MHI

TECHNICAL MANUAL

Manual No.'15•PAC-T-236

INVERTER PACKAGED AIR-CONDITIONERS

(Split system, air to air heat pump type)

HYPER INVERTER

CEILING SUSPENDED TYPE

Single type	Twin type
FDE40ZMXVG	FDE71VNXPVG
50ZMXVG	100VNXPVG
60ZMXVG	100VSXPVG
71VNXVG	125VNXPVG
100VNXVG	125VSXPVG
100VSXVG	140VNXPVG
125VNXVG	140VSXPVG
125VSXVG	Triple Type
140VNXVG	FDE140VNXTVG
140VSXVG	140VSXTVG

MICRO INVERTER

CEILING SUSPENDED TYPE

Single type	Twin type	Triple type
FDE71VNPVG	FDE100VNPVG	FDE140VNTVG
90VNPVG	100VSPVG	140VSTVG
100VNVG	125VNPVG	200VSATVG
100VSVG	125VSPVG	
125VNVG	140VNPVG	Double twin type
125VSVG	140VSPVG	FDE200VSADVG
140VNVG	200VSAPVG	250VSADVG
140VSVG	250VSAPVG	

V Multi System

(OUTDOOR UNIT)	(INDOOR UNIT)
FDC71VNX	FDE40VG
100VNX	50VG
100VSX	60VG
125VNX	71VG
125VSX	
140VNX	
140VSX	

V Multi System

(OUTDOOR UNIT)	(INDOOR UNIT)
FDC100VN	FDE50VG
100VS	60VG
125VN	71VG
125VS	100VG
140VN	125VG
140VS	
200VSA	
250VSA	

MITSUBISHI HEAVY INDUSTRIES, LTD.

TABLE OF CONTENTS

1. HYPER INVERTER PACKAGED AIR-CONDITIONERS 2
2. MICRO INVERTER PACKAGED AIR-CONDITIONERS 278
3. V MULTI SYSTEM 408
4. OPTION PARTS 444

1. HYPER INVERTER PACKAGED AIR-CONDITIONERS

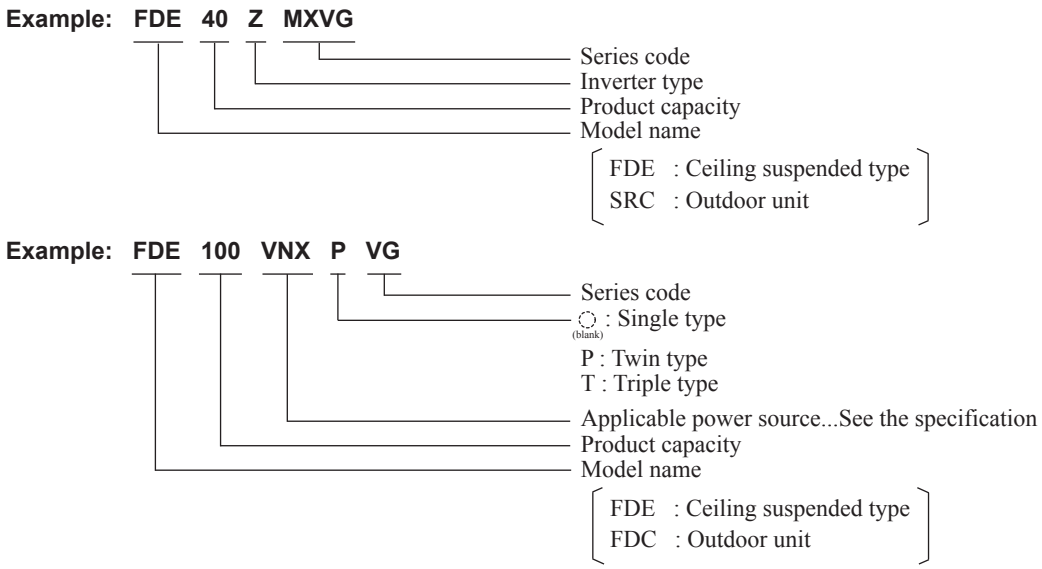
CONTENTS

1.1 SPECIFICATIONS **5**
1.2 EXTERIOR DIMENSIONS **24**
(1) Indoor units 24
(2) Outdoor units 27
(3) Remote control (Option parts) 30
1.3 ELECTRICAL WIRING **33**
(1) Indoor units 33
(2) Outdoor units 34
1.4 NOISE LEVEL **38**
1.5 TEMPERATURE AND VELOCITY DISTRIBUTION **41**
1.6 PIPING SYSTEM **45**
1.7 RANGE OF USAGE & LIMITATIONS **48**
1.8 SELECTION CHART **52**
1.8.1 Capacity tables **52**
1.8.2 Correction of cooling and heating capacity in relation to air flow rate control (fan speed) **65**
1.8.3 Correction of cooling and heating capacity in relation to one way length of refrigerant piping **65**
1.8.4 Height difference between the indoor unit and outdoor unit **65**
1.9 APPLICATION DATA **67**
1.9.1 Installation of indoor unit **67**
1.9.2 Electric wiring work installation **71**
1.9.3 Installation of wired remote control (Option) **75**
1.9.4 Installation of outdoor unit **89**
(1) Models SRC40－60ZMX-S 89
(2) Model FDC71VNX 97
(3) Models FDC100－140VNX, 100－140VSX 105
1.9.5 Instructions for branching pipe set (DIS-WA1,WB1,TA1,TB1) **113**
1.10 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER **116**
1.10.1 Remote control **116**
1.10.2 Operation control function by the wired remote control **119**
1.10.3 Operation control function by the indoor control **122**
(1) Auto operation 122
(2) Operations of functional items during cooling/heating 123
(3) Dehumidifying operation 123
(4) Timer operation 124
(5) Remote control display during the operation stop 125
(6) Hot start (Cold draft prevention at heating) 125
(7) Hot keep 125
(8) Auto swing control 126

(9) Thermostat operation 127
(10) Filter sign 128
(11) Compressor inching prevention control 128
(12) Operation check mode 129
(13) Cooling, dehumidifying frost protection 129
(14) Heating overload protection 129
(15) Anomalous fan motor 130
(16) Plural unit control - Control of 16 units group by one remote control 130
(17) High ceiling control 130
(18) Abnormal temperature thermistor (return air/indoor heat exchanger) wire/short-circuit detection 131
(19) External input/output control (CnT or CnTA) 131
(20) Operation permission/prohibition 133
(21) Selection of cooling/heating external input function 134
(22) Fan control at heating startup 135
(23) Room temperature detection temperature compensation during heating 135
(24) Return air temperature compensation 135
(25) High power operation (RC−EX1A only) 135
(26) Energy-saving operation (RC−EX1A only) 136
(27) Warm-up control (RC−EX1A only) 136
(28) Home leave mode (RC−EX1A only) 136
(29) Auto temp. setting (RC−EX1A only) 136
(30) Fan circulator operation (RC−EX1A only) 136
(31) The operation judgment is executed every 5 minutes (RC−EX1A only) ...136
(32) Auto fan speed control (RC−EX1A only) 136
(33) IU overload alarm (RC−EX1A only) 136
(34) Peak-cut time (RC−EX1A only) 137
1.10.4 Operation control function by the outdoor control 138
(Ⅰ) Models SRC40－60 138
(1) Defrost operation 138
(2) Cooling overload protective control 138
(3) Cooling high pressure control 139
(4) Cooling low outdoor temperature protective control 139
(5) Heating high pressure control 140
(6) Heating overload protective control 140
(7) Heating low outdoor temperature protective control 140
(8) Compressor overheat protection 141
(9) Current safe 141
(10) Current cut 141
(11) Outdoor unit failure 141
(12) Serial signal transmission error protection 141
(13) Rotor lock 141

(14) Outdoor fan motor protection 141
(15) Outdoor fan control at low outdoor temperature 142
(16) Refrigeration cycle system protection 142
(Ⅱ) Models FDC71－140 143
(1) Determination of comressor speed (Frequency) 143
(2) Compressor start control 143
(3) Compressor soft start control 144
(4) Outdoor unit fan control 145
(5) Defrost operation 147
(6) Protective control/anomalous stop control by compressor's number of revolutions 148
(7) Silent mode 152
(8) Test run 152
(9) Pump-down control 152
(10) Base heater ON/OFF output control (Option) 153
1.11 MAINTENANCE DATA 154
1.11.1 Diagnosing of microcomputer circuit 154
(1) Selfdiagnosis function 154
(2) Troubleshooting procedure 159
(3) Troubleshooting at the indoor unit 159
(4) Troubleshooting at the outdoor unit 163
(5) Check of anomalous operation data with the remote control 178
(6) Power transistor module (including the driver PCB) inspection procedure 181
(7) Inverter checker for diagnosis of inverter output 183
(8) Outdoor unit control failure diagnosis circuit diagram 185
1.11.2 Troubleshooting flow 196
(1) List of troubles 196
(2) Troubleshooting 199
1.12 TECHNICAL INFORMATION 269

■ How to read the model name



1.1 SPECIFICATIONS

(1) Single type

Item			Model	FDE40ZMXVG	
				Indoor unit **FDE40VG**	Outdoor unit **SRC40ZMX-S**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	4.0 [1.1(Min.)-4.7(Max.)]	
	Nominal heating capacity (range)		kW	4.5 [0.6(Min.)-5.4(Max.)]	
	Power consumption	Cooling	kW	1.02	
		Heating		1.10	
	Max power consumption			2.60	
	Running current	Cooling	A	4.8 / 5.0	
		Heating		5.1 / 5.4	
	Inrush current, max current			5 , 12	
	Power factor	Cooling	%	92	
		Heating		93	
	EER	Cooling		3.92	
	COP	Heating		4.09	
	Sound power level	Cooling	dB(A)	60	63
		Heating			
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31	50
		Heating			
	Silent mode sound pressure level			—	Cooling : 45 / Heating : 45
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	640×800(+71)×290
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	28	45
Compressor type & Q'ty				—	RMT5113MCE2 (Twin rotary type)×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.45 MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Capillary tubes + Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×1
Fan motor (Starting method)			W	30 < Direct line start >	34 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	36
		Heating			33
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ6.35 (1/4") Pipe ϕ6.35(1/4")x0.8 O/U ϕ6.35 (1/4")	
				Gas line: ϕ12.7 (1/2") ϕ12.7(1/2")x0.8 ϕ12.7 (1/2")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.30m	
	Vertical height diff. between O.U. and I.U.		m	Max.20m (Outdoor unit is higher)	Max.20m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 5pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.3	
Interconnecting wires	Size x Core number			1.5mm²×4 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IPX4
Standard accessories				Mounting kit, Drain hose	Drain elbow, Drain hole grommet
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE50ZMXVG	
				Indoor unit **FDE50VG**	Outdoor unit **SRC50ZMX-S**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	5.0 [1.1(Min.)-5.6(Max.)]	
	Nominal heating capacity (range)		kW	5.4 [0.6(Min.)-6.3(Max.)]	
	Power consumption	Cooling	kW	1.52	
		Heating		1.46	
	Max power consumption			2.90	
	Running current	Cooling	A	7.0 / 7.4	
		Heating		7.0 / 7.3	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	94	
		Heating		91	
	EER	Cooling		3.29	
	COP	Heating		3.70	
	Sound power level	Cooling	dB(A)	60	63
		Heating			
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31	54
		Heating			50
	Silent mode sound pressure level			—	Cooling : 45 / Heating : 45
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	640×800(+71)×290
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	28	45
Compressor type & Q'ty				—	RMT5113MCE2 (Twin rotary type)×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.45 MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Capillary tubes + Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×1
Fan motor (Starting method)			W	30 < Direct line start >	34 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	40
		Heating			33
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ6.35 (1/4") Pipe ϕ6.35(1/4")x0.8 O/U ϕ6.35 (1/4")	
				Gas line: ϕ12.7 (1/2") ϕ12.7(1/2")x0.8 ϕ12.7 (1/2")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.30m	
	Vertical height diff. between O.U. and I.U.		m	Max.20m (Outdoor unit is higher)	Max.20m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 5pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	6.2	
Interconnecting wires	Size x Core number			1.5mm^2×4 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IPX4
Standard accessories				Mounting kit, Drain hose	Drain elbow, Drain hole grommet
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE60ZMXVG	
				Indoor unit **FDE60VG**	Outdoor unit **SRC60ZMX-S**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	5.6 [1.1(Min.)-6.3(Max.)]	
	Nominal heating capacity (range)		kW	6.7 [0.6(Min.)-7.1(Max.)]	
	Power consumption	Cooling	kW	1.75	
		Heating		1.86	
	Max power consumption			2.90	
	Running current	Cooling	A	8.0 / 8.4	
		Heating		8.7 / 9.1	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	95	
		Heating		93	
	EER	Cooling		3.20	
	COP	Heating		3.60	
	Sound power level	Cooling	dB(A)	60	64
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	54
		Heating			
	Silent mode sound pressure level			—	Cooling : 45 / Heating : 45
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	640×800(+71)×290
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	33	45
Compressor type & Q'ty				—	RMT5113MCE2 (Twin rotary type)×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.45 MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Capillary tubes + Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	50 < Direct line start >	34 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	41.5
		Heating			39
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ6.35 (1/4") Pipe ϕ6.35(1/4")x0.8 O/U ϕ6.35 (1/4")	
				Gas line: ϕ12.7 (1/2") ϕ12.7(1/2")x0.8 ϕ12.7 (1/2")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.30m	
	Vertical height diff. between O.U. and I.U.		m	Max.20m (Outdoor unit is higher)	Max.20m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 5pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	8.5	
Interconnecting wires	Size x Core number			1.5mm²×4 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IPX4
Standard accessories				Mounting kit, Drain hose	Drain elbow, Drain hole grommet
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE71VNXVG	
				Indoor unit **FDE71VG**	Outdoor unit **FDC71VNX**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	7.1 [3.2(Min.)-8.0(Max.)]	
	Nominal heating capacity (range)		kW	8.0 [3.6(Min.)-9.0(Max.)]	
	Power consumption	Cooling	kW	2.11	
		Heating		2.11	
	Max power consumption			3.38	
	Running current	Cooling	A	9.7 / 10.1	
		Heating		9.3 / 9.7	
	Inrush current, max current			5 , 17	
	Power factor	Cooling	%	95	
		Heating		99	
	EER	Cooling		3.36	
	COP	Heating		3.79	
	Sound power level	Cooling	dB(A)	60	66
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	51
		Heating			48
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	750×880(+88)×340
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	33	60
Compressor type & Q'ty				—	RMT5118MDE2×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.675 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 2.95kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	50 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	60
		Heating			50
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	—
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE100VNXVG	
				Indoor unit **FDE100VG**	Outdoor unit **FDC100VNX**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]	
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-12.5(Max.)]	
	Power consumption	Cooling	kW	2.55	
		Heating		2.68	
	Max power consumption			4.61	
	Running current	Cooling	A	11.3 / 11.8	
		Heating		11.8 / 12.3	
	Inrush current, max current			5 , 24	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		3.92	
	COP	Heating		4.18	
	Sound power level	Cooling	dB(A)	64	70
		Heating			
	Sound pressure level	Cooling		P-Hi : 48 Hi : 43 Me : 38 Lo : 34	48
		Heating			50
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	43	105
Compressor type & Q'ty				—	RMT5134MDE2×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	80 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 26 Me : 21 Lo : 16.5	100
		Heating			
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE100VSXVG	
				Indoor unit **FDE100VG**	Outdoor unit **FDC100VSX**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]	
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-16.0(Max.)]	
	Power consumption	Cooling	kW	2.55	
		Heating		2.68	
	Max power consumption			5.76	
	Running current	Cooling	A	3.8 / 4.0	
		Heating		3.9 / 4.1	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		3.92	
	COP	Heating		4.18	
	Sound power level	Cooling	dB(A)	64	70
		Heating			
	Sound pressure level	Cooling		P-Hi : 48 Hi : 43 Me : 38 Lo : 34	48
		Heating			50
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	43	105
Compressor type & Q'ty				—	RMT5134MDE3×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	80 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 26 Me : 21 Lo : 16.5	100
		Heating			
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item			Model	FDE125VNXVG	
				Indoor unit **FDE125VG**	Outdoor unit **FDC125VNX**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]	
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-17.0(Max.)]	
	Power consumption	Cooling	kW	3.50	
		Heating		3.77	
	Max power consumption			6.18	
	Running current	Cooling	A	15.4 / 16.1	
		Heating		16.6 / 17.3	
	Inrush current, max current			5 , 26	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		3.57	
	COP	Heating		3.71	
	Sound power level	Cooling	dB(A)	64	70
		Heating			
	Sound pressure level	Cooling		P-Hi : 48 Hi : 45 Me : 40 Lo : 35	48
		Heating			50
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	43	105
Compressor type & Q'ty				—	RMT5134MDE2×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	80 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 29 Me : 23 Lo : 17	100
		Heating			
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE125VSXVG	
				Indoor unit **FDE125VG**	Outdoor unit **FDC125VSX**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]	
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-18.0(Max.)]	
	Power consumption	Cooling	kW	3.50	
		Heating		3.77	
	Max power consumption			7.72	
	Running current	Cooling	A	5.1 / 5.4	
		Heating		5.5 / 5.8	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		3.57	
	COP	Heating		3.71	
	Sound power level	Cooling	dB(A)	64	70
		Heating			
	Sound pressure level	Cooling		P-Hi : 48 Hi : 45 Me : 40 Lo : 35	48
		Heating			50
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	43	105
Compressor type & Q'ty				—	RMT5134MDE3×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	80 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 29 Me : 23 Lo : 17	100
		Heating			
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item			Model	FDE140VNXVG	
				Indoor unit **FDE140VG**	Outdoor unit **FDC140VNX**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-16.0(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-18.0(Max.)]	
	Power consumption	Cooling	kW	4.40	
		Heating		4.69	
	Max power consumption			6.97	
	Running current	Cooling	A	19.3 / 20.2	
		Heating		20.6 / 21.5	
	Inrush current, max current			5 , 26	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		3.18	
	COP	Heating		3.41	
	Sound power level	Cooling	dB(A)	65	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 49 Hi : 45 Me : 40 Lo : 36	49
		Heating			52
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	43	105
Compressor type & Q'ty				—	RMT5134MDE2×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	90 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 34 Hi : 29 Me : 23 Lo : 18	100
		Heating			
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE140VSXVG	
				Indoor unit **FDE140VG**	Outdoor **FDC140VSX**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-16.0(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-20.0(Max.)]	
	Power consumption	Cooling	kW	4.40	
		Heating		4.69	
	Max power consumption			8.72	
	Running current	Cooling	A	6.4 / 6.8	
		Heating		6.8 / 7.2	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		3.18	
	COP	Heating		3.41	
	Sound power level	Cooling	dB(A)	65	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 49 Hi : 45 Me : 40 Lo : 36	49
		Heating			52
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	43	105
Compressor type & Q'ty				—	RMT5134MDE3×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	90 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 34 Hi : 29 Me : 23 Lo : 18	100
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

(2) Twin type

Item			Model	FDE71VNXPVG	
				Indoor unit **FDE40VG (2 units)**	Outdoor unit **FDC71VNX**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	7.1 [3.2(Min.)-8.0(Max.)]	
	Nominal heating capacity (range)		kW	8.0 [3.6(Min.)-9.0(Max.)]	
	Power consumption	Cooling	kW	2.05	
		Heating		2.35	
	Max power consumption			3.84	
	Running current	Cooling	A	9.1 / 9.5	
		Heating		10.4 / 10.9	
	Inrush current, max current			5 , 17	
	Power factor	Cooling	%	98	
		Heating		98	
	EER	Cooling		3.46	
	COP	Heating		3.40	
	Sound power level	Cooling	dB(A)	60	66
		Heating			
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31	51
		Heating			48
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	750×880(+88)×340
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	28	60
Compressor type & Q'ty				—	RMT5118MDE2×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.675 (M-MA68)
Refrigerant (Type, amount, pre-charge length)			kg	R410A 2.95kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×1
Fan motor (Starting method)			W	30 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	60
		Heating			50
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I.U. ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	—
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
(7) Indoor unit specification for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ①：Pipe of O/U-Branch, ②：Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE100VNXPVG	
				Indoor unit **FDE50VG (2 units)**	Outdoor unit **FDC100VNX**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]	
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-12.5(Max.)]	
	Power consumption	Cooling	kW	3.00	
		Heating		3.39	
	Max power consumption			5.58	
	Running current	Cooling	A	13.3 / 13.9	
		Heating		15.0 / 15.7	
	Inrush current, max current			5 , 24	
	Power factor	Cooling	%	98	
		Heating		98	
	EER	Cooling		3.33	
	COP	Heating		3.30	
	Sound power level	Cooling	dB(A)	60	70
		Heating			
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31	48
		Heating			50
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	28	105
Compressor type & Q'ty				—	RMT5134MDE2×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4,5kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×2
Fan motor (Starting method)			W	30 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	100
		Heating			
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I.U. ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
(7) Indoor unit specification for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ①：Pipe of O/U-Branch, ②：Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE100VSXPVG	
				Indoor unit **FDE50VG (2 units)**	Outdoor unit **FDC100VSX**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]	
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-16.0(Max.)]	
	Power consumption	Cooling	kW	3.00	
		Heating		3.39	
	Max power consumption			6.98	
	Running current	Cooling	A	4.4 / 4.6	
		Heating		4.9 / 5.2	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		3.33	
	COP	Heating		3.30	
	Sound power level	Cooling	dB(A)	60	70
		Heating			
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31	48
		Heating			50
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	28	105
Compressor type & Q'ty				—	RMT5134MDE3×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4,5kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×2
Fan motor (Starting method)			W	30 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	100
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I.U. ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specification for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ①：Pipe of O/U-Branch, ②：Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE125VNXPVG	
				Indoor unit **FDE60VG (2 units)**	Outdoor unit **FDC125VNX**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]	
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-17.0(Max.)]	
	Power consumption	Cooling	kW	3.97	
		Heating		3.70	
	Max power consumption			6.50	
	Running current	Cooling	A	17.6 / 18.4	
		Heating		16.4 / 17.2	
	Inrush current, max current			5 , 26	
	Power factor	Cooling	%	98	
		Heating		98	
	EER	Cooling		3.15	
	COP	Heating		3.78	
	Sound power level	Cooling	dB(A)	60	70
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	48
		Heating			50
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	33	105
Compressor type & Q'ty				—	RMT5134MDE2×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4,5kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	50 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	100
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I.U. ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
(7) Indoor unit specification for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ①：Pipe of O/U-Branch, ②：Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE125VSXPVG	
				Indoor unit **FDE60VG (2 units)**	Outdoor unit **FDC125VSX**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]	
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-18.0(Max.)]	
	Power consumption	Cooling	kW	3.97	
		Heating		3.70	
	Max power consumption			8.12	
	Running current	Cooling	A	5.8 / 6.2	
		Heating		5.4 / 5.7	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		3.15	
	COP	Heating		3.78	
	Sound power level	Cooling	dB(A)	60	70
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	48
		Heating			50
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	33	105
Compressor type & Q'ty				—	RMT5134MDE3×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4,5kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	50 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	100
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I.U. ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specification for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ①：Pipe of O/U-Branch, ②：Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE140VNXPVG	
				Indoor unit **FDE71VG (2 units)**	Outdoor unit **FDC140VNX**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-16.0(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-18.0(Max.)]	
	Power consumption	Cooling	kW	4.67	
		Heating		4.58	
	Max power consumption			6.94	
	Running current	Cooling	A	20.7 / 21.7	
		Heating		20.3 / 21.2	
	Inrush current, max current			5 , 26	
	Power factor	Cooling	%	98	
		Heating		98	
	EER	Cooling		3.00	
	COP	Heating		3.49	
	Sound power level	Cooling	dB(A)	60	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	49
		Heating			52
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	33	105
Compressor type & Q'ty				—	RMT5134MDE2×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4,5kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	50 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	100
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I.U. ϕ9.52 (3/8") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: I/U ϕ15.88 (5/8") ② ϕ15.88(5/8")x1.0 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
(7) Indoor unit specification for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ①：Pipe of O/U-Branch, ②：Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE140VSXPVG	
				Indoor unit **FDE71VG (2 units)**	Outdoor unit **FDC140VSX**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-16.0(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-20.0(Max.)]	
	Power consumption	Cooling	kW	4.67	
		Heating		4.58	
	Max power consumption			8.68	
	Running current	Cooling	A	6.8 / 7.2	
		Heating		6.7 / 7.1	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	99	
		Heating		98	
	EER	Cooling		3.00	
	COP	Heating		3.49	
	Sound power level	Cooling	dB(A)	60	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	49
		Heating			52
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	33	105
Compressor type & Q'ty				—	RMT5134MDE3×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4,5kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	50 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	100
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I.U. ϕ9.52 (3/8") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: I/U ϕ15.88 (5/8") ② ϕ15.88(5/8")x1.0 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specification for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ①：Pipe of O/U-Branch, ②：Pipe of Branch-I/U

PFA004Z024 A

(3) Triple type

Item			Model	FDE140VNXTVG	
				Indoor unit **FDE50VG (3 units)**	Outdoor unit **FDC140VNX**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-16.0(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-18.0(Max.)]	
	Power consumption	Cooling	kW	4.66	
		Heating		4.53	
	Max power consumption			6.86	
	Running current	Cooling	A	20.7 / 21.6	
		Heating		20.1 / 21.0	
	Inrush current, max current			5 , 26	
	Power factor	Cooling	%	98	
		Heating		98	
	EER	Cooling		3.00	
	COP	Heating		3.53	
	Sound power level	Cooling	dB(A)	60	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31	49
		Heating			52
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	28	105
Compressor type & Q'ty				—	RMT5134MDE2×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4,5kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×2
Fan motor (Starting method)			W	30 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	100
		Heating			
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I.U. ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
(7) Indoor unit specification for one unit. Capacity and operation data are three indoor units combined and run together.
(8) Branching pipe set "DIS-TA1"×1(option). ① : Pipe of O/U-Branch, ② : Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE140VSXTVG	
				Indoor unit **FDE50VG (3 units)**	Outdoor unit **FDC140VSX**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-16.0(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-20.0(Max.)]	
	Power consumption	Cooling	kW	4.66	
		Heating		4.53	
	Max power consumption			8.58	
	Running current	Cooling	A	6.9 / 7.2	
		Heating		6.7 / 7.0	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	99	
		Heating		98	
	EER	Cooling		3.00	
	COP	Heating		3.53	
	Sound power level	Cooling	dB(A)	60	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31	49
		Heating			52
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2)near equivalent	Stucco white (4.2Y7.5/1.1)near equivalent
Net weight			kg	28	105
Compressor type & Q'ty				—	RMT5134MDE3×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4,5kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×2
Fan motor (Starting method)			W	30 < Direct line start >	86 ×2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	100
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I.U. ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.100m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

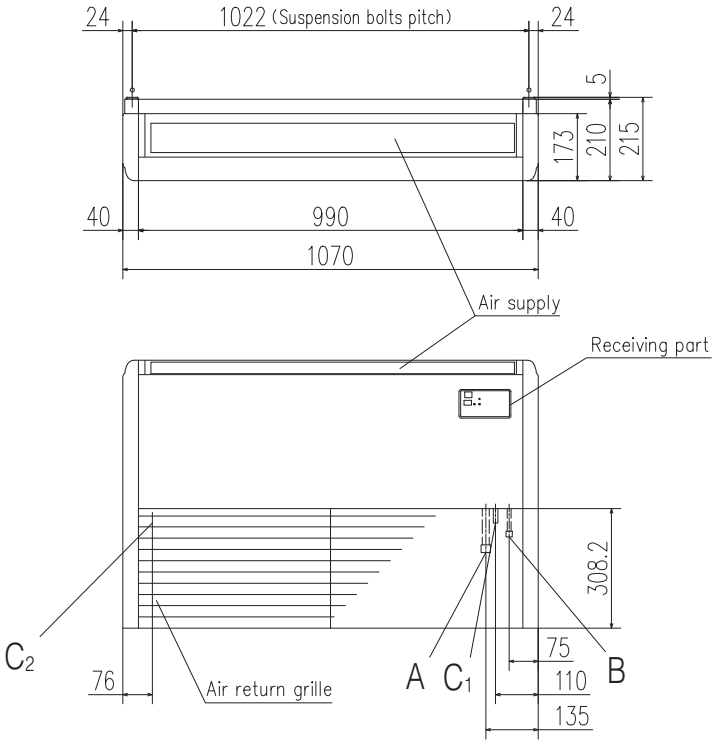
(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specification for one unit. Capacity and operation data are three indoor units combined and run together.
(8) Branching pipe set "DIS-TA1"×1(option). ① : Pipe of O/U-Branch, ② : Pipe of Branch-I/U

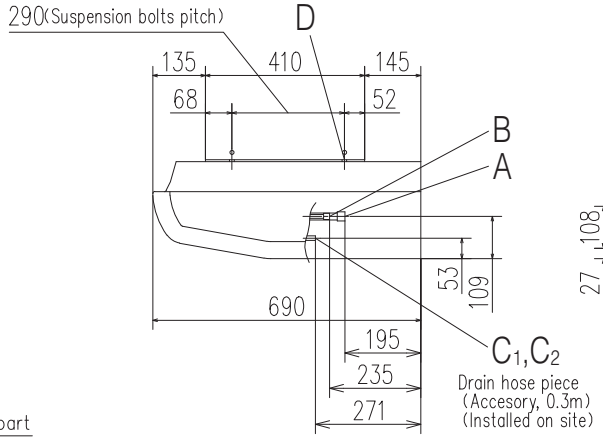
PFA004Z024 A

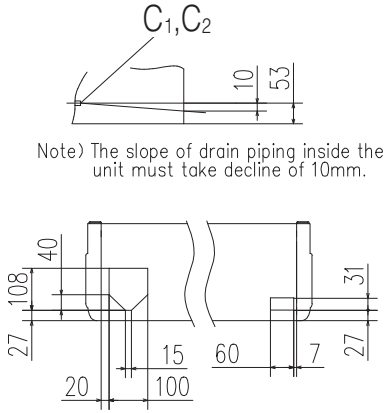
1.2 EXTERIOR DIMENSIONS

(1) Indoor units
Models FDE40VG, 50VG

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





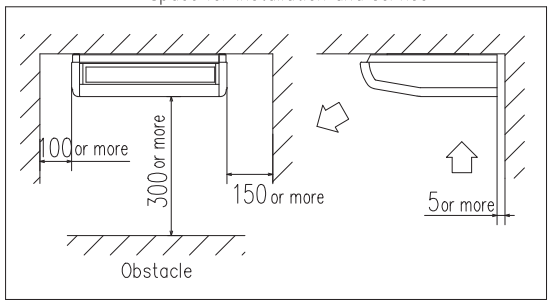


Note) The slope of drain piping inside the unit must take decline of 10mm.

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

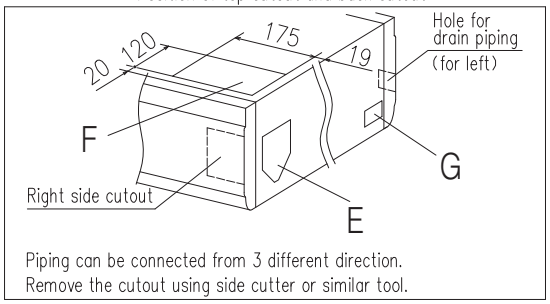
Unit: mm

Space for installation and service



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

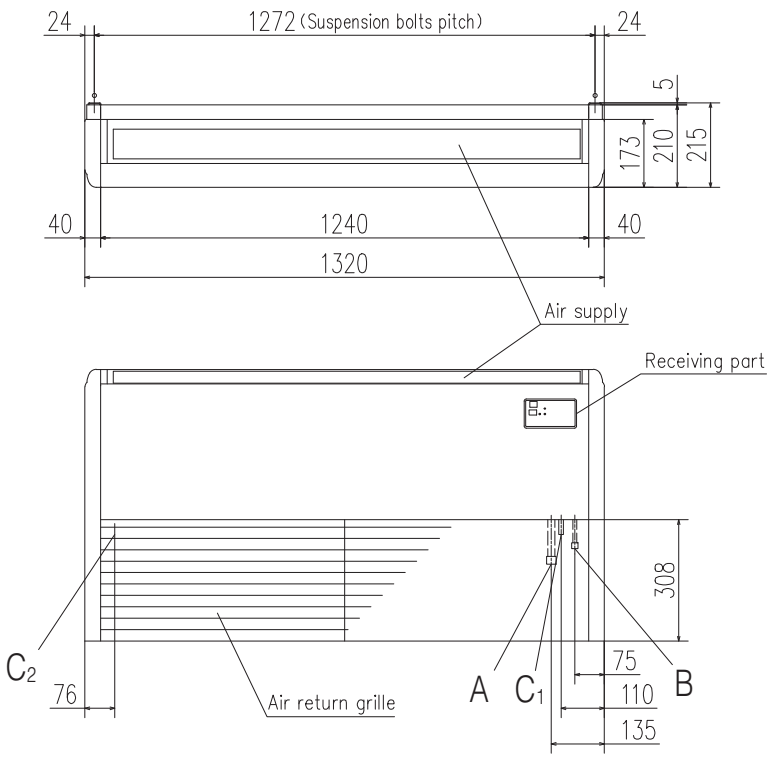
Position of top cutout and back cutout

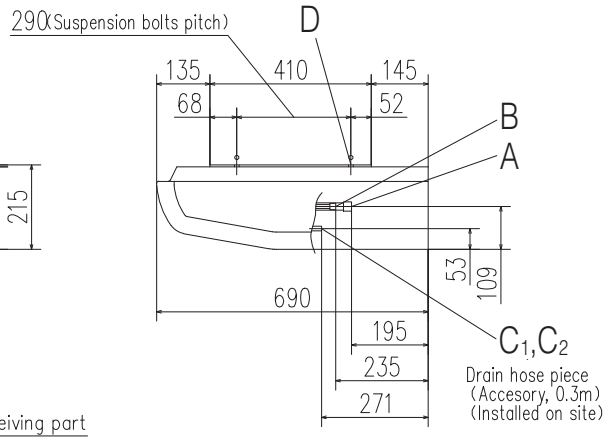


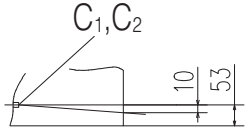
Piping can be connected from 3 different direction.
Remove the cutout using side cutter or similar tool.

PFA004Z025

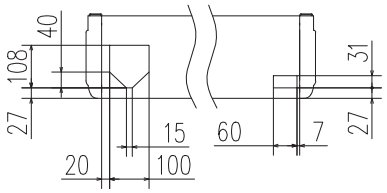
Note (1) The model name label is attached on the fan casing inside the air return grille.







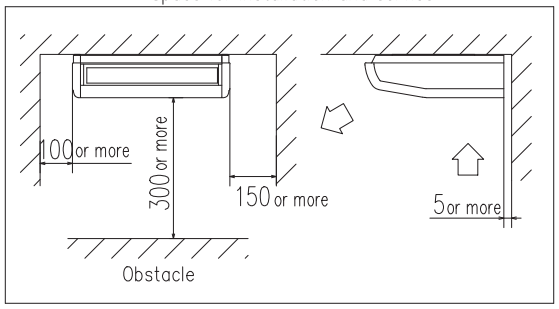
Note) The slope of drain piping inside the unit must take decline of 10mm.



Symbol		Content	
	Model	FDE60	FDE71
A	Gas piping	ϕ12.7 (1/2") (Flare)	ϕ15.88 (5/8") (Flare)
B	Liquid piping	ϕ6.35 (1/4") (Flare)	ϕ9.52 (3/8") (Flare)
C 1,2	Drain piping	VP20 (I.D.20, O.D.26)	
D	Hole for suspension bolts	(M10 or M8)	
E	Back cutout	PE cover	
F	Top cutout	Plate cover	
G	Hole for drain piping (for left back)	(Knock out)	

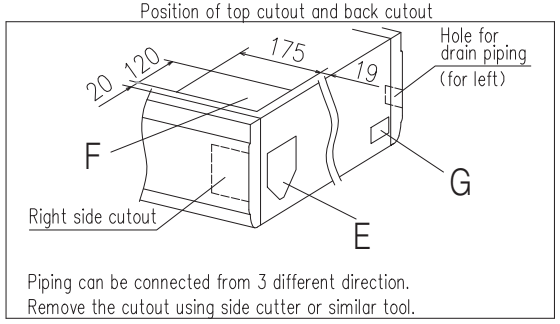
Unit: mm

Space for installation and service



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

Position of top cutout and back cutout

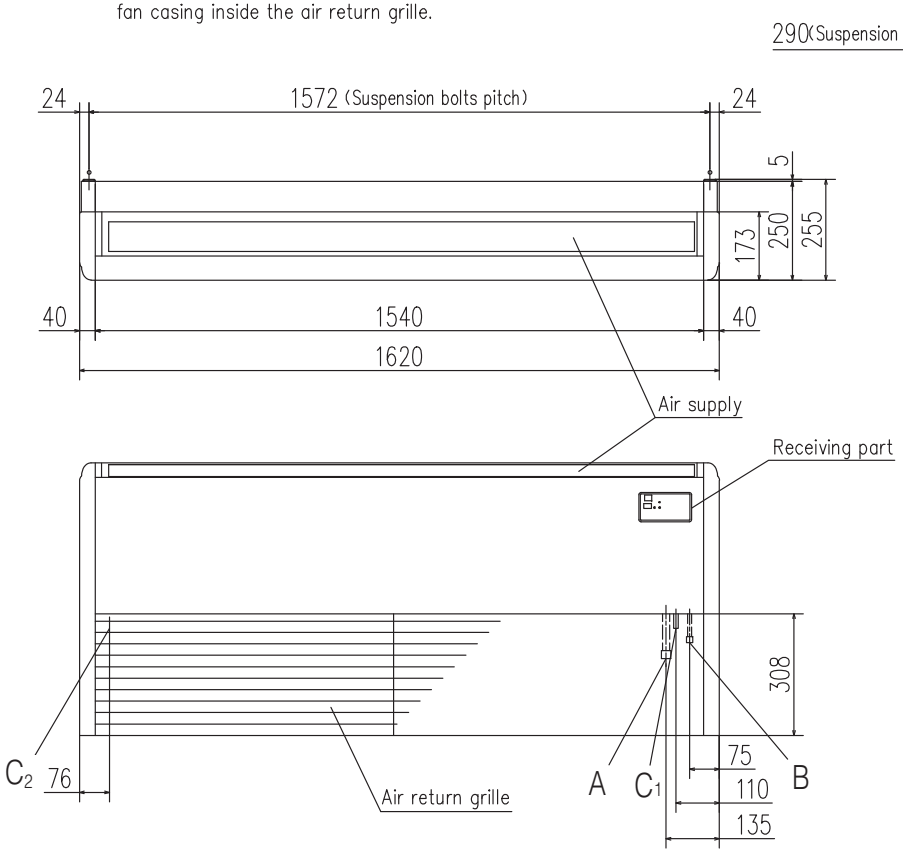


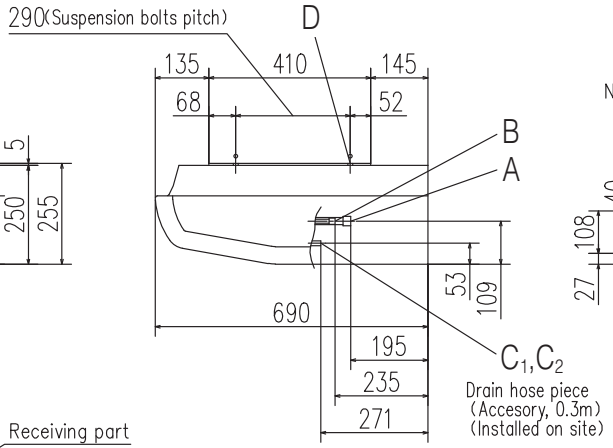
Piping can be connected from 3 different direction.
Remove the cutout using side cutter or similar tool.

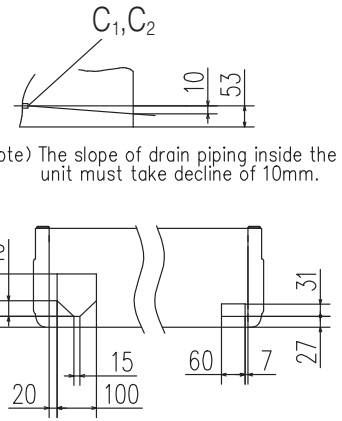
PFA004Z026

Models FDE100VG, 125VG, 140VG

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





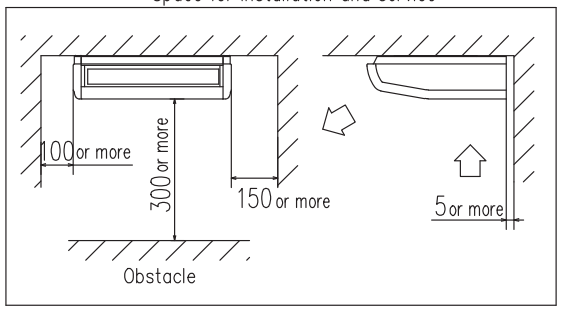


Note) The slope of drain piping inside the unit must take decline of 10mm.

Symbol	Content	
A	Gas piping	ϕ15.88 (5/8") (Flare)
B	Liquid piping	ϕ9.52 (3/8") (Flare)
$C_{1,2}$	Drain piping	VP20 (I.D. 20, O.D.26)
D	Hole for suspension bolt	(M10 or M8)
E	Back cutout	PE cover
F	Top cutout	Plate cover
G	Hole for drain piping (for left back)	(Knock out)

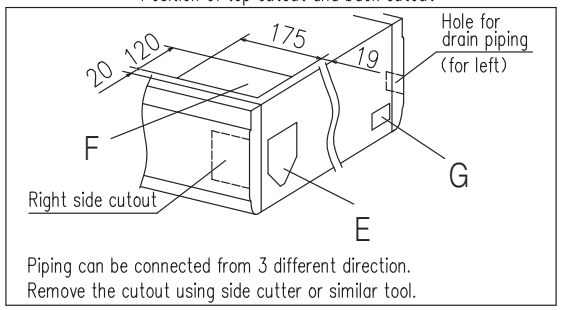
Unit: mm

Space for installation and service



Make a space of 5000 or more between the units when installing more than one.

Position of top cutout and back cutout



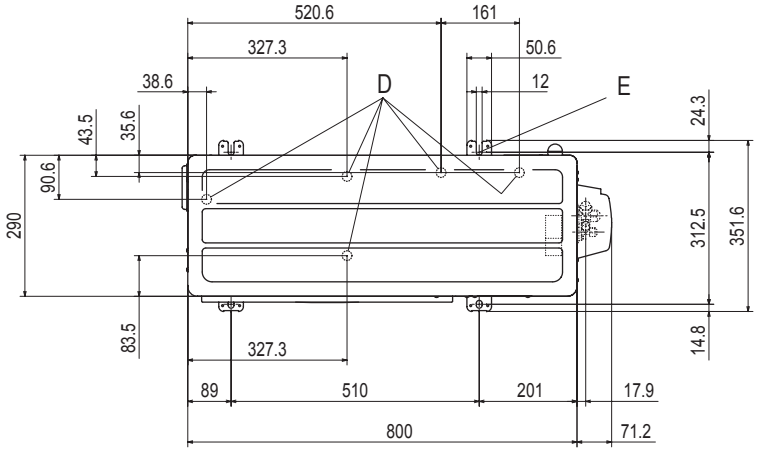
Piping can be connected from 3 different direction.
Remove the cutout using side cutter or similar tool.

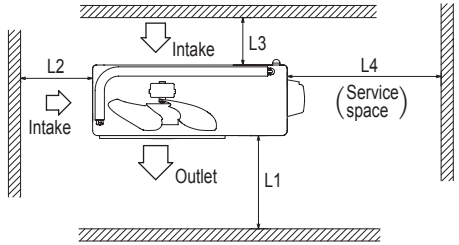
PFA004Z027

(2) Outdoor units
Models SRC40ZMX-S, 50ZMX-S, 60ZMX-S

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

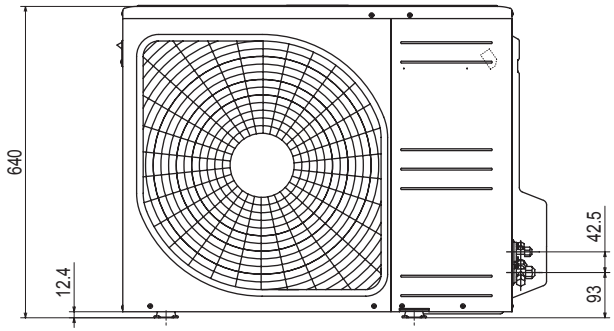
Notes
(1) It must not be surrounded by walls on the four sides.
(2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more than 15mm.
(3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.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

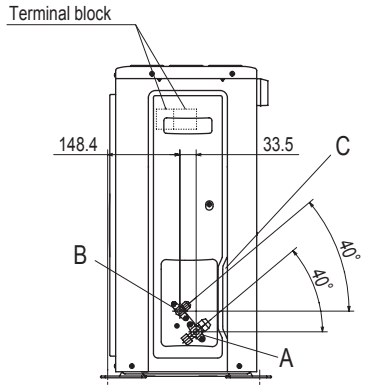




Minimum installation space

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



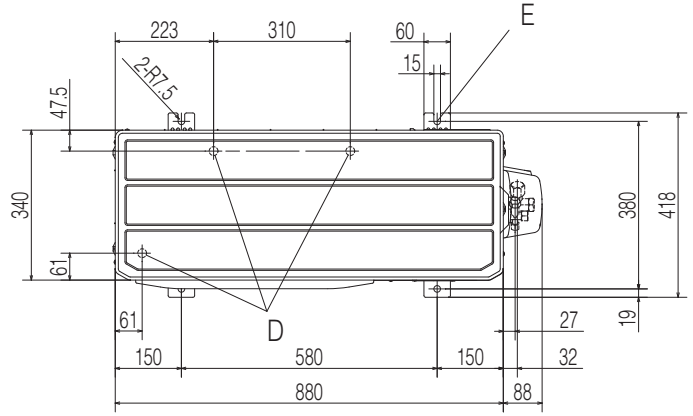


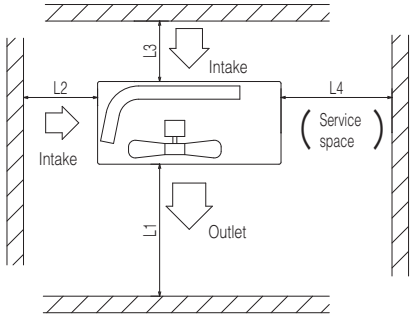
Unit:mm

RCT000Z010

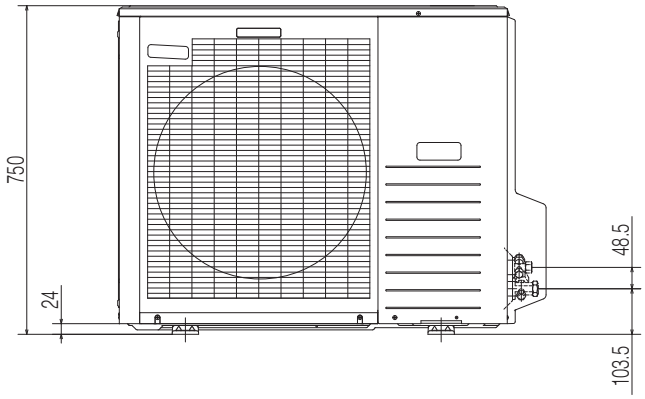
Symbol	Content	
A	Service valve connection (gas side)	φ15.88 (5/8") (Flare)
B	Service valve connection (liquid side)	φ9.52 (3/8") (Flare)
C	Pipe/cable draw-out hole	
D	Drain discharge hole	φ20 × 3places
E	Anchor bolt hole	M10 × 4places

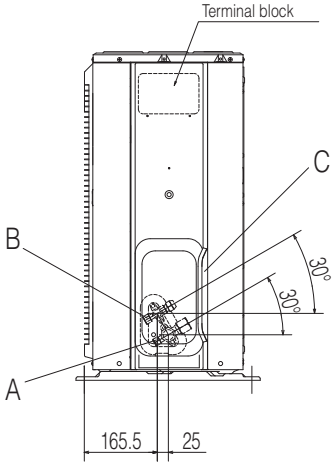
Notes
(1) It must not be surrounded by walls on the four sides.
(2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more the 15mm.
(3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.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





Minimum installation space





Dimensions \ Examples of installation	I	II	III
L1	Open	Open	500
L2	300	250	Open
L3	100	150	100
L4	250	250	250

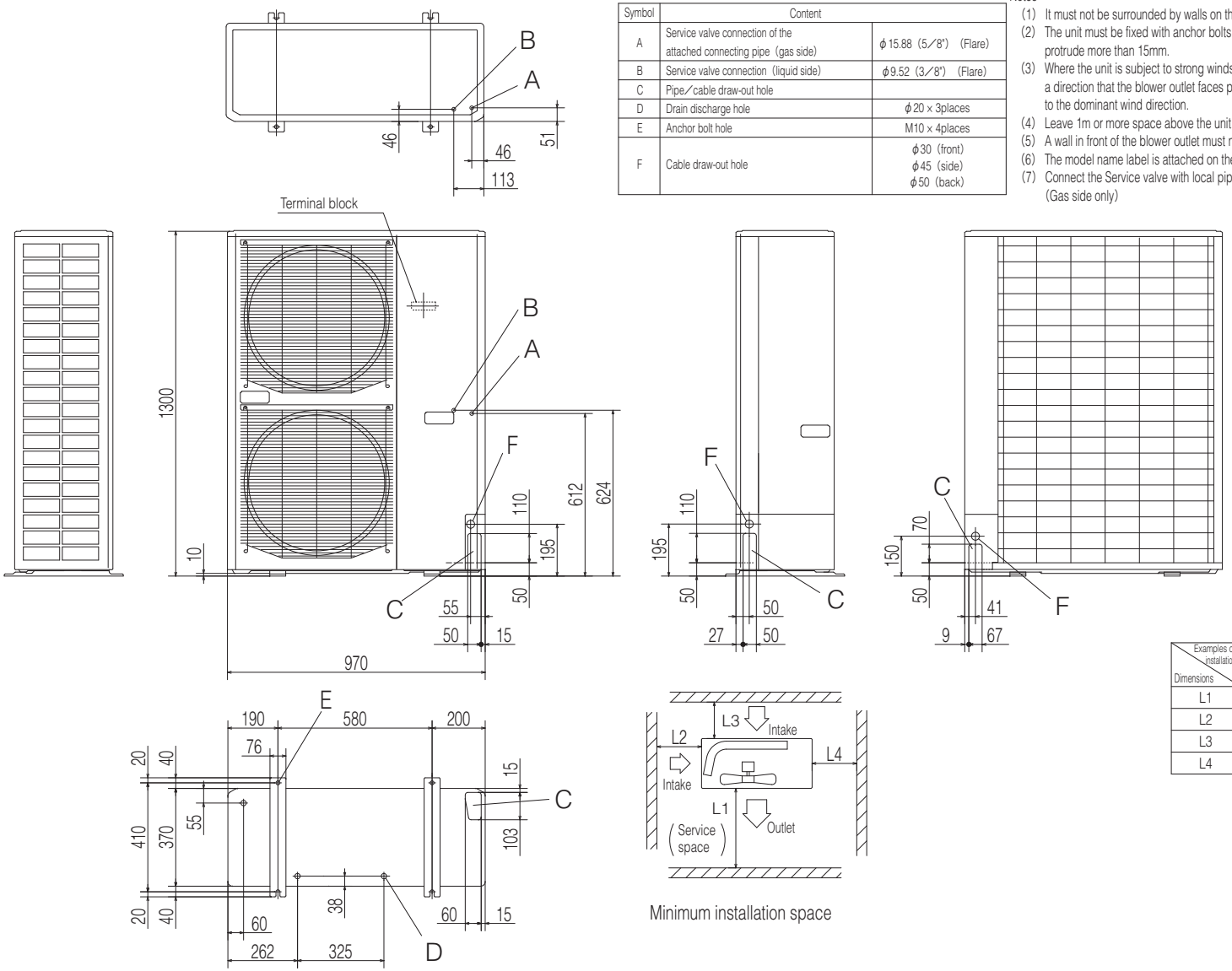
Unit:mm

PCA001Z603 A

Models FDC100VNX, 125VNX, 140VNX
100VSX, 125VSX, 140VSX

Symbol	Content	
A	Service valve connection of the attached connecting pipe (gas side)	φ15.88 (5/8") (Flare)
B	Service valve connection (liquid side)	φ9.52 (3/8") (Flare)
C	Pipe/cable draw-out hole	
D	Drain discharge hole	φ20 × 3places
E	Anchor bolt hole	M10 × 4places
F	Cable draw-out hole	φ30 (front) φ45 (side) φ50 (back)

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



Minimum installation space

Dimensions \ Examples of installation	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

Unit:mm

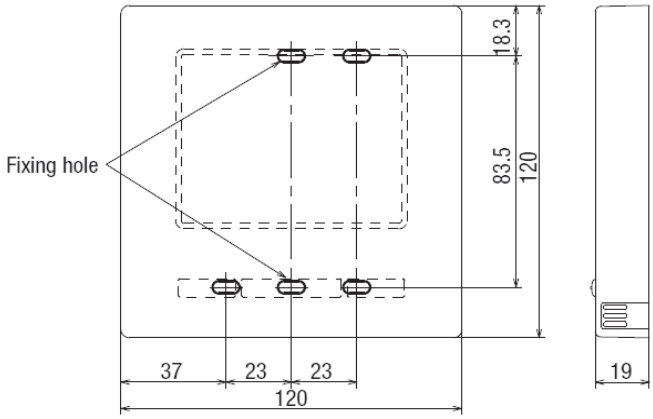
PCA001Z569 C

(3) Remote control (Option parts)

(a) Wired remote control

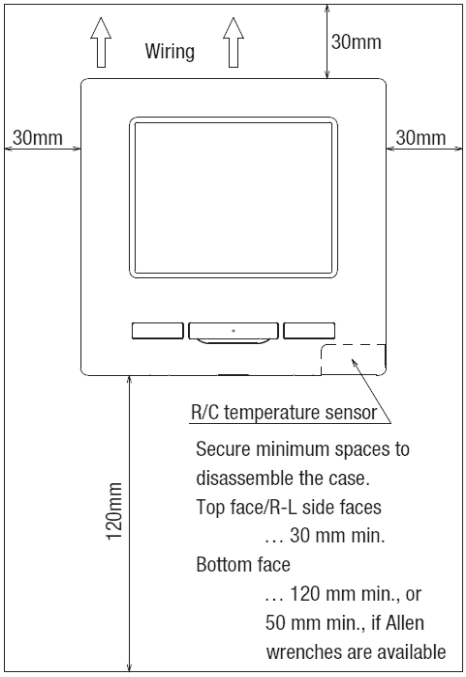
Model RC-EX1A

Dimensions (Viewed from front)



Exterior appearance (Munsell color)	Pearl White (N8.5) near equivalent

Installation space



Cautions for selecting installation place

(1) Installation surface must be flat and sufficiently strong. R/C case must not be deformed.

(2) Where the R/C can detect room temperatures accurately This is a must when detecting room temperatures with the temperature sensor of R/C.

- Install the R/C where it can detect the average temperature in the room.
- Install the R/C sufficiently separated from a heat source.
- Install the R/C where it will not be influenced by the turbulence of air when the door is opened or closed.

Select a place where the R/C is not exposed to direct sunlight or blown by winds from the air-conditioner or temperatures on the wall surface will not deviate largely from indoor air temperatures.

R/C cable: 0.3mm^2 × 2-core

When the cable length is longer than 100 m, the max size for wires used in the R/C case is 0.5 mm^2. Connect them to wires of larger size near the outside of R/C. When wires are connected, take measures to prevent water, etc. from entering inside.

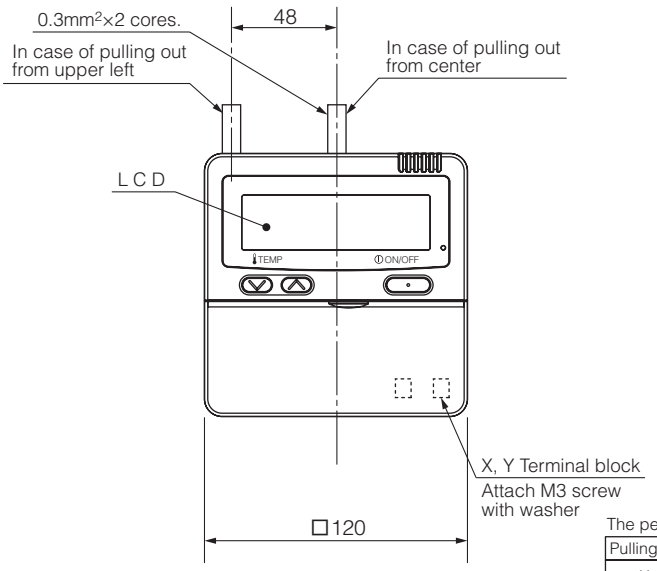
< 200 m	0.5 mm^2 x 2-core
< 300 m	0.75 mm^2 x 2-core
< 400 m	1.25 mm^2 x 2-core
< 600 m	2.0 mm^2 x 2-core

Adapted to **RoHS** directive

PJZ000Z297 A

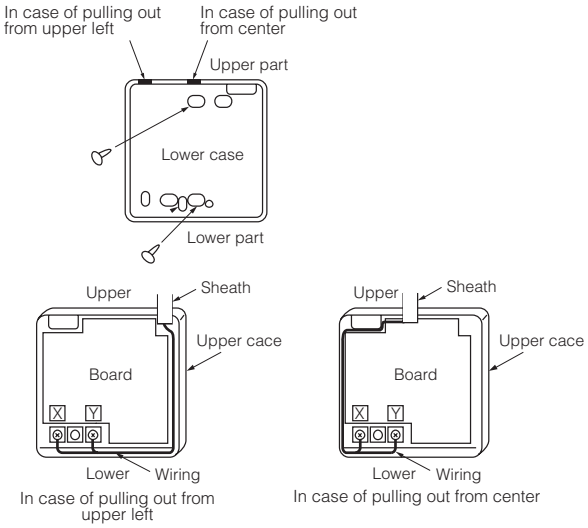
Model RC-E5

Exposed mounting



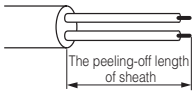
Exterior appearance (Munsell color)	Pearl White (N8.5) near equivalent

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

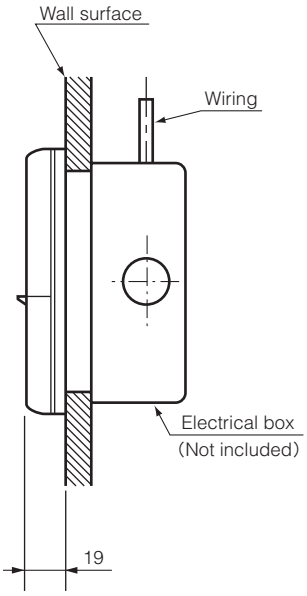


The peeling-off length of sheath

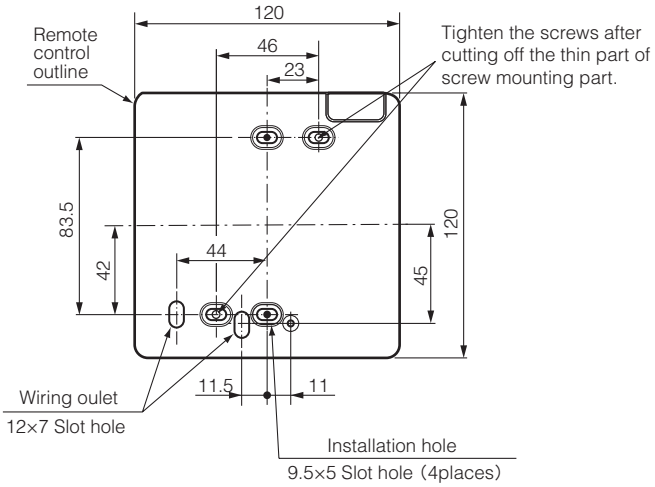
Pulling out from upper left	Pulling out from center
X wiring : 215mm Y wiring : 195mm	X wiring : 170mm Y wiring : 190mm



Embedded mounting



Remote control installation dimensions



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

Unit:mm

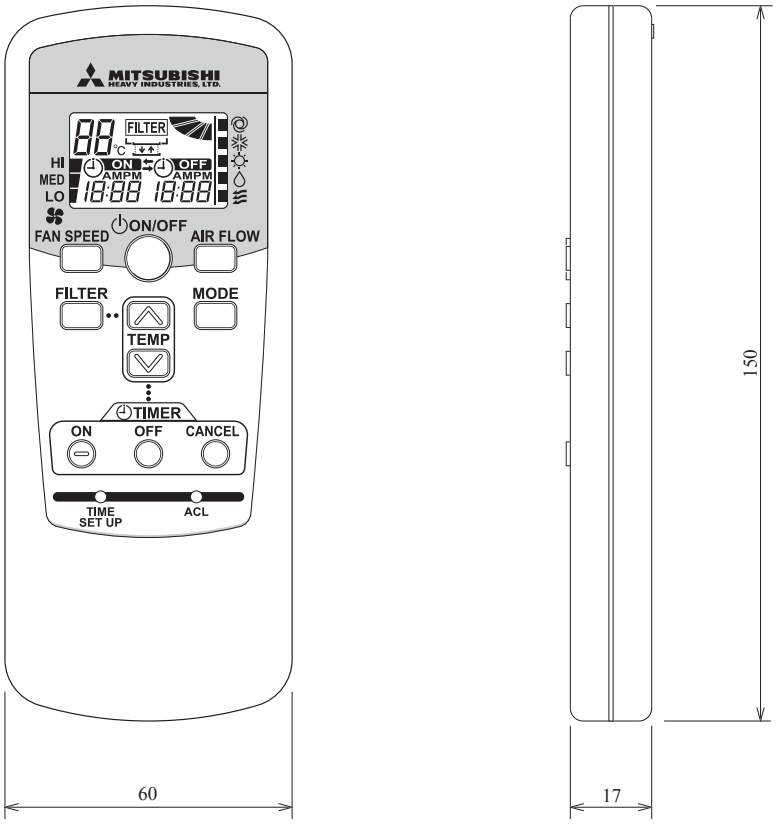
Wiring specifications

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

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

PJZ000Z295 a

(b) Wireless remote control (RCN-E1R)

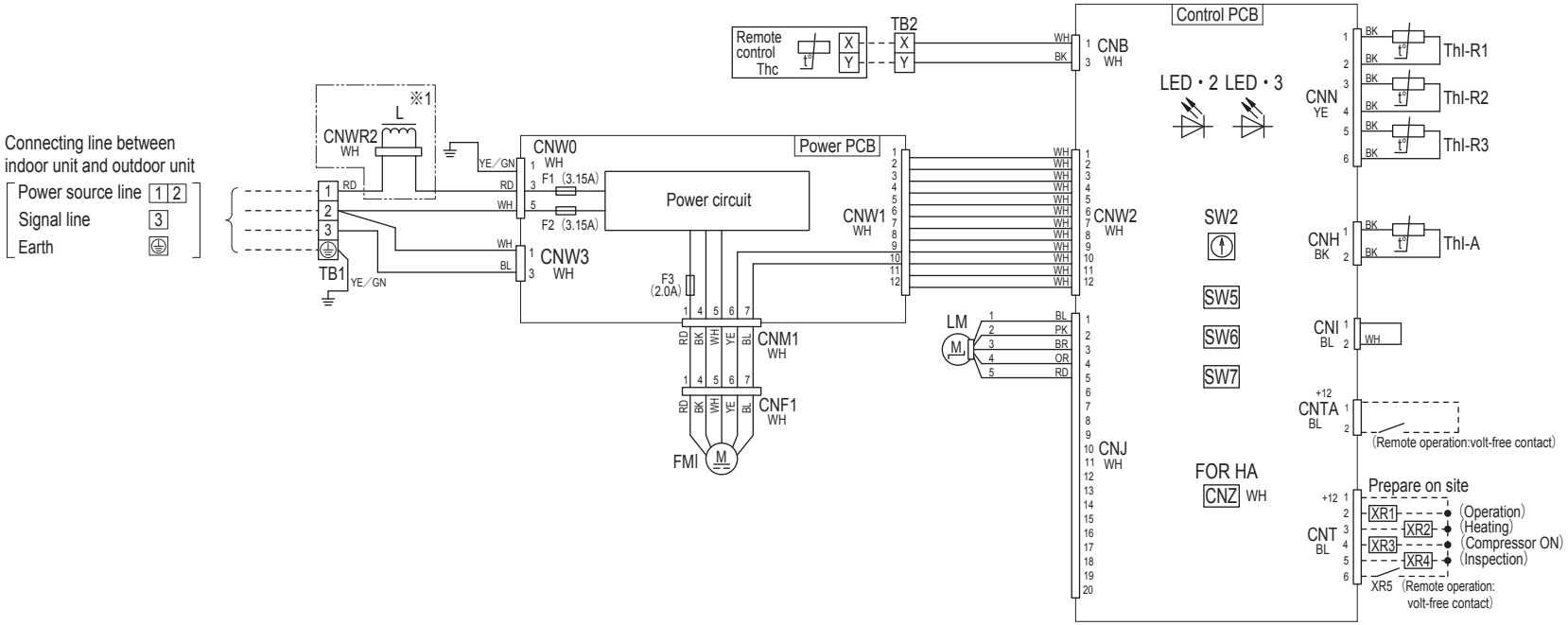


Unit: mm

1.3 ELECTRICAL WIRING

(1) Indoor units

Models FDE40VG, 50VG, 60VG, 71VG, 100VG, 125VG, 140VG



Meaning of marks

Mark	Parts name
CNB-Z	Connector
F1-3	Fuse（Power PCB）
FMI	Fan motor
LED・2	Indication lamp（Green-Normal operation）
LED・3	Indication lamp（Red-Inspection）
LM	Louver motor
SW2	Remote control communication address
SW5	Plural units Master／Slave setting
SW6	Model capacity setting
SW7-1	Operation check,drain motor test run
SW7-3	Powerful mode Valid／Invalid
TB1	Terminal block（Power source）
TB2	Terminal block（Signal line）
Thc	Thermistor（Remote control）
ThI-A	Thermistor（Return air）
ThI-R1,2,3	Thermistor（Heat exchanger）

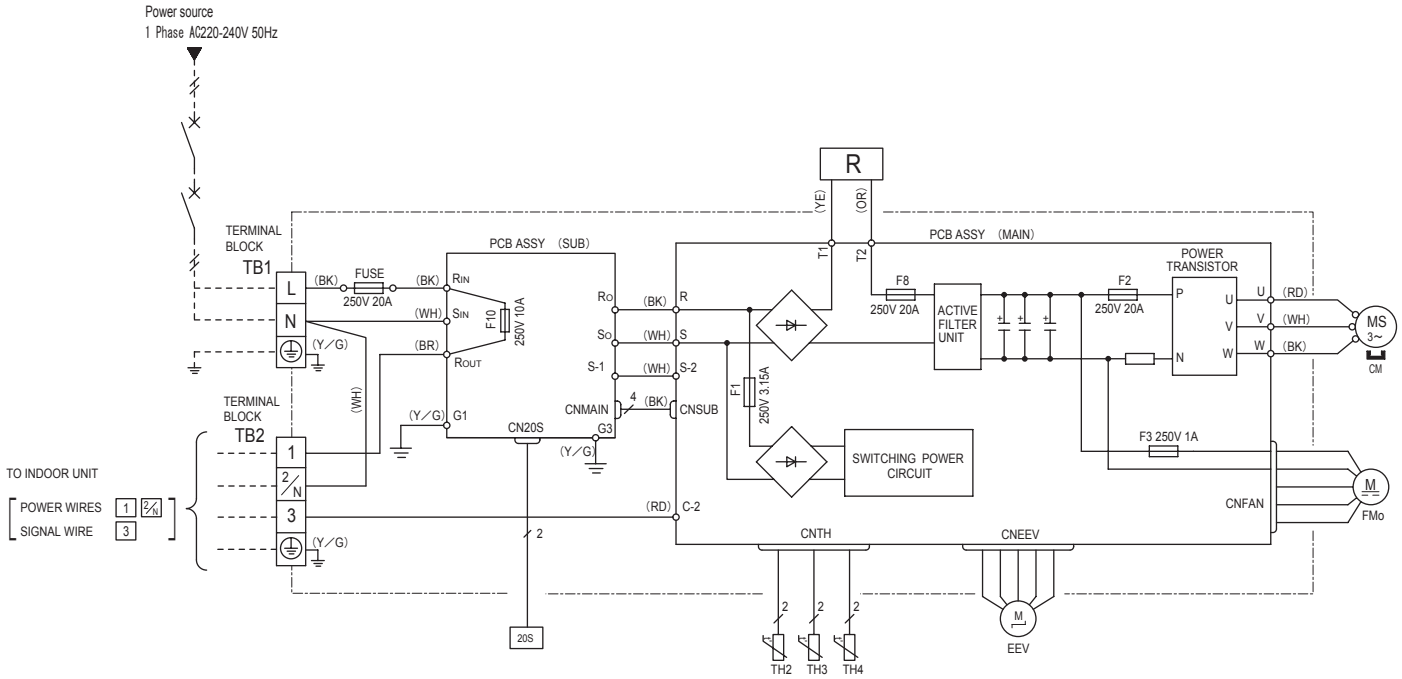
Color marks

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

Notes 1. - - - indicates wiring on site.
2. See the wiring diagram of outside unit about the line between indoor unit and outdoor unit.
3. Use twin core cable（0.3mm²X2）at remote control line. See spec sheet of remote control in case that the total length is more than 100m.
4. Do not put remote control line alongside power source line.
5. Section 1（※1） is provided on the models FDE100-140 only.

PFA004Z028

(2) Outdoor units
Models SRC40ZMX-S, 50ZMX-S, 60ZMX-S



Power cable, indoor-outdoor connecting wires

Model	MAX running current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm^2)
SRC40	15	2.0	18	$1.5mm^2$ x 3	1.5
SRC50					
SRC60					

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

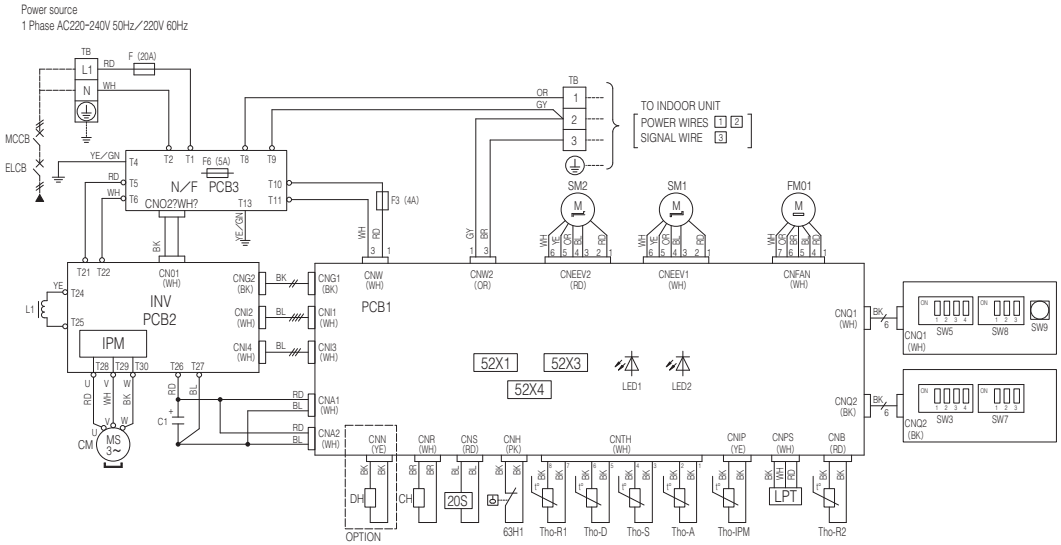
Meaning of marks

	Description
CM	Compressor motor
CNEEV~CN20S	Connector
EEV	Electric expansion valve (coil)
FMo	Fan motor
R	Reactor
TB1,2	Terminal block
TH2	Heat exchanger sensor (outdoor unit)
TH3	Outdoor air temp.sensor
TH4	Discharge pipe temp.sensor
20S	Solenoid valve for 4 way valve

Color marks

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

RWC000Z270



Meaning of marks

Item	Description
CM	Compressor motor
FM01	Fan motor
CH	Crankcase heater
DH	Drain pan heater
52X1	Auxilliary relay (for CH)
52X3	Auxilliary relay (for 20S)
52X4	Auxilliary relay (for DH)
20S	Solenoid valve for 4 way valve
SM1	Expansion valve for cooling
SM2	Expansion valve for heating
63H1	High pressure switch
Tho-A	Thermistor (Outdoor air temp.)
Tho-D	Thermistor (Discharge pipe temp.)
Tho-R1,R2	Thermistor (Heat exchanger temp.)
Tho-S	Thermistor (Suction pipe temp.)
Tho-IPM	Thermistor (IPM)
LPT	Low pressure sensor
IPM	Intelligent power module
TB	Terminal block
F,F3	Fuse
CnA~Z	Connector
SW9	Pump down switch
SW3,5	Local setting switch
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
L1	Reactor

Color marks

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

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size
FDC71	17	3.5	21	ϕ1.6mm x 3	ϕ1.6mm

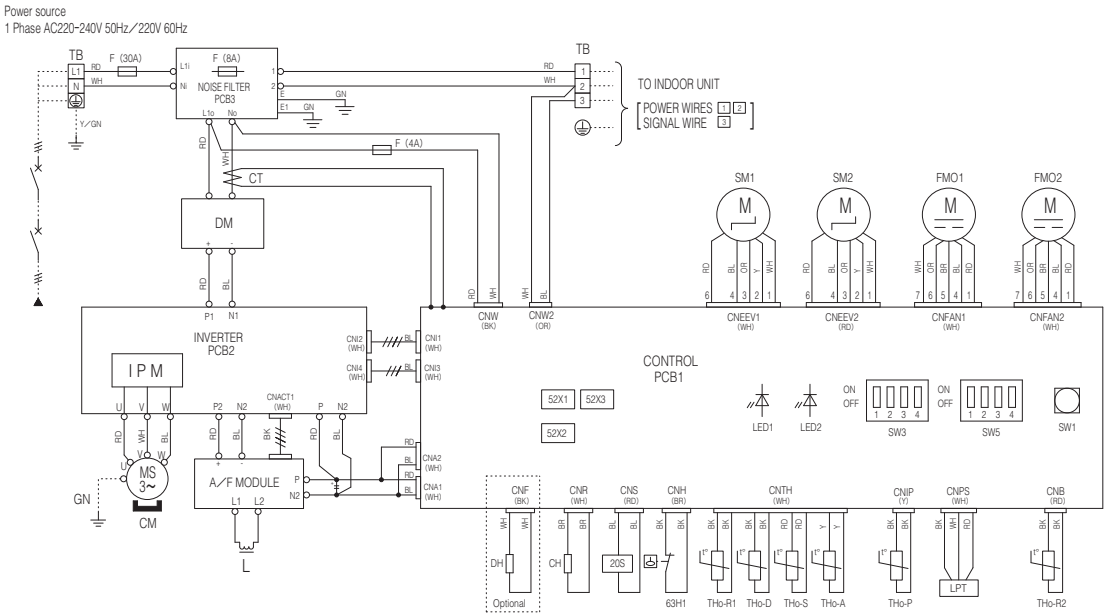
- The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- Switchgear of circuit breaker capacity which is calculated from MAX. over current should be chosen along the regulations in each country.
- The cable specifications are based on the assumption that a metal or plastic conduit is used with no more than three cables contained in a conduit and a voltage drop is 2%. For an installation falling outside of these conditions, please follow the internal cabling regulations. Adapt it to the regulation in effect in each country.
- Refer to installation manual or technical manual about usage of local setting switch.
  Don't operate SW3-3,SW5-1,SW5-2,SW7,SW8

Local setting switch SW3, SW5 (Set up at shipment OFF)

SW3-1	Defrost control change	The defrost operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.
SW3-2	Snow guard fan control	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 when the unit is used in a very snowy country, set this switch to ON.
SW5-3,4	Trial operation	Method of trial operation 1. Trial operation can be performed by using SW5-3. 2. Cooling trial operation will be performed when SW5-4 is OFF, and heating trial operation when SW5-4 is ON. 3. Be sure to turn OFF SW5-3 after the trial operation is finished.

PCA001Z605

'15 • PAC-T-236



Color marks

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

Meaning of marks

Item	Description
CnA~Z	Connector
CH	Crankcase heater
DH	Drain pan heater
CM	Compressor motor
CT	Current sensor
DM	Diode module
F	Fuse
FM01	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
LPT	Low pressure sensor
SM1	Expansion valve for cooling
SM2	Expansion valve for heating
SW1	Pump down switch
SW3,5	Local setting switch
TB	Terminal block
THo-A	Thermistor (Outdoor air temp.)
THo-D	Thermistor (Discharge pipe temp.)
THo-P	Thermistor (IPM)
THo-R1,2	Thermistor (Heat exchanger pipe temp.)
THo-S	Thermistor (Suction pipe temp.)
20S	Solenoid valve for 4 way valve
52X1	Auxilliary relay (for CH)
52X2	Auxilliary relay (for DH)
52X3	Auxilliary relay (for 20S)
63H1	High pressure switch

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm)
FDC100	24	5.5	25	φ1.6mm x 3	φ1.6
FDC125	26		23		
FDC140					

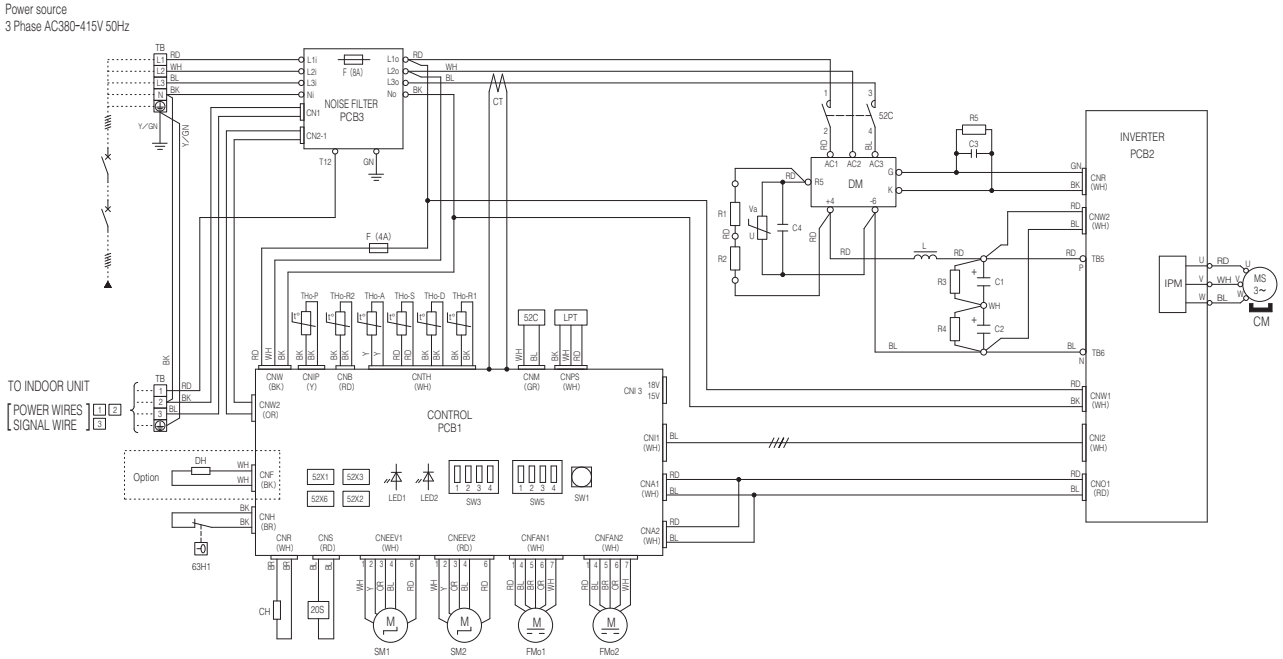
- The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- Switchgear of circuit breaker capacity which is calculated from MAX. over current should be chosen along the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

Local setting switch SW3 (Set up at shipment OFF)

SW3-1	Defrost control change	The defrost operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature falls to 3℃ or lower and the compressor is not runnning when the unit is used in a very snowy country, set this switch to ON.
SW3-3,4	Trial operation	Method of trial operation ①Trial operation can be performed by using SW3-3,4. ②Compressor will be in the operation when SW3-3 is ON. ③Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON. ④Be sure to turn OFF SW3-3 after the trial operation is finished.

PCA001Z570 A

'15 • PAC-T-236



Meaning of marks

Item	Description
CH	Crankcase heater
CM	Compressor motor
CnA~Z	Connector
CT	Current sensor
DH	Drain pan heater
DM	Diode module
F	Fuse
FMo1,2	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
LPT	Low pressure sensor
SM1	Expansion valve for cooling
SM2	Expansion valve for heating
SW1	Pump down switch
SW3,5	Local setting switch
TB	Terminal block
THo-A	Thermistor (Outdoor air temp.)
THo-D	Thermistor (Discharger pipe temp.)
THo-R1,2	Thermistor (Heat exchanger pipe temp.)
THo-S	Thermistor (Suction pipe temp.)
THo-P	Thermistor (IPM)
20S	Solenoid valve for 4 way valve
52C	Relay
52X1	Auxilliary relay (for CH)
52X2	Auxilliary relay (for DH)
52X3	Auxilliary relay (for 20S)
52X6	Auxilliary relay (for 52C)
63H1	High pressure switch

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm)
FDC100	15	3.5	27	ϕ1.6mm x 3	ϕ1.6
FDC125					
FDC140					

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

Local setting switch SW3 (Set up at shipment OFF)

SW3-1	Defrost control change	The defrost operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature falls to 3℃ or lower and the compressor is not runnning when the unit is used in a very snowy country, set this switch to ON.
SW3-3,4	Trial operation	Method of trial operation ①Trial operation can be performed by using SW3-3,4. ②Compressor will be in the operation when SW3-3 is ON. ③Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON. ④Be sure to turn OFF SW3-3 after the trial operation is finished.

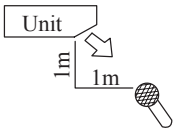
Color marks

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

PCA001Z571 A

1.4 NOISE LEVEL

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



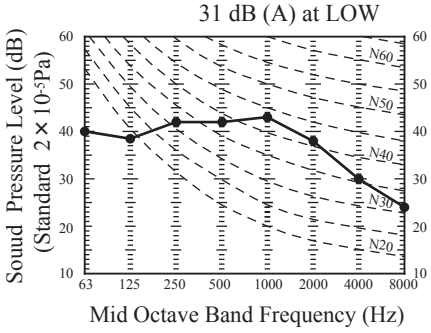
Mike (in front & below unit)

(1) Indoor units

Measured based on JIS B 8616
Mike position

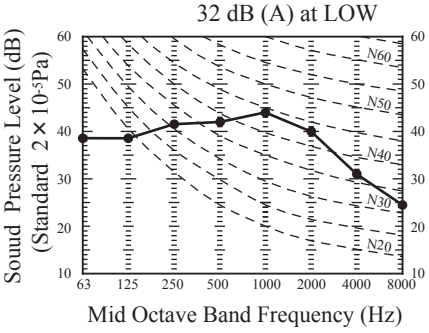
Models FDE40VG, 50VG

Noise level 46 dB (A) at P-HIGH
38 dB (A) at HIGH
36 dB (A) at MEDIUM
31 dB (A) at LOW



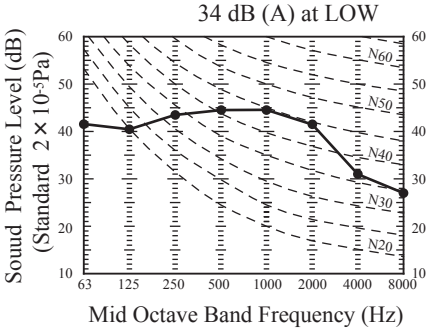
Models FDE60VG, 71VG

Noise level 47 dB (A) at P-HIGH
41 dB (A) at HIGH
37 dB (A) at MEDIUM
32 dB (A) at LOW



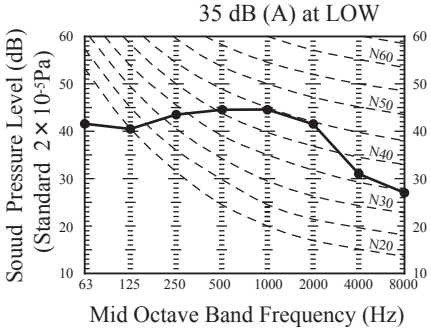
Model FDE100VG

Noise level 48 dB (A) at P-HIGH
43 dB (A) at HIGH
38 dB (A) at MEDIUM
34 dB (A) at LOW



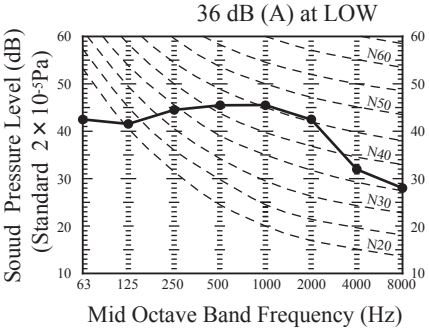
Model FDE125VG

Noise level 48 dB (A) at P-HIGH
45 dB (A) at HIGH
40 dB (A) at MEDIUM
35 dB (A) at LOW



Model FDE140VG

Noise level 49 dB (A) at P-HIGH
45 dB (A) at HIGH
40 dB (A) at MEDIUM
36 dB (A) at LOW

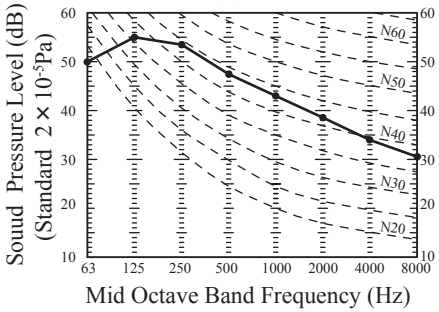


(2) Outdoor units

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

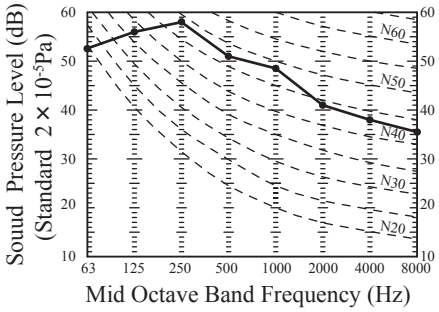
Model SRC40ZMX-S

Noise level 50 dB (A)

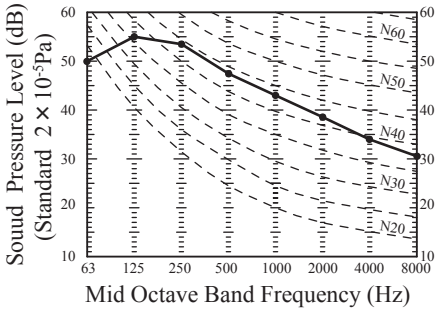


Model SRC50ZMX-S

Cooling noise level 54 dB (A)

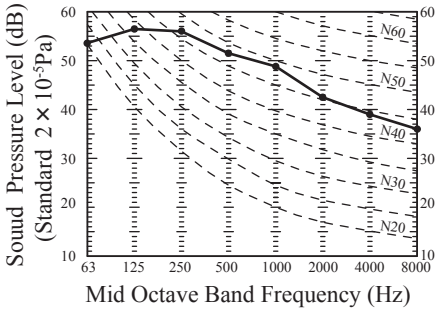


Heating noise level 50 dB (A)

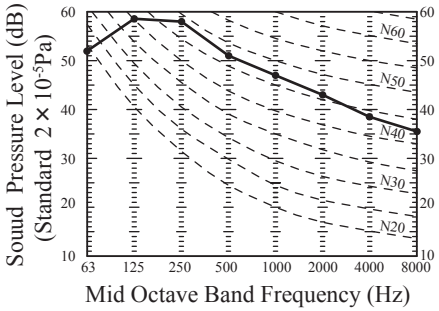


Model SRC60ZMX-S

Cooling noise level 54 dB (A)

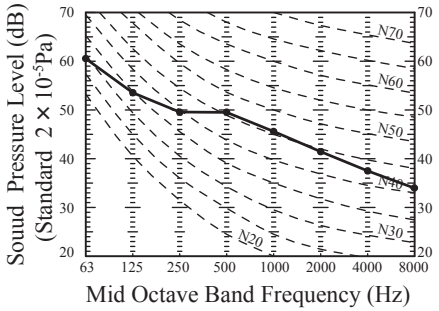


Heating noise level 54 dB (A)

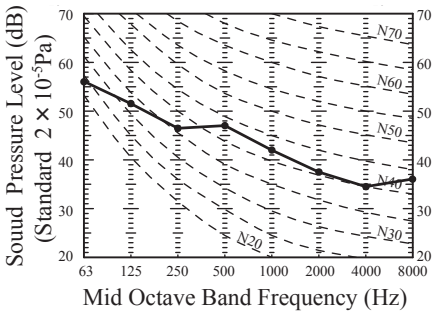


Model FDC71VNX

Cooling noise level 51 dB (A)

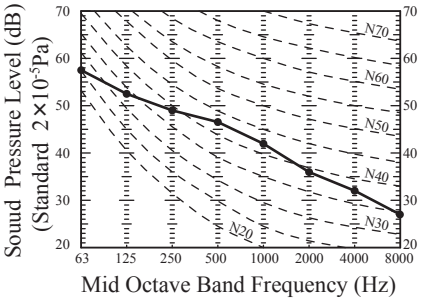


Heating noise level 48 dB (A)

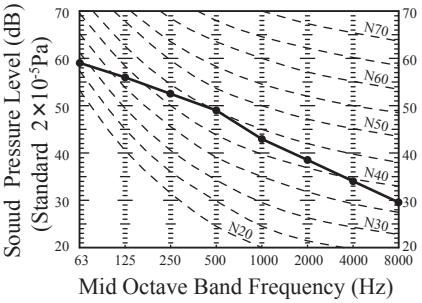


Model FDC100VNX,100VSX

Cooling noise level 48 dB (A)

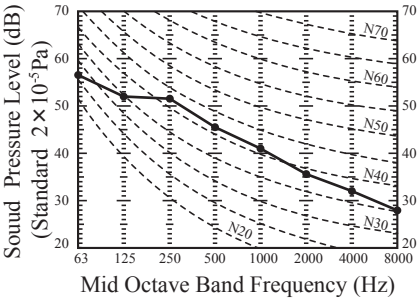


Heating noise level 50 dB (A)

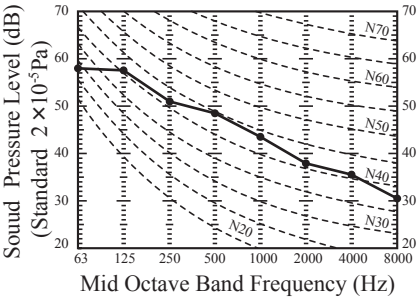


Models FDC125VNX,125VSX

Cooling noise level 48 dB (A)

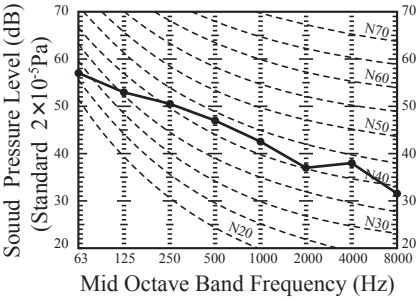


Heating noise level 50 dB (A)

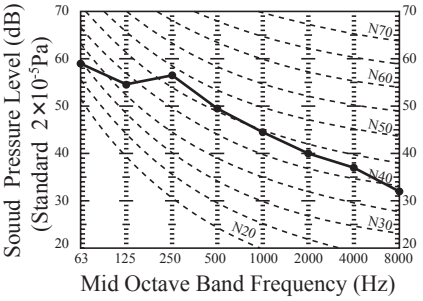


Models FDC140VNX,140VSX

Heating noise level 49 dB (A)



Heating noise level 52 dB (A)



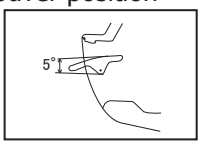
1.5 TEMPERATURE AND VELOCITY DISTRIBUTION

Indoor temperature
Cooling 27°CDB / 19°CWB
Heating 20°CDB
Note: These figures represent the typical main range of temperature and velocity distribution at the center of air outlet within the published conditions.
In the actual installation, they may differ from the typical figures under the influence of air temperature conditions, ceiling height, operation conditions and obstacles.

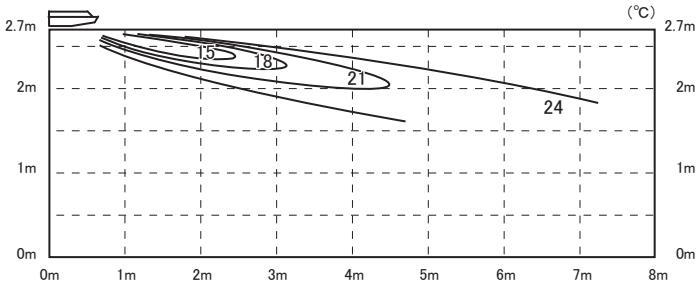
Models FDE40, 50VG

Cooling Air flow: P-Hi

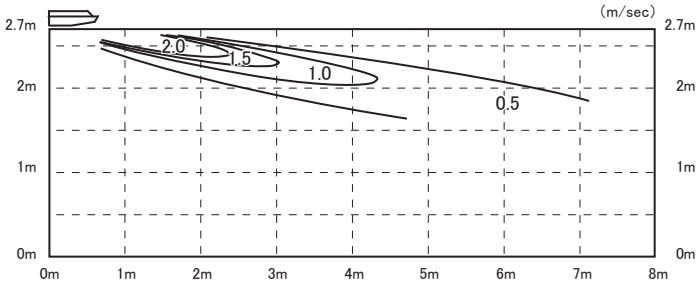
Louver position



Temperature distribution

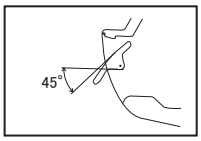


Velocity distribution

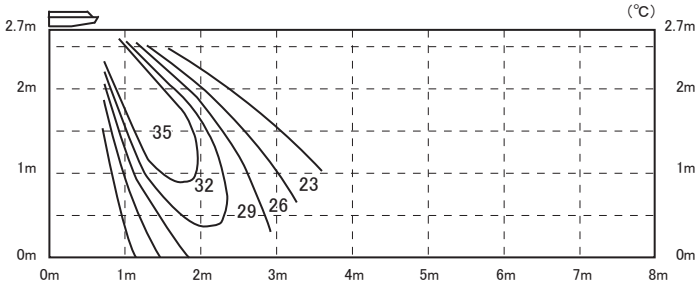


Heating Air flow: P-Hi

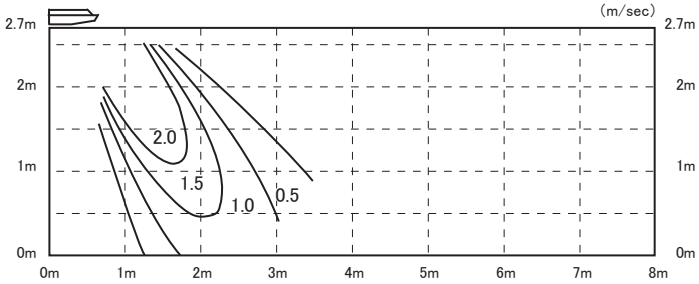
Louver position



Temperature distribution



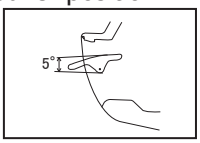
Velocity distribution



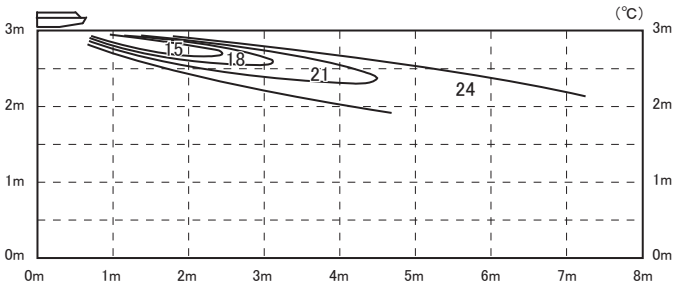
Models FDE60, 71VG

Cooling Air flow: P-Hi

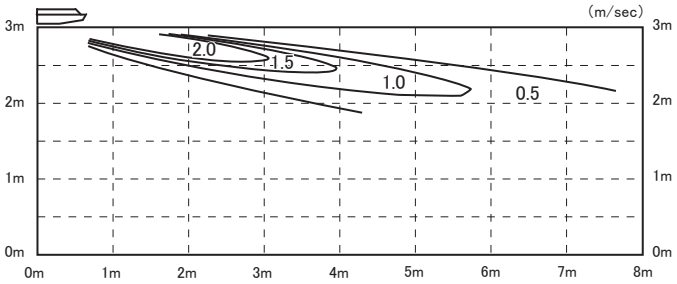
Louver position



Temperature distribution

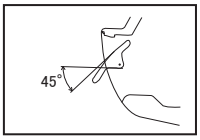


Velocity distribution

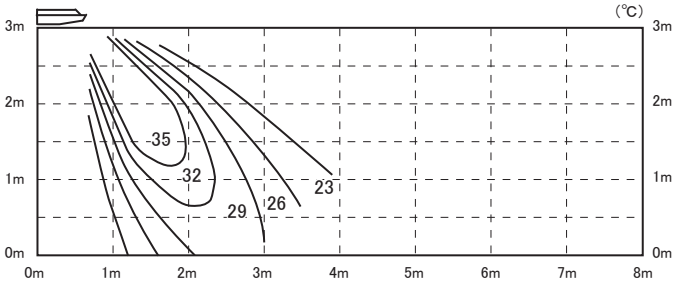


Heating Air flow: P-Hi

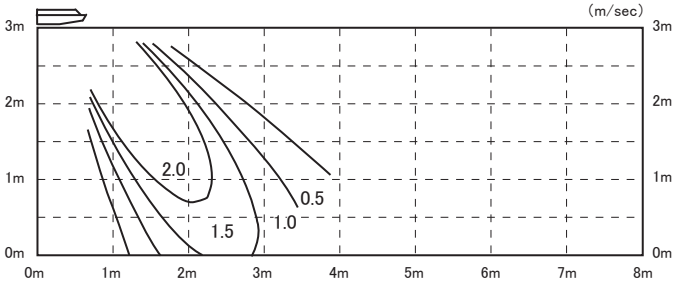
Louver position



Temperature distribution



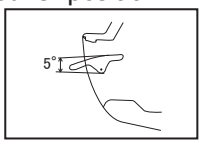
Velocity distribution



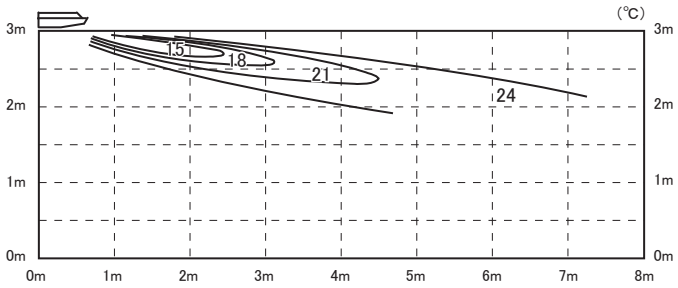
Models FDE100, 125VG

Cooling Air flow: P-Hi

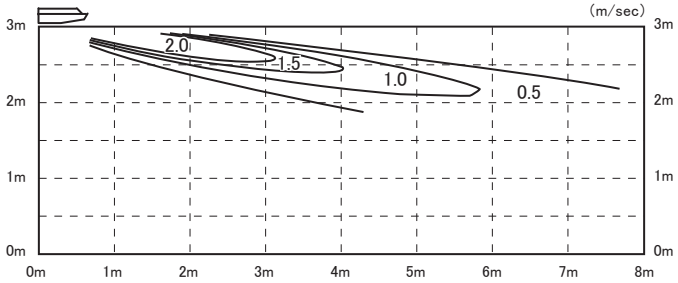
Louver position



Temperature distribution

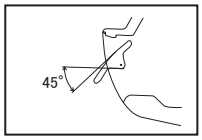


Velocity distribution

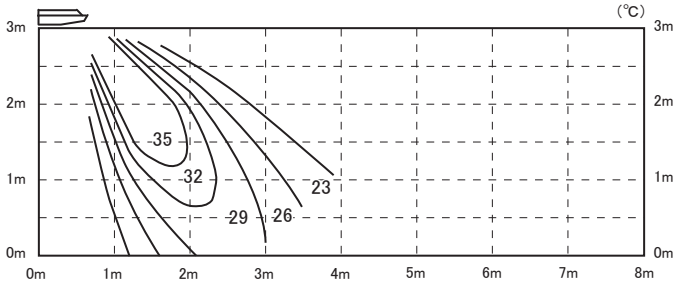


Heating Air flow: P-Hi

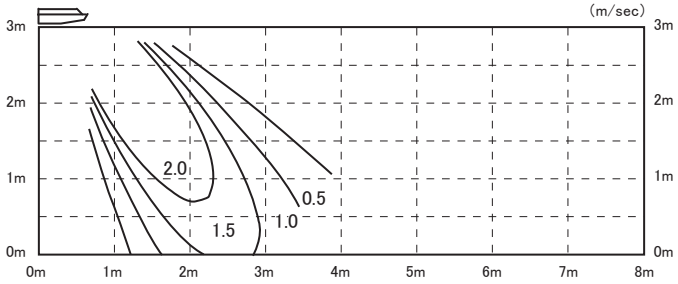
Louver position



Temperature distribution



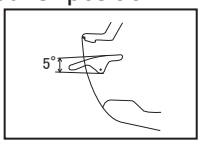
Velocity distribution



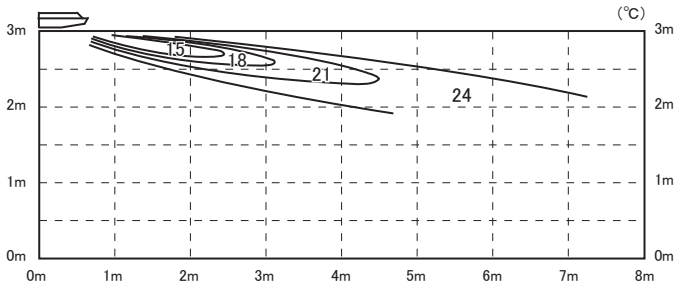
Model FDE140VG

Cooling Air flow: P-Hi

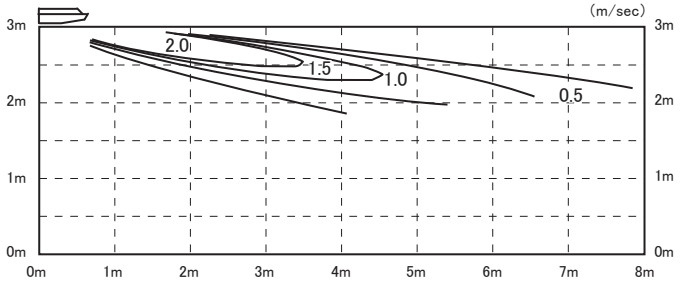
Louver position



Temperature distribution

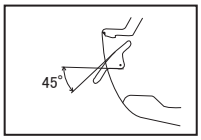


Velocity distribution

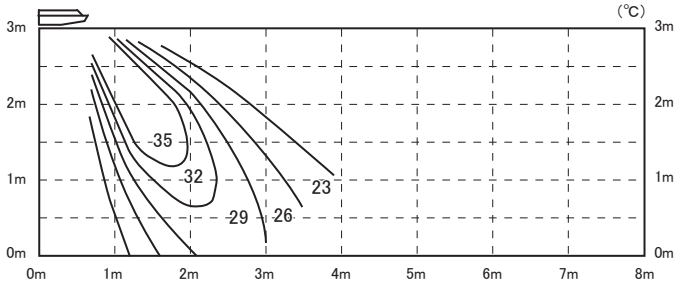


Heating Air flow: P-Hi

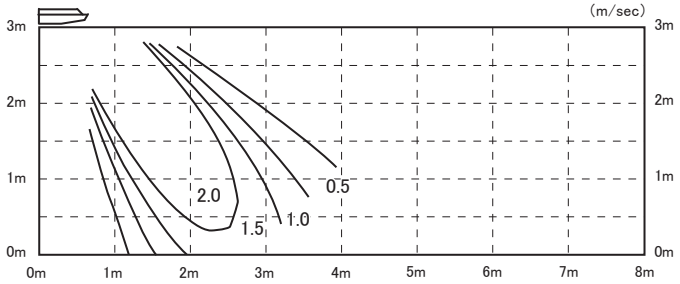
Louver position



Temperature distribution



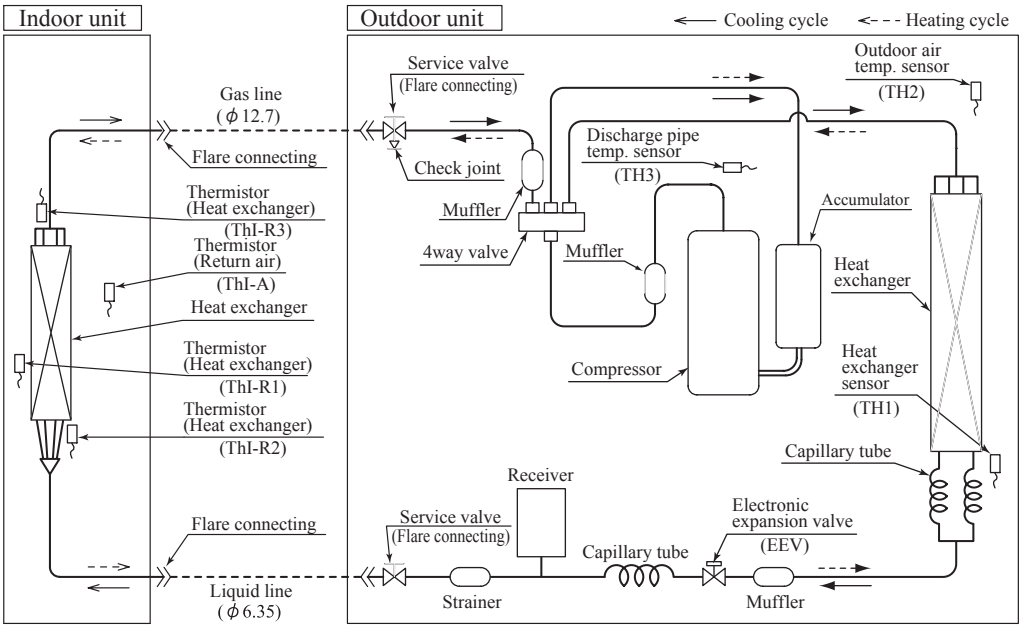
Velocity distribution



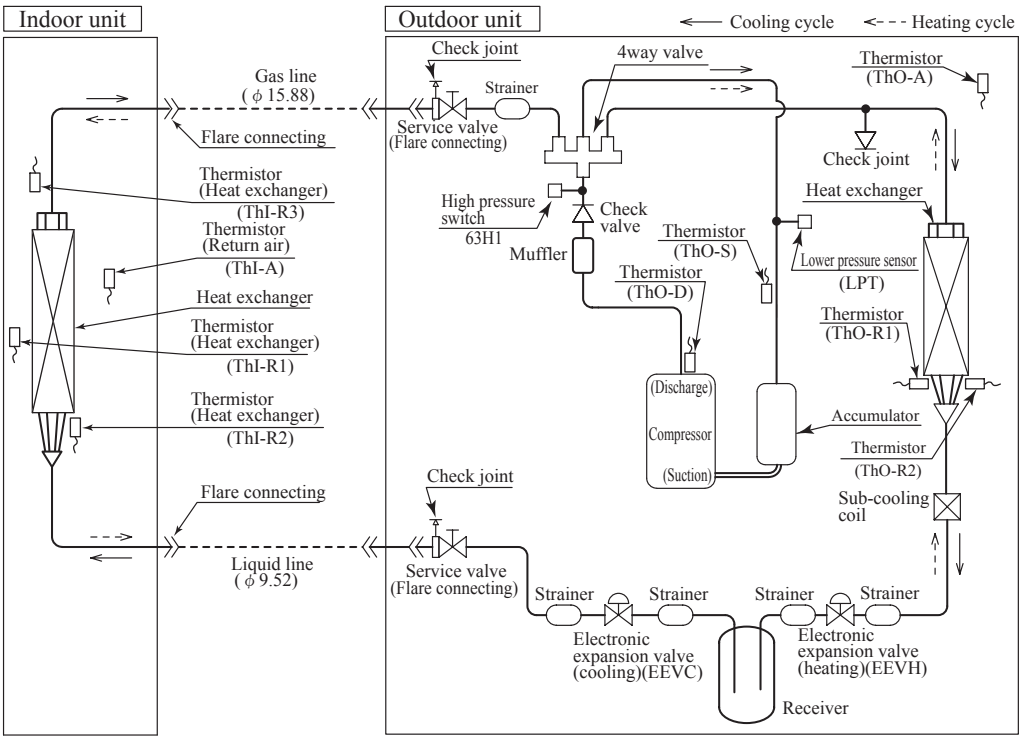
1.6 PIPING SYSTEM

(1) Single type

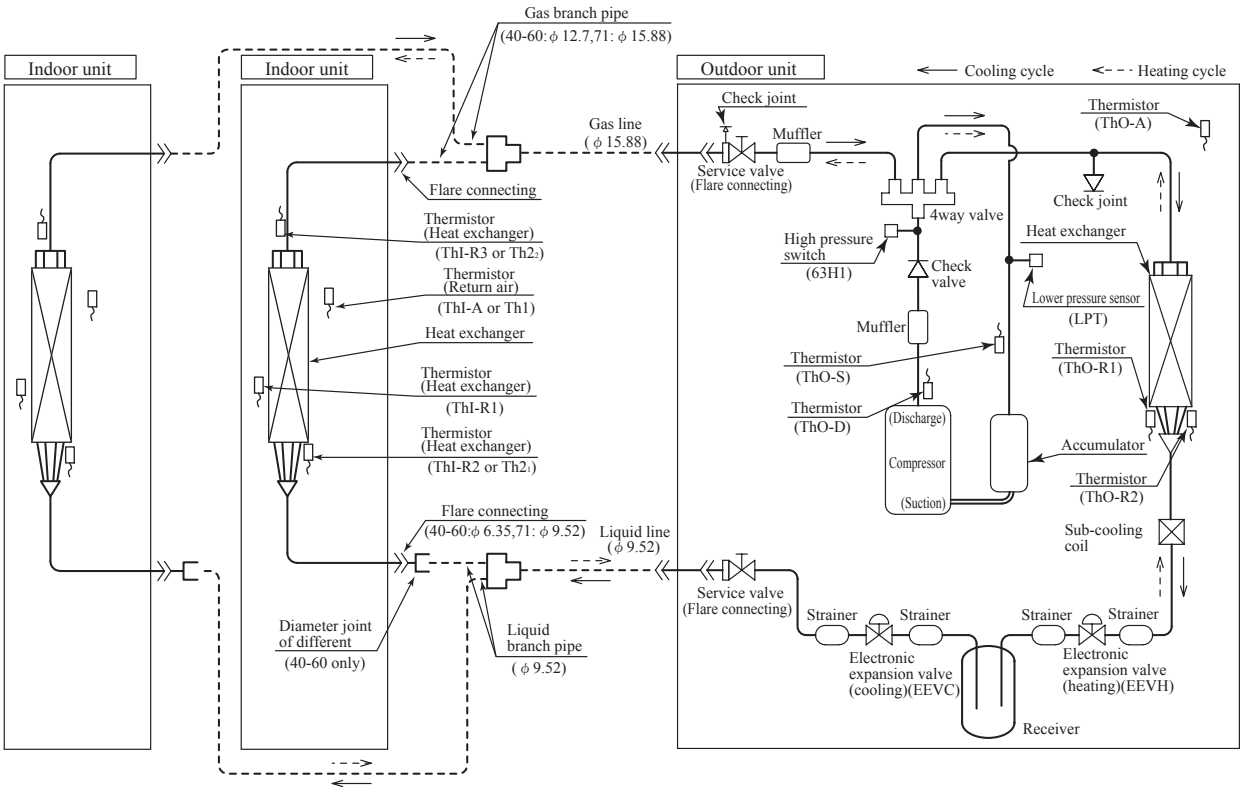
Models FDE40, 50, 60



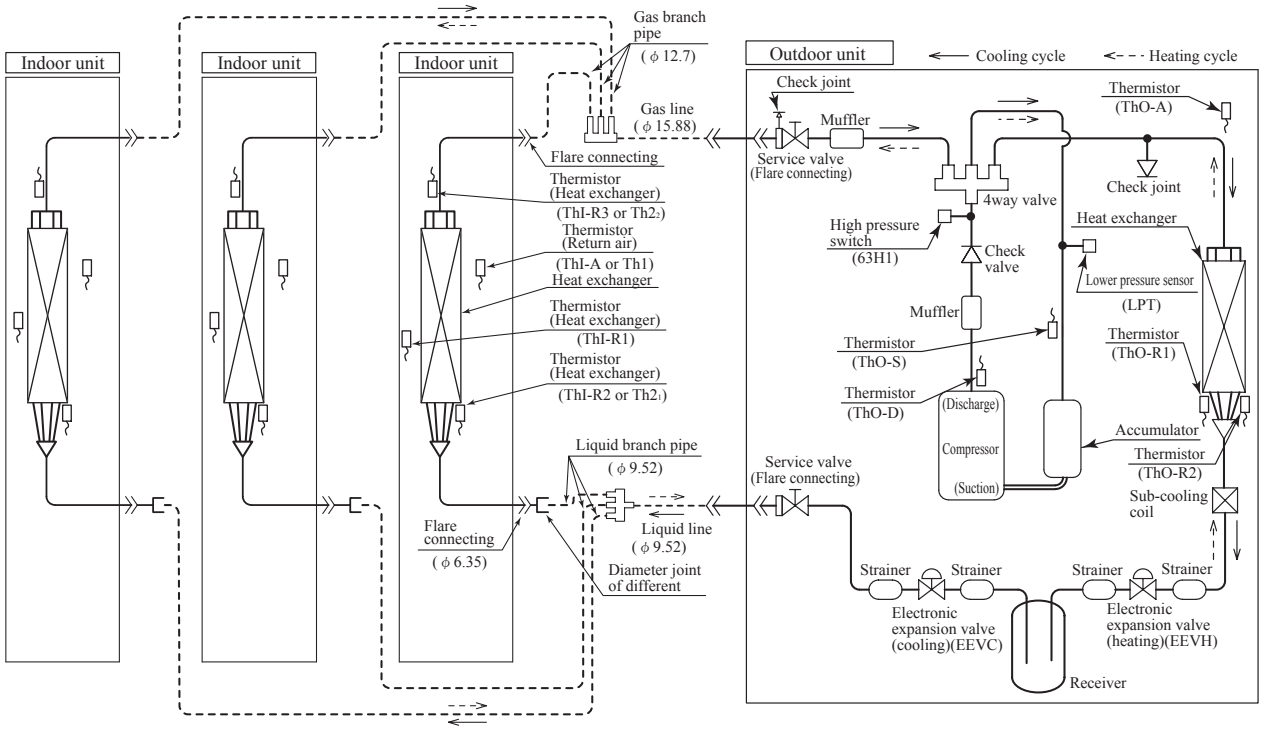
Models FDE71, 100, 125, 140



(2) Twin type
Models FDE71, 100, 125, 140



(3) Triple type
Model FDE140



Preset point of the protective devices

Parts name	Mark	Equipped unit	FDE40, 50, 60 model	FDE71, 100, 125, 140 model
Thermistor (for protection overloading in heating)	Thl-R	Indoor unit	OFF 63℃ ON 56℃	
Thermistor (for frost prevention)	Thl-R		OFF 1.0℃ ON 10℃	
Thermistor (for protection high pressure in cooling.)	Tho-R (TH1)	Outdoor unit	OFF 63℃ ON 53℃	OFF 65℃ ON 51℃
Thermistor (for detecting discharge pipe temp.)	Tho-D (TH3)	Outdoor unit	OFF 115℃ ON 95℃	OFF 115℃ ON 85℃
High pressure switch (for protection)	63H1	Outdoor unit	—	OFF 4.15MPa ON 3.15MPa
Low pressure sensor (for protection)	LPT	Outdoor unit	—	OFF 0.079MPa ON 0.227MPa

Note(1) Values in ( ) shown in the case of SRC40, 50, 60 models.

1.7 RANGE OF USAGE & LIMITATIONS

Operating temperature range		See the next page.
		When used below -5°C, install a snow hood. <FDC71−140 only>
Recommendable area to install		Considering to get sufficient heating capacity, the area where the averaged lowest ambient air temperature in day time during winter is above 0°C, and it has no accumulation of snow.
Installation site		The limitations of installation space are shown in the page for outline drawing. Install the indoor unit at least 2.5m higher than the floor surface.
Temperature and humidity conditions surrounding the indoor unit in the ceiling (Note 2)		Dew point temperature : 23°C or less, relative hummdity : 80% or less
Limitations on unit and piping installation		See page 50 and 51
Compressor ON-OFF cycling	Cycle Time	7 minutes or more (from OFF to OFF) or (from ON to ON)
	Stop Time	3 minutes or more
Power source	Voltage range	Rating ±10%
	Voltage drop at start-up	Min.85% of rating
	Phase-to-phase umbalance	3% or less

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

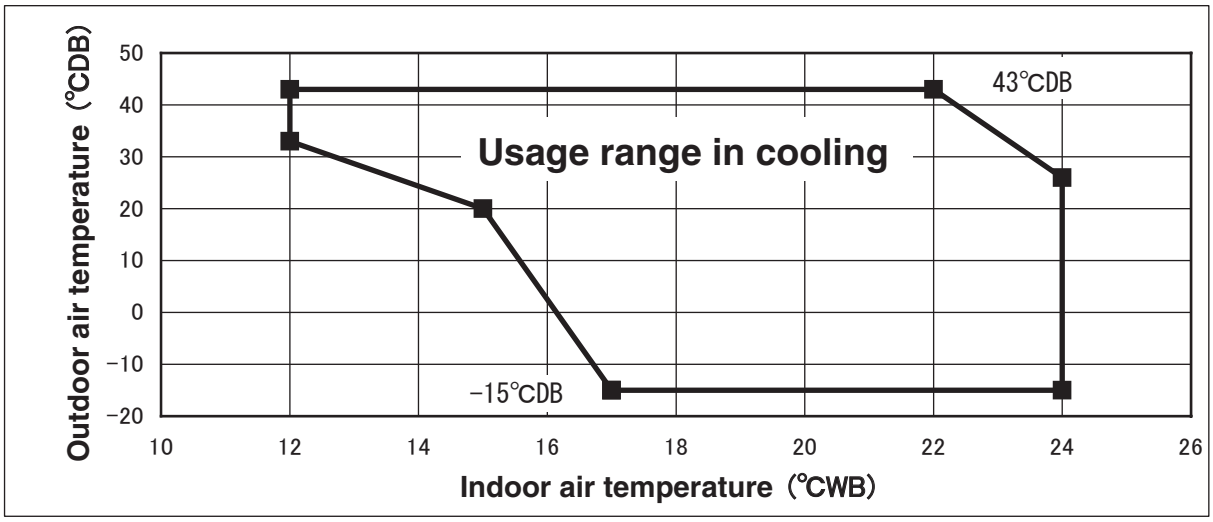
Note 2. If ambient temperature and humidity exceed the above conditions, add polyurethane foam insulation on the outer plate (10mm or thicker) of indoor unit.
Both gas and liquid pipes need to be cover with 20mm or thicker heat insulation materials at the place where humidity exceeds 70%.

Note 3. When used below -5°C, install a snow hood on site.
Regarding outline of a snow hood, refer to our technical maunal.

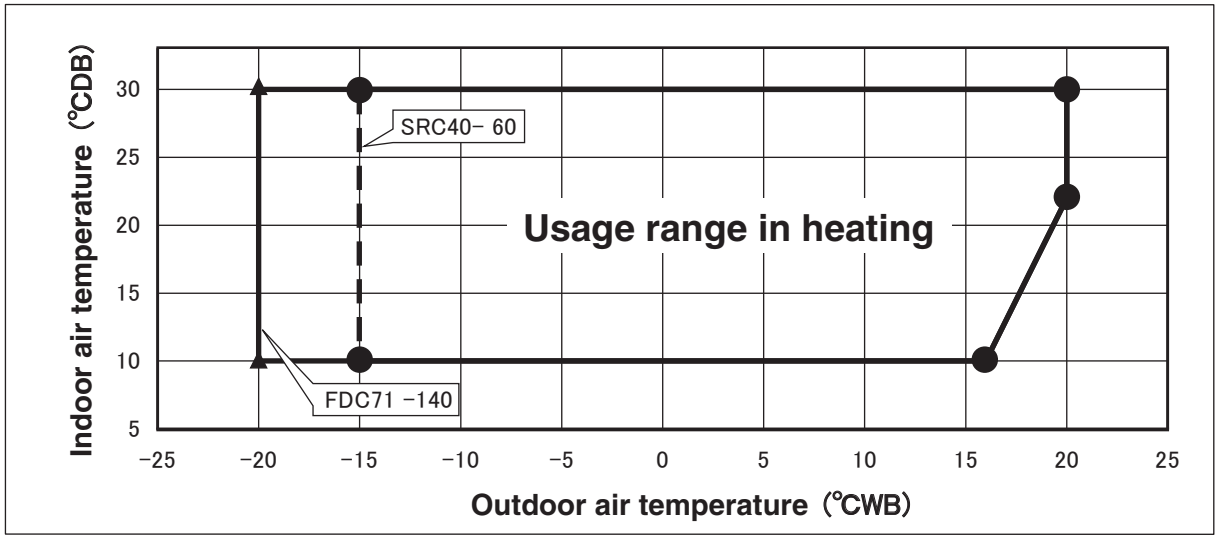
PFA004Z051

Operating temperature range

■ **Cooling**



■ **Heating**



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

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

[Precaution]
In case of severely low temperature condition

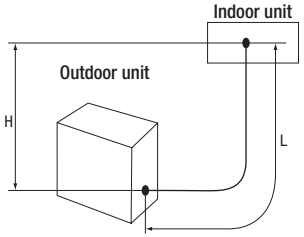
1) Install the outdoor unit at the place where strong wind cannot blow directly into the outdoor unit.
2) If there is no installation place where can prevent strong wind from directly blowing into the outdoor unit, mount the flex flow adapter (prepared as option part) or like such devices onto the outdoor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

[Reason]
Under the low outdoor air temperature conditions of -5℃ or lower, the outdoor fan is controlled at lower or lowest speed by outdoor fan control, but if strong wind directly blow into the outdoor unit, the outdoor heat exchanger temperature will drop more.
This makes high and low pressures to drop as well. This low pressure drop makes the indoor heat exchanger temperature to drop and will activate anti-frost control at indoor heat exchanger at frequent intervals, that cooling operation may not be established for any given time.

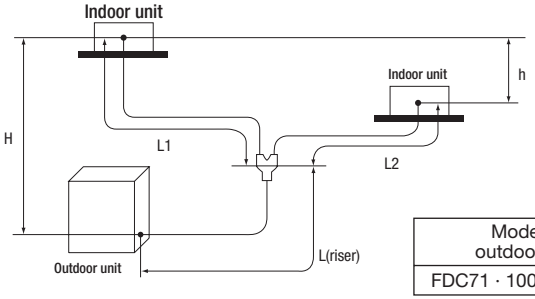
Limitation on unit and piping installation - single, twin.

Descriptions	Models for outdoor unit		Dimensional limitations	Marks appearing in the drawing	
				Single type	Twin type
One-way pipe length	SRC40 · 50 · 60		≦ 30m	L	
	FDC71		≦ 50m		
	FDC100 · 125 · 140		≦ 100m		L + L1 + L2
Main pipe length	FDC71		≦ 50m		L
	FDC100 · 125 · 140		≦ 100m		
One-way pipe length after first branching point	FDC71		≦ 20m		L1, L2
	FDC100 · 125 · 140		≦ 30m		
Difference of pipe length after first branching point			≦ 10m		L1 - L2 L2 - L1
Total pipe length after the second branching point			≦ 15m		
Elevation difference between indoor and outdoor unit	When outdoor unit is positioned higher	SRC40 · 50 · 60	≦ 20m	H	H
		FDC71	≦ 30m		
		FDC100 · 125 · 140			
	When outdoor unit is positioned lower	SRC40 · 50 · 60	≦ 20m	H	H
		FDC71	≦ 15m		
		FDC100 · 125 · 140			
Elevation difference among indoor units			≦ 0.5m		h

Single type



Twin type



Twin type

Model for outdoor units	Branch piping set (option)
FDC71 · 100 · 125 · 140	DIS-WA1

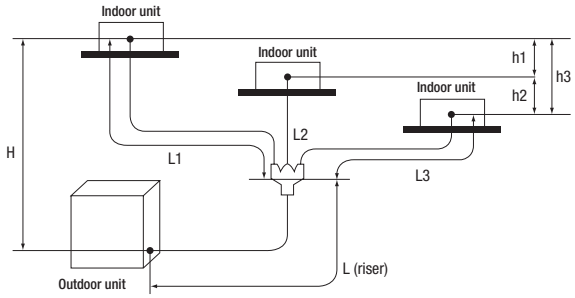
(1) A riser pipe must be part of the main.
A branching pipe set should be installed horizontally at point as close to an indoor unit as possible.
(2) Reduce refrigerant amount by according to table below from the factory charge when refrigerant piping is shorter than 3m.

Model for outdoor units	Refrigerant to be reduced
FDC71 · 100 · 125 · 140	1.0 kg

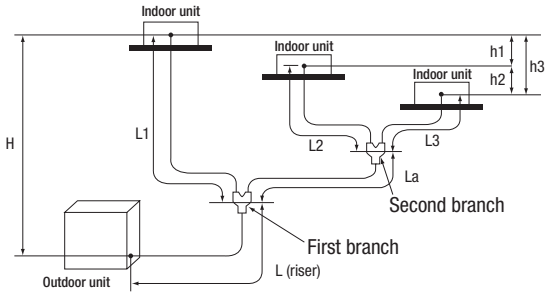
Limitation on unit and piping installation - triple.

Descriptions	Models for outdoor unit	Dimensional limitations	Marks appearing in the drawing: Triple type A	Marks appearing in the drawing: Triple type B
One-way pipe length	FDC140	≦ 100m	L + L1 + L2 + L3	L + La + L1 + L2 + L3 ※1
Main pipe length	FDC140	≦ 100m	L	L
One-way pipe length first branching point to indoor units between	FDC140	≦ 30m	L1, L2, L3	L1 ※1
One-way pipe length between first branching point from and second branching point	FDC140	≦ 5m		La
One-way pipe length first branching point and indoor units	FDC140	≦ 27m		La + L2, La + L3 ※1
Piping length difference among piping to indoor units from first branch		< 3m	L1 - L2, L1 - L3, L2 - L3	(not possible)
		3m ≦ ≦ 10m	(not possible)	L1 - (La + L2), L1 - (La + L3) ※1
One-way pipe length difference from second branching point to indoor units		≦ 10m		L2 - L3
Elevation difference between indoor and outdoor	When the outdoor unit is positioned higher	≦ 30m	H	H
	When the outdoor unit is positioned lower	≦ 15m		
Elevation difference among indoor units		≦ 0.5m	h1, h2, h3	h1, h2, h3

Triple type A



Triple type B



※1
Install the indoor units so that L + L1 becomes the longest one-way pipe.
Keep the pipe length difference between L1 and (La + L2) or (La + L3) within 10m.

Branch piping set (option)

Model for outdoor units	Triple type A	Triple type B	
	Branch piping	First branch	Second branch
FDC140	DIS-TA1	DIS-WA1	DIS-WA1

(1) A riser pipe must be part of the main.
A branching pipe set should be installed horizontally at point as close to an indoor unit as possible.
(2) Reduce refrigerant amount by 1.0kg from the factory charge when refrigerant piping is shorter than 3m.

1.8 SELECTION CHART

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

Net capacity = Capacity shown in the capacity tables (1.8.1) × Correction factors shown in the table (1.8.2) (1.8.3) (1.8.4).

Caution: In case that the cooling operation during low outdoor air temperature below -5°C is expected, install the outdoor unit where it is not influenced by natural wind. Otherwise protection control by low pressure will be activated much more frequently and it will cause insufficient capacity or breakdown of the compressor in worst case.

1.8.1 Capacity tables

(1) Single type

Model FDE40ZMXVG Indoor unit FDE40VG Outdoor unit SRC40ZMX-S

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					3.38	3.03	3.56	3.28	3.65	3.25	3.75	3.23	3.95	3.42	4.15	3.36
13					3.46	3.06	3.65	3.32	3.75	3.29	3.85	3.26	4.05	3.45	4.26	3.39
15					3.54	3.09	3.74	3.35	3.84	3.32	3.95	3.30	4.15	3.49	4.36	3.42
17					3.62	3.12	3.83	3.38	3.94	3.36	4.04	3.33	4.26	3.52	4.47	3.45
19					3.69	3.15	3.91	3.41	4.02	3.39	4.15	3.37	4.41	3.57	4.67	3.51
21					3.81	3.20	3.99	3.44	4.10	3.42	4.26	3.40	4.56	3.62	4.87	3.57
23					3.85	3.22	4.04	3.46	4.15	3.43	4.30	3.42	4.59	3.63	4.88	3.57
25			3.73	3.35	3.89	3.23	4.08	3.48	4.20	3.45	4.34	3.43	4.61	3.63	4.89	3.58
27			3.76	3.36	3.93	3.25	4.13	3.50	4.25	3.47	4.36	3.44	4.60	3.63		
29			3.70	3.34	3.86	3.22	4.06	3.47	4.18	3.45	4.30	3.42	4.54	3.61		
31			3.64	3.31	3.80	3.20	4.00	3.45	4.12	3.42	4.24	3.40	4.48	3.59		
33	3.23	2.99	3.44	3.22	3.74	3.17	3.94	3.42	4.06	3.40	4.18	3.38	4.42	3.57		
35	3.28	3.01	3.44	3.22	3.68	3.15	3.88	3.40	4.00	3.38	4.12	3.36	4.36	3.55		
37	3.23	2.99	3.38	3.20	3.62	3.12	3.82	3.38	3.94	3.36	4.06	3.33	4.30	3.53		
39	3.17	2.96	3.32	3.17	3.56	3.10	3.76	3.36	3.88	3.34	4.00	3.31	4.23	3.51		
41	3.12	2.94	3.27	3.15	3.50	3.07	3.70	3.33	3.82	3.31	3.93	3.29	4.17	3.49		
43	3.06	2.91	3.21	3.12	3.44	3.05	3.64	3.31	3.76	3.29	3.87	3.27	4.10	3.47		

Heating Mode : HC (kW)

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

PFA004Z047

Model FDE50ZMXVG Indoor unit FDE50VG Outdoor unit SRC50ZMX-S

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.22	3.37	4.45	3.62	4.56	3.59	4.69	3.56	4.94	3.74	5.19	3.66
13					4.32	3.42	4.56	3.66	4.68	3.63	4.81	3.60	5.07	3.78	5.32	3.70
15					4.42	3.46	4.68	3.71	4.80	3.68	4.93	3.65	5.19	3.82	5.45	3.74
17					4.53	3.51	4.79	3.76	4.92	3.72	5.06	3.69	5.32	3.87	5.58	3.78
19					4.62	3.55	4.89	3.80	5.02	3.76	5.19	3.74	5.51	3.93	5.84	3.86
21					4.76	3.61	4.99	3.84	5.13	3.81	5.32	3.79	5.70	4.00	6.09	3.94
23					4.81	3.63	5.04	3.86	5.19	3.83	5.37	3.81	5.73	4.01	6.10	3.95
25			4.66	3.78	4.86	3.65	5.10	3.88	5.25	3.85	5.42	3.83	5.76	4.02	6.11	3.95
27			4.70	3.80	4.91	3.67	5.16	3.91	5.31	3.88	5.46	3.84	5.75	4.02		
29			4.62	3.76	4.83	3.64	5.08	3.87	5.23	3.84	5.38	3.81	5.68	3.99		
31			4.54	3.73	4.75	3.60	5.00	3.84	5.15	3.81	5.30	3.78	5.60	3.96		
33	4.04	3.38	4.31	3.62	4.67	3.57	4.93	3.81	5.08	3.79	5.23	3.76	5.53	3.94		
35	4.11	3.42	4.30	3.61	4.59	3.53	4.85	3.78	5.00	3.75	5.15	3.73	5.45	3.91		
37	4.04	3.38	4.23	3.58	4.52	3.50	4.77	3.75	4.92	3.72	5.07	3.70	5.37	3.88		
39	3.97	3.35	4.16	3.55	4.45	3.47	4.70	3.72	4.85	3.70	4.99	3.67	5.29	3.86		
41	3.90	3.31	4.09	3.52	4.38	3.44	4.62	3.69	4.77	3.67	4.92	3.64	5.21	3.83		
43	3.83	3.28	4.01	3.48	4.30	3.41	4.55	3.66	4.69	3.64	4.84	3.61	5.13	3.80		

Heating Mode : HC (kW)

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

PFA004Z047

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

Model FDE60ZMXVG Indoor unit FDE60VG Outdoor unit SRC60ZMX-S

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.73	4.47	4.98	4.87	5.11	4.83	5.25	4.79	5.53	5.10	5.81	5.01
13					4.84	4.51	5.11	4.91	5.24	4.87	5.39	4.84	5.67	5.14	5.96	5.05
15					4.95	4.55	5.24	4.96	5.38	4.92	5.52	4.88	5.82	5.19	6.11	5.09
17					5.07	4.60	5.37	5.01	5.51	4.97	5.66	4.93	5.96	5.23	6.25	5.13
19					5.17	4.64	5.48	5.05	5.63	5.01	5.81	4.98	6.17	5.30	6.54	5.21
21					5.33	4.71	5.59	5.09	5.74	5.05	5.96	5.03	6.39	5.36	6.82	5.30
23					5.39	4.73	5.65	5.11	5.81	5.08	6.01	5.05	6.42	5.37	6.83	5.30
25			5.22	4.93	5.44	4.75	5.71	5.14	5.88	5.10	6.07	5.07	6.45	5.38	6.84	5.30
27			5.27	4.95	5.50	4.78	5.78	5.16	5.94	5.12	6.11	5.08	6.44	5.38		
29			5.18	4.91	5.41	4.74	5.69	5.13	5.86	5.09	6.02	5.05	6.36	5.36		
31			5.09	4.87	5.32	4.70	5.60	5.09	5.77	5.06	5.94	5.02	6.27	5.33		
33	4.53	4.39	4.82	4.72	5.23	4.67	5.52	5.06	5.69	5.03	5.85	4.99	6.19	5.30		
35	4.60	4.42	4.81	4.71	5.15	4.63	5.43	5.03	5.60	5.00	5.77	4.97	6.10	5.27		
37	4.52	4.39	4.73	4.64	5.06	4.60	5.35	5.00	5.51	4.97	5.68	4.94	6.01	5.25		
39	4.44	4.35	4.65	4.56	4.98	4.57	5.26	4.97	5.43	4.94	5.59	4.91	5.92	5.22		
41	4.37	4.28	4.58	4.49	4.90	4.54	5.18	4.94	5.34	4.91	5.51	4.88	5.83	5.19		
43	4.29	4.20	4.50	4.41	4.82	4.50	5.10	4.91	5.26	4.88	5.42	4.85	5.74	5.16		

Heating Mode : HC (kW)

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

PFA004Z047

Model FDE71VNXVG Indoor unit FDE71VG Outdoor unit FDC71VNX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.87	4.52	6.02	5.25	6.59	5.36	6.79	5.32	7.19	5.62	7.59	5.52
13					5.33	4.71	6.32	5.37	6.82	5.44	7.03	5.41	7.45	5.71	7.88	5.61
15					5.79	4.90	6.63	5.49	7.05	5.53	7.27	5.49	7.71	5.79	8.16	5.69
17					6.26	5.09	6.94	5.61	7.27	5.61	7.51	5.58	7.97	5.88	8.44	5.78
19					6.59	5.23	7.16	5.70	7.44	5.68	7.68	5.64	8.15	5.94	8.63	5.83
21					6.93	5.38	7.38	5.78	7.60	5.74	7.84	5.70	8.33	6.00	8.82	5.89
23					6.91	5.37	7.35	5.77	7.57	5.73	7.81	5.69	8.30	5.99	8.78	5.88
25			6.46	5.49	6.89	5.36	7.32	5.76	7.54	5.72	7.78	5.68	8.26	5.98	8.74	5.87
27			6.45	5.48	6.87	5.35	7.30	5.75	7.52	5.71	7.74	5.66	8.18	5.95		
29			6.34	5.43	6.75	5.30	7.19	5.71	7.41	5.67	7.64	5.63	8.09	5.92		
31			6.23	5.38	6.64	5.25	7.08	5.66	7.31	5.63	7.54	5.59	7.99	5.89		
33	5.77	4.98	6.05	5.30	6.53	5.21	6.97	5.62	7.20	5.59	7.44	5.55	7.90	5.85		
35	5.67	4.93	5.95	5.25	6.42	5.16	6.86	5.58	7.10	5.55	7.34	5.52	7.81	5.82		
37	5.58	4.89	5.85	5.21	6.31	5.11	6.72	5.52	6.95	5.49	7.18	5.46	7.64	5.77		
39	5.49	4.85	5.76	5.17	6.20	5.07	6.59	5.47	6.81	5.44	7.03	5.41	7.46	5.71		
41	5.39	4.80	5.67	5.13	6.09	5.02	6.45	5.42	6.66	5.39	6.87	5.35	7.29	5.65		
43	5.30	4.75	5.57	5.08	5.97	4.97	6.31	5.36	6.51	5.33	6.71	5.29	7.12	5.60		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	3.95	3.93	3.91	3.88	3.86
-17.7	-18	4.18	4.16	4.14	4.11	4.09
-15.7	-16	4.42	4.39	4.37	4.34	4.32
-13.5	-14	4.68	4.65	4.63	4.60	4.57
-11.5	-12	4.94	4.91	4.88	4.85	4.82
-9.5	-10	5.20	5.17	5.14	5.11	5.08
-7.5	-8	5.46	5.43	5.40	5.36	5.33
-5.5	-6	5.59	5.55	5.52	5.48	5.44
-3.0	-4	5.71	5.68	5.64	5.60	5.56
-1.0	-2	5.84	5.80	5.76	5.72	5.67
1.0	0	5.97	5.92	5.88	5.83	5.79
2.0	1	6.03	5.98	5.94	5.89	5.85
3.0	2	6.45	6.40	6.35	6.30	6.25
5.0	4	7.29	7.23	7.18	7.12	7.06
7.0	6	8.13	8.06	8.00	7.93	7.87
9.0	8	8.42	8.36	8.29	8.23	8.16
11.5	10	8.72	8.65	8.59	8.52	8.46
13.5	12	9.20	9.13	9.06	9.00	8.92
15.5	14	9.69	9.61	9.53	9.47	9.39
16.5	16	9.93	9.85	9.77	9.71	9.62

PFA004Z047

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

Model FDE100VNXVG Indoor unit FDE100VG Outdoor unit FDC100VNX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					8.33	7.45	8.84	8.11	9.10	8.05	9.38	8.00	9.94	8.49	10.50	8.35
13					8.63	7.57	9.17	8.23	9.43	8.17	9.73	8.12	10.32	8.61	10.92	8.47
15					8.93	7.70	9.49	8.35	9.77	8.29	10.09	8.24	10.71	8.74	11.34	8.60
17					9.23	7.82	9.82	8.48	10.11	8.42	10.44	8.36	11.10	8.86	11.75	8.72
19					9.44	7.91	10.04	8.56	10.34	8.50	10.68	8.45	11.35	8.94	12.01	8.79
21					9.64	7.99	10.26	8.64	10.57	8.58	10.91	8.53	11.59	9.02	12.28	8.87
23					9.64	7.99	10.28	8.65	10.59	8.59	10.94	8.54	11.63	9.03	12.32	8.88
25			8.95	8.15	9.64	7.99	10.30	8.66	10.62	8.60	10.97	8.55	11.66	9.04	12.36	8.90
27			8.91	8.13	9.64	7.99	10.33	8.67	10.64	8.61	10.96	8.55	11.59	9.02		
29			8.84	8.10	9.51	7.93	10.16	8.61	10.48	8.55	10.80	8.49	11.45	8.98		
31			8.76	8.06	9.37	7.88	10.00	8.54	10.32	8.49	10.65	8.44	11.30	8.93		
33	8.21	7.48	8.58	7.98	9.23	7.82	9.83	8.48	10.16	8.43	10.49	8.38	11.15	8.88		
35	7.77	7.27	8.31	7.86	9.09	7.76	9.66	8.41	10.00	8.38	10.34	8.33	11.01	8.83		
37	7.68	7.23	8.18	7.81	8.92	7.69	9.49	8.35	9.81	8.31	10.13	8.26	10.77	8.76		
39	7.58	7.18	8.04	7.74	8.76	7.63	9.31	8.28	9.62	8.24	9.93	8.19	10.54	8.68		
41	7.49	7.14	7.91	7.69	8.59	7.56	9.14	8.22	9.43	8.17	9.73	8.12	10.31	8.61		
43	7.40	7.09	7.78	7.62	8.42	7.49	8.96	8.15	9.24	8.10	9.52	8.05	10.08	8.54		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	7.30	7.24	7.18	7.12	7.06
-17.7	-18	7.74	7.68	7.62	7.55	7.49
-15.7	-16	8.18	8.12	8.05	7.99	7.92
-13.5	-14	8.54	8.47	8.40	8.33	8.27
-11.5	-12	8.89	8.82	8.75	8.68	8.61
-9.5	-10	9.25	9.17	9.10	9.03	8.95
-7.5	-8	9.60	9.53	9.45	9.38	9.30
-5.5	-6	10.00	9.92	9.84	9.76	9.68
-3.0	-4	10.39	10.31	10.23	10.14	10.06
-1.0	-2	10.79	10.70	10.62	10.53	10.44
1.0	0	11.18	11.09	11.01	10.91	10.82
2.0	1	11.38	11.29	11.20	11.10	11.01
3.0	2	11.38	11.29	11.20	11.10	11.01
5.0	4	11.38	11.29	11.20	11.11	11.01
7.0	6	11.37	11.29	11.20	11.11	11.01
9.0	8	11.85	11.76	11.67	11.58	11.48
11.5	10	12.32	12.23	12.15	12.05	11.95
13.5	12	12.97	12.88	12.78	12.68	12.72
15.5	14	13.62	13.52	13.41	13.32	13.49
16.5	16	13.95	13.84	13.72	13.63	13.87

PFA004Z047

Model FDE100VSXVG Indoor unit FDE100VG Outdoor unit FDC100VSX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					8.33	7.45	8.84	8.11	9.10	8.05	9.38	8.00	9.94	8.49	10.50	8.35
13					8.63	7.57	9.17	8.23	9.43	8.17	9.73	8.12	10.32	8.61	10.92	8.47
15					8.93	7.70	9.49	8.35	9.77	8.29	10.09	8.24	10.71	8.74	11.34	8.60
17					9.23	7.82	9.82	8.48	10.11	8.42	10.44	8.36	11.10	8.86	11.75	8.72
19					9.44	7.91	10.04	8.56	10.34	8.50	10.68	8.45	11.35	8.94	12.01	8.79
21					9.64	7.99	10.26	8.64	10.57	8.58	10.91	8.53	11.59	9.02	12.28	8.87
23					9.64	7.99	10.28	8.65	10.59	8.59	10.94	8.54	11.63	9.03	12.32	8.88
25			8.95	8.15	9.64	7.99	10.30	8.66	10.62	8.60	10.97	8.55	11.66	9.04	12.36	8.90
27			8.91	8.13	9.64	7.99	10.33	8.67	10.64	8.61	10.96	8.55	11.59	9.02		
29			8.84	8.10	9.51	7.93	10.16	8.61	10.48	8.55	10.80	8.49	11.45	8.98		
31			8.76	8.06	9.37	7.88	10.00	8.54	10.32	8.49	10.65	8.44	11.30	8.93		
33	8.21	7.48	8.58	7.98	9.23	7.82	9.83	8.48	10.16	8.43	10.49	8.38	11.15	8.88		
35	7.77	7.27	8.31	7.86	9.09	7.76	9.66	8.41	10.00	8.38	10.34	8.33	11.01	8.83		
37	7.68	7.23	8.18	7.81	8.92	7.69	9.49	8.35	9.81	8.31	10.13	8.26	10.77	8.76		
39	7.58	7.18	8.04	7.74	8.76	7.63	9.31	8.28	9.62	8.24	9.93	8.19	10.54	8.68		
41	7.49	7.14	7.91	7.69	8.59	7.56	9.14	8.22	9.43	8.17	9.73	8.12	10.31	8.61		
43	7.40	7.09	7.78	7.62	8.42	7.49	8.96	8.15	9.24	8.10	9.52	8.05	10.08	8.54		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	11.29	11.20	11.11	11.02	10.93
-17.7	-18	11.34	11.25	11.16	11.06	10.97
-15.7	-16	11.38	11.29	11.20	11.11	11.02
-13.5	-14	11.38	11.29	11.20	11.11	11.02
-11.5	-12	11.38	11.29	11.20	11.11	11.02
-9.5	-10	11.38	11.29	11.20	11.11	11.02
-7.5	-8	11.37	11.29	11.20	11.11	11.02
-5.5	-6	11.38	11.29	11.20	11.11	11.02
-3.0	-4	11.38	11.29	11.20	11.11	11.01
-1.0	-2	11.38	11.29	11.20	11.11	11.01
1.0	0	11.38	11.29	11.20	11.10	11.01
2.0	1	11.38	11.29	11.20	11.10	11.01
3.0	2	11.38	11.29	11.20	11.10	11.01
5.0	4	11.38	11.29	11.20	11.11	11.01
7.0	6	11.37	11.29	11.20	11.11	11.01
9.0	8	11.85	11.76	11.67	11.58	11.48
11.5	10	12.32	12.23	12.15	12.05	11.95
13.5	12	12.97	12.88	12.78	12.68	12.72
15.5	14	13.62	13.52	13.41	13.32	13.49
16.5	16	13.95	13.84	13.72	13.63	13.87

PFA004Z047

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

Model FDE125VNXVG Indoor unit FDE125VG Outdoor unit FDC125VNX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					10.41	8.31	11.05	8.95	11.37	8.88	11.72	8.82	12.42	9.29	13.12	9.13
13					10.79	8.47	11.46	9.11	11.79	9.04	12.16	8.98	12.91	9.46	13.65	9.29
15					11.16	8.63	11.87	9.28	12.22	9.21	12.61	9.15	13.39	9.62	14.17	9.45
17					11.54	8.80	12.27	9.44	12.64	9.37	13.05	9.31	13.87	9.79	14.69	9.61
19					11.80	8.91	12.55	9.55	12.93	9.49	13.34	9.42	14.18	9.89	15.02	9.71
21					12.05	9.02	12.83	9.67	13.21	9.60	13.64	9.53	14.49	10.00	15.34	9.82
23					12.05	9.02	12.85	9.68	13.24	9.61	13.67	9.55	14.54	10.02	15.40	9.84
25			11.19	9.18	12.05	9.02	12.88	9.69	13.27	9.62	13.71	9.56	14.58	10.03	15.45	9.85
27			11.14	9.15	12.05	9.02	12.91	9.70	13.30	9.63	13.70	9.56	14.49	10.00		
29			11.05	9.11	11.88	8.95	12.70	9.62	13.10	9.55	13.51	9.48	14.31	9.94		
31			10.95	9.06	11.71	8.87	12.49	9.53	12.90	9.47	13.31	9.41	14.13	9.88		
33	10.26	8.48	10.73	8.96	11.53	8.80	12.29	9.45	12.70	9.40	13.11	9.33	13.94	9.81		
35	9.71	8.21	10.39	8.80	11.36	8.72	12.08	9.36	12.50	9.32	12.92	9.26	13.76	9.75		
37	9.60	8.15	10.22	8.72	11.15	8.63	11.86	9.27	12.26	9.22	12.67	9.17	13.47	9.65		
39	9.48	8.09	10.05	8.64	10.94	8.54	11.64	9.19	12.03	9.14	12.41	9.07	13.18	9.55		
41	9.36	8.03	9.89	8.57	10.74	8.45	11.42	9.10	11.79	9.04	12.16	8.98	12.89	9.45		
43	9.25	7.98	9.72	8.49	10.53	8.36	11.21	9.01	11.55	8.95	11.90	8.89	12.60	9.35		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature				
		℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	9.12	9.05	8.97	8.90	8.83
-17.7	-18	9.67	9.60	9.52	9.44	9.37
-15.7	-16	10.23	10.15	10.07	9.98	9.90
-13.5	-14	10.67	10.59	10.50	10.42	10.33
-11.5	-12	11.11	11.03	10.94	10.85	10.76
-9.5	-10	11.56	11.47	11.38	11.29	11.19
-7.5	-8	12.00	11.91	11.82	11.72	11.62
-5.5	-6	12.49	12.40	12.30	12.20	12.10
-3.0	-4	12.99	12.89	12.79	12.68	12.57
-1.0	-2	13.48	13.38	13.27	13.16	13.05
1.0	0	13.98	13.87	13.76	13.64	13.52
2.0	1	14.22	14.11	14.00	13.88	13.76
3.0	2	14.22	14.11	14.00	13.88	13.76
5.0	4	14.22	14.11	14.00	13.88	13.76
7.0	6	14.22	14.11	14.00	13.88	13.77
9.0	8	14.81	14.70	14.59	14.47	14.35
11.5	10	15.41	15.29	15.18	15.06	14.94
13.5	12	16.22	16.09	15.97	15.85	15.90
15.5	14	17.03	16.90	16.76	16.65	16.86
16.5	16	17.44	17.30	17.16	17.04	17.34

PFA004Z047

Model FDE125VSXVG Indoor unit FDE125VG Outdoor unit FDC125VSX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					10.41	8.31	11.05	8.95	11.37	8.88	11.72	8.82	12.42	9.29	13.12	9.13
13					10.79	8.47	11.46	9.11	11.79	9.04	12.16	8.98	12.91	9.46	13.65	9.29
15					11.16	8.63	11.87	9.28	12.22	9.21	12.61	9.15	13.39	9.62	14.17	9.45
17					11.54	8.80	12.27	9.44	12.64	9.37	13.05	9.31	13.87	9.79	14.69	9.61
19					11.80	8.91	12.55	9.55	12.93	9.49	13.34	9.42	14.18	9.89	15.02	9.71
21					12.05	9.02	12.83	9.67	13.21	9.60	13.64	9.53	14.49	10.00	15.34	9.82
23					12.05	9.02	12.85	9.68	13.24	9.61	13.67	9.55	14.54	10.02	15.40	9.84
25			11.19	9.18	12.05	9.02	12.88	9.69	13.27	9.62	13.71	9.56	14.58	10.03	15.45	9.85
27			11.14	9.15	12.05	9.02	12.91	9.70	13.30	9.63	13.70	9.56	14.49	10.00		
29			11.05	9.11	11.88	8.95	12.70	9.62	13.10	9.55	13.51	9.48	14.31	9.94		
31			10.95	9.06	11.71	8.87	12.49	9.53	12.90	9.47	13.31	9.41	14.13	9.88		
33	10.26	8.48	10.73	8.96	11.53	8.80	12.29	9.45	12.70	9.40	13.11	9.33	13.94	9.81		
35	9.71	8.21	10.39	8.80	11.36	8.72	12.08	9.36	12.50	9.32	12.92	9.26	13.76	9.75		
37	9.60	8.15	10.22	8.72	11.15	8.63	11.86	9.27	12.26	9.22	12.67	9.17	13.47	9.65		
39	9.48	8.09	10.05	8.64	10.94	8.54	11.64	9.19	12.03	9.14	12.41	9.07	13.18	9.55		
41	9.36	8.03	9.89	8.57	10.74	8.45	11.42	9.10	11.79	9.04	12.16	8.98	12.89	9.45		
43	9.25	7.98	9.72	8.49	10.53	8.36	11.21	9.01	11.55	8.95	11.90	8.89	12.60	9.35		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature				
		℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	14.11	14.00	13.89	13.78	13.66
-17.7	-18	14.17	14.06	13.94	13.83	13.72
-15.7	-16	14.23	14.11	14.00	13.89	13.77
-13.5	-14	14.23	14.11	14.00	13.89	13.77
-11.5	-12	14.22	14.11	14.00	13.89	13.77
-9.5	-10	14.22	14.11	14.00	13.89	13.77
-7.5	-8	14.22	14.11	14.00	13.89	13.77
-5.5	-6	14.22	14.11	14.00	13.88	13.77
-3.0	-4	14.22	14.11	14.00	13.88	13.77
-1.0	-2	14.22	14.11	14.00	13.88	13.76
1.0	0	14.22	14.11	14.00	13.88	13.76
2.0	1	14.22	14.11	14.00	13.88	13.76
3.0	2	14.22	14.11	14.00	13.88	13.76
5.0	4	14.22	14.11	14.00	13.88	13.76
7.0	6	14.22	14.11	14.00	13.88	13.77
9.0	8	14.81	14.70	14.59	14.47	14.35
11.5	10	15.41	15.29	15.18	15.06	14.94
13.5	12	16.22	16.09	15.97	15.85	15.90
15.5	14	17.03	16.90	16.76	16.65	16.86
16.5	16	17.44	17.30	17.16	17.04	17.34

PFA004Z047

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

Model FDE140VNXVG Indoor unit FDE140VG Outdoor unit FDC140VNX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.66	9.09	12.38	9.76	12.73	9.69	13.13	9.62	13.91	10.11	14.70	9.93
13					12.08	9.27	12.83	9.95	13.21	9.87	13.62	9.80	14.45	10.30	15.28	10.11
15					12.50	9.45	13.29	10.13	13.68	10.06	14.12	9.99	14.99	10.48	15.87	10.29
17					12.92	9.64	13.75	10.32	14.16	10.24	14.62	10.18	15.54	10.68	16.45	10.48
19					13.21	9.77	14.06	10.45	14.48	10.37	14.95	10.31	15.88	10.80	16.82	10.60
21					13.50	9.90	14.36	10.58	14.80	10.50	15.28	10.43	16.23	10.92	17.19	10.72
23					13.50	9.90	14.40	10.59	14.83	10.51	15.31	10.44	16.28	10.94	17.25	10.74
25			12.53	10.06	13.50	9.90	14.43	10.61	14.87	10.53	15.35	10.46	16.33	10.96	17.30	10.75
27			12.48	10.03	13.50	9.90	14.46	10.62	14.90	10.54	15.34	10.46	16.23	10.92		
29			12.37	9.98	13.31	9.82	14.23	10.52	14.68	10.45	15.13	10.37	16.03	10.85		
31			12.26	9.93	13.11	9.73	13.99	10.42	14.45	10.36	14.91	10.29	15.82	10.78		
33	11.49	9.31	12.02	9.81	12.92	9.64	13.76	10.33	14.23	10.27	14.69	10.21	15.61	10.70		
35	10.88	9.00	11.63	9.63	12.72	9.55	13.53	10.23	14.00	10.18	14.47	10.12	15.41	10.63		
37	10.75	8.93	11.45	9.54	12.49	9.45	13.29	10.13	13.74	10.08	14.18	10.01	15.08	10.52		
39	10.62	8.87	11.26	9.45	12.26	9.35	13.04	10.03	13.47	9.97	13.90	9.91	14.76	10.41		
41	10.49	8.80	11.07	9.37	12.02	9.24	12.80	9.93	13.21	9.87	13.62	9.80	14.44	10.30		
43	10.35	8.74	10.89	9.28	11.79	9.14	12.55	9.83	12.94	9.77	13.33	9.69	14.11	10.18		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	10.42	10.34	10.26	10.17	10.09
-17.7	-18	11.06	10.97	10.88	10.79	10.70
-15.7	-16	11.69	11.60	11.50	11.41	11.32
-13.5	-14	12.20	12.10	12.00	11.91	11.81
-11.5	-12	12.70	12.60	12.50	12.40	12.30
-9.5	-10	13.21	13.11	13.00	12.90	12.79
-7.5	-8	13.71	13.61	13.50	13.39	13.28
-5.5	-6	14.28	14.17	14.06	13.94	13.83
-3.0	-4	14.84	14.73	14.61	14.49	14.37
-1.0	-2	15.41	15.29	15.17	15.04	14.91
1.0	0	15.97	15.85	15.72	15.59	15.45
2.0	1	16.26	16.13	16.00	15.86	15.73
3.0	2	16.25	16.13	16.00	15.86	15.73
5.0	4	16.25	16.13	16.00	15.86	15.73
7.0	6	16.25	16.12	16.00	15.87	15.73
9.0	8	16.93	16.80	16.68	16.54	16.40
11.5	10	17.61	17.48	17.35	17.21	17.07
13.5	12	18.53	18.39	18.25	18.12	18.17
15.5	14	19.46	19.31	19.16	19.02	19.27
16.5	16	19.93	19.77	19.61	19.48	19.82

PFA004Z047

Model FDE140VSXVG Indoor unit FDE140VG Outdoor unit FDC140VSX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.66	9.09	12.38	9.76	12.73	9.69	13.13	9.62	13.91	10.11	14.70	9.93
13					12.08	9.27	12.83	9.95	13.21	9.87	13.62	9.80	14.45	10.30	15.28	10.11
15					12.50	9.45	13.29	10.13	13.68	10.06	14.12	9.99	14.99	10.48	15.87	10.29
17					12.92	9.64	13.75	10.32	14.16	10.24	14.62	10.18	15.54	10.68	16.45	10.48
19					13.21	9.77	14.06	10.45	14.48	10.37	14.95	10.31	15.88	10.80	16.82	10.60
21					13.50	9.90	14.36	10.58	14.80	10.50	15.28	10.43	16.23	10.92	17.19	10.72
23					13.50	9.90	14.40	10.59	14.83	10.51	15.31	10.44	16.28	10.94	17.25	10.74
25			12.53	10.06	13.50	9.90	14.43	10.61	14.87	10.53	15.35	10.46	16.33	10.96	17.30	10.75
27			12.48	10.03	13.50	9.90	14.46	10.62	14.90	10.54	15.34	10.46	16.23	10.92		
29			12.37	9.98	13.31	9.82	14.23	10.52	14.68	10.45	15.13	10.37	16.03	10.85		
31			12.26	9.93	13.11	9.73	13.99	10.42	14.45	10.36	14.91	10.29	15.82	10.78		
33	11.49	9.31	12.02	9.81	12.92	9.64	13.76	10.33	14.23	10.27	14.69	10.21	15.61	10.70		
35	10.88	9.00	11.63	9.63	12.72	9.55	13.53	10.23	14.00	10.18	14.47	10.12	15.41	10.63		
37	10.75	8.93	11.45	9.54	12.49	9.45	13.29	10.13	13.74	10.08	14.18	10.01	15.08	10.52		
39	10.62	8.87	11.26	9.45	12.26	9.35	13.04	10.03	13.47	9.97	13.90	9.91	14.76	10.41		
41	10.49	8.80	11.07	9.37	12.02	9.24	12.80	9.93	13.21	9.87	13.62	9.80	14.44	10.30		
43	10.35	8.74	10.89	9.28	11.79	9.14	12.55	9.83	12.94	9.77	13.33	9.69	14.11	10.18		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	16.13	16.00	15.87	15.74	15.61
-17.7	-18	16.19	16.07	15.94	15.81	15.68
-15.7	-16	16.26	16.13	16.00	15.87	15.74
-13.5	-14	16.26	16.13	16.00	15.87	15.74
-11.5	-12	16.25	16.13	16.00	15.87	15.74
-9.5	-10	16.25	16.13	16.00	15.87	15.74
-7.5	-8	16.25	16.12	16.00	15.87	15.74
-5.5	-6	16.25	16.13	16.00	15.87	15.74
-3.0	-4	16.25	16.13	16.00	15.87	15.73
-1.0	-2	16.25	16.13	16.00	15.86	15.73
1.0	0	16.25	16.13	16.00	15.86	15.73
2.0	1	16.26	16.13	16.00	15.86	15.73
3.0	2	16.25	16.13	16.00	15.86	15.73
5.0	4	16.25	16.13	16.00	15.86	15.73
7.0	6	16.25	16.12	16.00	15.87	15.73
9.0	8	16.93	16.80	16.68	16.54	16.40
11.5	10	17.61	17.48	17.35	17.21	17.07
13.5	12	18.53	18.39	18.25	18.12	18.17
15.5	14	19.46	19.31	19.16	19.02	19.27
16.5	16	19.93	19.77	19.61	19.48	19.82

PFA004Z047

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

(2) Twin type

Model FDE71VNXPVG Indoor unit FDE40VG (2 uints) Outdoor unit FDC71VNX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.87	4.77	6.02	5.90	6.59	6.26	6.79	6.22	7.19	6.63	7.59	6.52
13					5.33	5.22	6.32	6.19	6.82	6.34	7.03	6.30	7.45	6.71	7.88	6.60
15					5.79	5.67	6.63	6.38	7.05	6.42	7.27	6.38	7.71	6.79	8.16	6.68
17					6.26	5.85	6.94	6.50	7.27	6.50	7.51	6.46	7.97	6.87	8.44	6.76
19					6.59	5.98	7.16	6.58	7.44	6.56	7.68	6.52	8.15	6.93	8.63	6.82
21					6.93	6.12	7.38	6.66	7.60	6.62	7.84	6.57	8.33	6.98	8.82	6.87
23					6.91	6.11	7.35	6.65	7.57	6.60	7.81	6.56	8.30	6.97	8.78	6.86
25			6.46	6.26	6.89	6.10	7.32	6.64	7.54	6.59	7.78	6.55	8.26	6.96	8.74	6.85
27			6.45	6.26	6.87	6.10	7.30	6.63	7.52	6.59	7.74	6.54	8.18	6.93		
29			6.34	6.21	6.75	6.05	7.19	6.59	7.41	6.55	7.64	6.50	8.09	6.91		
31			6.23	6.11	6.64	6.00	7.08	6.55	7.31	6.51	7.54	6.47	7.99	6.87		
33	5.77	5.65	6.05	5.93	6.53	5.96	6.97	6.51	7.20	6.47	7.44	6.44	7.90	6.85		
35	5.67	5.56	5.95	5.83	6.42	5.92	6.86	6.47	7.10	6.44	7.34	6.40	7.81	6.82		
37	5.58	5.47	5.85	5.73	6.31	5.87	6.72	6.42	6.95	6.38	7.18	6.35	7.64	6.77		
39	5.49	5.38	5.76	5.64	6.20	5.83	6.59	6.37	6.81	6.34	7.03	6.30	7.46	6.71		
41	5.39	5.28	5.67	5.56	6.09	5.78	6.45	6.32	6.66	6.28	6.87	6.24	7.29	6.66		
43	5.30	5.19	5.57	5.46	5.97	5.74	6.31	6.18	6.51	6.23	6.71	6.19	7.12	6.61		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	3.95	3.93	3.91	3.88	3.86
-17.7	-18	4.18	4.16	4.14	4.11	4.09
-15.7	-16	4.42	4.39	4.37	4.34	4.32
-13.5	-14	4.68	4.65	4.63	4.60	4.57
-11.5	-12	4.94	4.91	4.88	4.85	4.82
-9.5	-10	5.20	5.17	5.14	5.11	5.08
-7.5	-8	5.46	5.43	5.40	5.36	5.33
-5.5	-6	5.59	5.55	5.52	5.48	5.44
-3.0	-4	5.71	5.68	5.64	5.60	5.56
-1.0	-2	5.84	5.80	5.76	5.72	5.67
1.0	0	5.97	5.92	5.88	5.83	5.79
2.0	1	6.03	5.98	5.94	5.89	5.85
3.0	2	6.45	6.40	6.35	6.30	6.25
5.0	4	7.29	7.23	7.18	7.12	7.06
7.0	6	8.13	8.06	8.00	7.93	7.87
9.0	8	8.42	8.36	8.29	8.23	8.16
11.5	10	8.72	8.65	8.59	8.52	8.46
13.5	12	9.20	9.13	9.06	9.00	8.92
15.5	14	9.69	9.61	9.53	9.47	9.39
16.5	16	9.93	9.85	9.77	9.71	9.62

PFA004Z047

Model FDE100VNXPVG Indoor unit FDE50VG (2 uints) Outdoor unit FDC100VNX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					8.33	6.70	8.84	7.22	9.10	7.17	9.38	7.12	9.94	7.50	10.50	7.37
13					8.63	6.83	9.17	7.35	9.43	7.29	9.73	7.24	10.32	7.63	10.92	7.49
15					8.93	6.96	9.49	7.48	9.77	7.42	10.09	7.37	10.71	7.76	11.34	7.62
17					9.23	7.09	9.82	7.61	10.11	7.55	10.44	7.50	11.10	7.89	11.75	7.75
19					9.44	7.18	10.04	7.70	10.34	7.64	10.68	7.59	11.35	7.98	12.01	7.83
21					9.64	7.27	10.26	7.79	10.57	7.73	10.91	7.68	11.59	8.06	12.28	7.92
23					9.64	7.27	10.28	7.80	10.59	7.74	10.94	7.69	11.63	8.08	12.32	7.93
25			8.95	7.39	9.64	7.27	10.30	7.80	10.62	7.75	10.97	7.70	11.66	8.09	12.36	7.94
27			8.91	7.37	9.64	7.27	10.33	7.82	10.64	7.76	10.96	7.70	11.59	8.06		
29			8.84	7.34	9.51	7.21	10.16	7.75	10.48	7.70	10.80	7.64	11.45	8.01		
31			8.76	7.30	9.37	7.15	10.00	7.68	10.32	7.63	10.65	7.58	11.30	7.96		
33	8.21	6.83	8.58	7.22	9.23	7.09	9.83	7.61	10.16	7.57	10.49	7.52	11.15	7.91		
35	7.77	6.61	8.31	7.09	9.09	7.03	9.66	7.54	10.00	7.51	10.34	7.47	11.01	7.86		
37	7.68	6.56	8.18	7.03	8.92	6.95	9.49	7.48	9.81	7.44	10.13	7.39	10.77	7.78		
39	7.58	6.51	8.04	6.97	8.76	6.88	9.31	7.40	9.62	7.36	9.93	7.32	10.54	7.70		
41	7.49	6.47	7.91	6.91	8.59	6.81	9.14	7.34	9.43	7.29	9.73	7.24	10.31	7.62		
43	7.40	6.43	7.78	6.85	8.42	6.74	8.96	7.27	9.24	7.22	9.52	7.17	10.08	7.55		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	7.30	7.24	7.18	7.12	7.06
-17.7	-18	7.74	7.68	7.62	7.55	7.49
-15.7	-16	8.18	8.12	8.05	7.99	7.92
-13.5	-14	8.54	8.47	8.40	8.33	8.27
-11.5	-12	8.89	8.82	8.75	8.68	8.61
-9.5	-10	9.25	9.17	9.10	9.03	8.95
-7.5	-8	9.60	9.53	9.45	9.38	9.30
-5.5	-6	10.00	9.92	9.84	9.76	9.68
-3.0	-4	10.39	10.31	10.23	10.14	10.06
-1.0	-2	10.79	10.70	10.62	10.53	10.44
1.0	0	11.18	11.09	11.01	10.91	10.82
2.0	1	11.38	11.29	11.20	11.10	11.01
3.0	2	11.38	11.29	11.20	11.10	11.01
5.0	4	11.38	11.29	11.20	11.11	11.01
7.0	6	11.37	11.29	11.20	11.11	11.01
9.0	8	11.85	11.76	11.67	11.58	11.48
11.5	10	12.32	12.23	12.15	12.05	11.95
13.5	12	12.97	12.88	12.78	12.68	12.72
15.5	14	13.62	13.52	13.41	13.32	13.49
16.5	16	13.95	13.84	13.72	13.63	13.87

PFA004Z047

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

Model FDE100VSXPVG Indoor unit FDE50VG (2 uints) Outdoor unit FDC100VSX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					8.33	6.70	8.84	7.22	9.10	7.17	9.38	7.12	9.94	7.50	10.50	7.37
13					8.63	6.83	9.17	7.35	9.43	7.29	9.73	7.24	10.32	7.63	10.92	7.49
15					8.93	6.96	9.49	7.48	9.77	7.42	10.09	7.37	10.71	7.76	11.34	7.62
17					9.23	7.09	9.82	7.61	10.11	7.55	10.44	7.50	11.10	7.89	11.75	7.75
19					9.44	7.18	10.04	7.70	10.34	7.64	10.68	7.59	11.35	7.98	12.01	7.83
21					9.64	7.27	10.26	7.79	10.57	7.73	10.91	7.68	11.59	8.06	12.28	7.92
23					9.64	7.27	10.28	7.80	10.59	7.74	10.94	7.69	11.63	8.08	12.32	7.93
25			8.95	7.39	9.64	7.27	10.30	7.80	10.62	7.75	10.97	7.70	11.66	8.09	12.36	7.94
27			8.91	7.37	9.64	7.27	10.33	7.82	10.64	7.76	10.96	7.70	11.59	8.06		
29			8.84	7.34	9.51	7.21	10.16	7.75	10.48	7.70	10.80	7.64	11.45	8.01		
31			8.76	7.30	9.37	7.15	10.00	7.68	10.32	7.63	10.65	7.58	11.30	7.96		
33	8.21	6.83	8.58	7.22	9.23	7.09	9.83	7.61	10.16	7.57	10.49	7.52	11.15	7.91		
35	7.77	6.61	8.31	7.09	9.09	7.03	9.66	7.54	10.00	7.51	10.34	7.47	11.01	7.86		
37	7.68	6.56	8.18	7.03	8.92	6.95	9.49	7.48	9.81	7.44	10.13	7.39	10.77	7.78		
39	7.58	6.51	8.04	6.97	8.76	6.88	9.31	7.40	9.62	7.36	9.93	7.32	10.54	7.70		
41	7.49	6.47	7.91	6.91	8.59	6.81	9.14	7.34	9.43	7.29	9.73	7.24	10.31	7.62		
43	7.40	6.43	7.78	6.85	8.42	6.74	8.96	7.27	9.24	7.22	9.52	7.17	10.08	7.55		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	11.29	11.20	11.11	11.02	10.93
-17.7	-18	11.34	11.25	11.16	11.06	10.97
-15.7	-16	11.38	11.29	11.20	11.11	11.02
-13.5	-14	11.38	11.29	11.20	11.11	11.02
-11.5	-12	11.38	11.29	11.20	11.11	11.02
-9.5	-10	11.38	11.29	11.20	11.11	11.02
-7.5	-8	11.37	11.29	11.20	11.11	11.02
-5.5	-6	11.38	11.29	11.20	11.11	11.02
-3.0	-4	11.38	11.29	11.20	11.11	11.01
-1.0	-2	11.38	11.29	11.20	11.11	11.01
1.0	0	11.38	11.29	11.20	11.10	11.01
2.0	1	11.38	11.29	11.20	11.10	11.01
3.0	2	11.38	11.29	11.20	11.10	11.01
5.0	4	11.38	11.29	11.20	11.11	11.01
7.0	6	11.37	11.29	11.20	11.11	11.01
9.0	8	11.85	11.76	11.67	11.58	11.48
11.5	10	12.32	12.23	12.15	12.05	11.95
13.5	12	12.97	12.88	12.78	12.68	12.72
15.5	14	13.62	13.52	13.41	13.32	13.49
16.5	16	13.95	13.84	13.72	13.63	13.87

PFA004Z047

Model FDE125VNXPVG Indoor unit FDE60VG (2 uints) Outdoor unit FDC125VNX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					10.41	9.31	11.05	10.13	11.37	10.06	11.72	9.99	12.42	10.62	13.12	10.44
13					10.79	9.47	11.46	10.29	11.79	10.21	12.16	10.15	12.91	10.77	13.65	10.59
15					11.16	9.62	11.87	10.44	12.22	10.37	12.61	10.30	13.39	10.92	14.17	10.74
17					11.54	9.77	12.27	10.59	12.64	10.52	13.05	10.46	13.87	11.08	14.69	10.90
19					11.80	9.88	12.55	10.70	12.93	10.63	13.34	10.56	14.18	11.18	15.02	10.99
21					12.05	9.99	12.83	10.81	13.21	10.73	13.64	10.66	14.49	11.28	15.34	11.09
23					12.05	9.99	12.85	10.81	13.24	10.74	13.67	10.67	14.54	11.29	15.40	11.11
25			11.19	10.18	12.05	9.99	12.88	10.83	13.27	10.75	13.71	10.69	14.58	11.31	15.45	11.12
27			11.14	10.16	12.05	9.99	12.91	10.84	13.30	10.76	13.70	10.69	14.49	11.28		
29			11.05	10.12	11.88	9.91	12.70	10.76	13.10	10.69	13.51	10.62	14.31	11.22		
31			10.95	10.08	11.71	9.84	12.49	10.68	12.90	10.62	13.31	10.55	14.13	11.16		
33	10.26	9.34	10.73	9.98	11.53	9.77	12.29	10.60	12.70	10.54	13.11	10.48	13.94	11.10		
35	9.71	9.08	10.39	9.83	11.36	9.70	12.08	10.52	12.50	10.47	12.92	10.41	13.76	11.04		
37	9.60	9.03	10.22	9.75	11.15	9.61	11.86	10.44	12.26	10.38	12.67	10.32	13.47	10.95		
39	9.48	8.98	10.05	9.68	10.94	9.53	11.64	10.35	12.03	10.30	12.41	10.23	13.18	10.86		
41	9.36	8.92	9.89	9.61	10.74	9.45	11.42	10.27	11.79	10.21	12.16	10.15	12.89	10.76		
43	9.25	8.87	9.72	9.53	10.53	9.36	11.21	10.19	11.55	10.13	11.90	10.06	12.60	10.67		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	9.12	9.05	8.97	8.90	8.83
-17.7	-18	9.67	9.60	9.52	9.44	9.37
-15.7	-16	10.23	10.15	10.07	9.98	9.90
-13.5	-14	10.67	10.59	10.50	10.42	10.33
-11.5	-12	11.11	11.03	10.94	10.85	10.76
-9.5	-10	11.56	11.47	11.38	11.29	11.19
-7.5	-8	12.00	11.91	11.82	11.72	11.62
-5.5	-6	12.49	12.40	12.30	12.20	12.10
-3.0	-4	12.99	12.89	12.79	12.68	12.57
-1.0	-2	13.48	13.38	13.27	13.16	13.05
1.0	0	13.98	13.87	13.76	13.64	13.52
2.0	1	14.22	14.11	14.00	13.88	13.76
3.0	2	14.22	14.11	14.00	13.88	13.76
5.0	4	14.22	14.11	14.00	13.88	13.76
7.0	6	14.22	14.11	14.00	13.88	13.77
9.0	8	14.81	14.70	14.59	14.47	14.35
11.5	10	15.41	15.29	15.18	15.06	14.94
13.5	12	16.22	16.09	15.97	15.85	15.90
15.5	14	17.03	16.90	16.76	16.65	16.86
16.5	16	17.44	17.30	17.16	17.04	17.34

PFA004Z047

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

Model FDE125VSXPVG Indoor unit FDE60VG (2 uints) Outdoor unit FDC125VSX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					10.41	9.31	11.05	10.13	11.37	10.06	11.72	9.99	12.42	10.62	13.12	10.44
13					10.79	9.47	11.46	10.29	11.79	10.21	12.16	10.15	12.91	10.77	13.65	10.59
15					11.16	9.62	11.87	10.44	12.22	10.37	12.61	10.30	13.39	10.92	14.17	10.74
17					11.54	9.77	12.27	10.59	12.64	10.52	13.05	10.46	13.87	11.08	14.69	10.90
19					11.80	9.88	12.55	10.70	12.93	10.63	13.34	10.56	14.18	11.18	15.02	10.99
21					12.05	9.99	12.83	10.81	13.21	10.73	13.64	10.66	14.49	11.28	15.34	11.09
23					12.05	9.99	12.85	10.81	13.24	10.74	13.67	10.67	14.54	11.29	15.40	11.11
25			11.19	10.18	12.05	9.99	12.88	10.83	13.27	10.75	13.71	10.69	14.58	11.31	15.45	11.12
27			11.14	10.16	12.05	9.99	12.91	10.84	13.30	10.76	13.70	10.69	14.49	11.28		
29			11.05	10.12	11.88	9.91	12.70	10.76	13.10	10.69	13.51	10.62	14.31	11.22		
31			10.95	10.08	11.71	9.84	12.49	10.68	12.90	10.62	13.31	10.55	14.13	11.16		
33	10.26	9.34	10.73	9.98	11.53	9.77	12.29	10.60	12.70	10.54	13.11	10.48	13.94	11.10		
35	9.71	9.08	10.39	9.83	11.36	9.70	12.08	10.52	12.50	10.47	12.92	10.41	13.76	11.04		
37	9.60	9.03	10.22	9.75	11.15	9.61	11.86	10.44	12.26	10.38	12.67	10.32	13.47	10.95		
39	9.48	8.98	10.05	9.68	10.94	9.53	11.64	10.35	12.03	10.30	12.41	10.23	13.18	10.86		
41	9.36	8.92	9.89	9.61	10.74	9.45	11.42	10.27	11.79	10.21	12.16	10.15	12.89	10.76		
43	9.25	8.87	9.72	9.53	10.53	9.36	11.21	10.19	11.55	10.13	11.90	10.06	12.60	10.67		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	14.11	14.00	13.89	13.78	13.66
-17.7	-18	14.17	14.06	13.94	13.83	13.72
-15.7	-16	14.23	14.11	14.00	13.89	13.77
-13.5	-14	14.23	14.11	14.00	13.89	13.77
-11.5	-12	14.22	14.11	14.00	13.89	13.77
-9.5	-10	14.22	14.11	14.00	13.89	13.77
-7.5	-8	14.22	14.11	14.00	13.89	13.77
-5.5	-6	14.22	14.11	14.00	13.88	13.77
-3.0	-4	14.22	14.11	14.00	13.88	13.77
-1.0	-2	14.22	14.11	14.00	13.88	13.76
1.0	0	14.22	14.11	14.00	13.88	13.76
2.0	1	14.22	14.11	14.00	13.88	13.76
3.0	2	14.22	14.11	14.00	13.88	13.76
5.0	4	14.22	14.11	14.00	13.88	13.76
7.0	6	14.22	14.11	14.00	13.88	13.77
9.0	8	14.81	14.70	14.59	14.47	14.35
11.5	10	15.41	15.29	15.18	15.06	14.94
13.5	12	16.22	16.09	15.97	15.85	15.90
15.5	14	17.03	16.90	16.76	16.65	16.86
16.5	16	17.44	17.30	17.16	17.04	17.34

PFA004Z047

Model FDE140VNXPVG Indoor unit FDE71VG (2 uints) Outdoor unit FDC140VNX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.66	9.82	12.38	10.63	12.73	10.55	13.13	10.48	13.91	11.09	14.70	10.90
13					12.08	10.00	12.83	10.81	13.21	10.73	13.62	10.66	14.45	11.26	15.28	11.07
15					12.50	10.17	13.29	10.99	13.68	10.90	14.12	10.84	14.99	11.44	15.87	11.25
17					12.92	10.35	13.75	11.17	14.16	11.09	14.62	11.02	15.54	11.62	16.45	11.42
19					13.21	10.47	14.06	11.29	14.48	11.21	14.95	11.14	15.88	11.74	16.82	11.53
21					13.50	10.60	14.36	11.41	14.80	11.33	15.28	11.26	16.23	11.85	17.19	11.65
23					13.50	10.60	14.40	11.42	14.83	11.34	15.31	11.27	16.28	11.87	17.25	11.67
25			12.53	10.79	13.50	10.60	14.43	11.43	14.87	11.35	15.35	11.28	16.33	11.89	17.30	11.68
27			12.48	10.77	13.50	10.60	14.46	11.45	14.90	11.37	15.34	11.28	16.23	11.85		
29			12.37	10.72	13.31	10.52	14.23	11.35	14.68	11.28	15.13	11.20	16.03	11.79		
31			12.26	10.67	13.11	10.43	13.99	11.26	14.45	11.19	14.91	11.12	15.82	11.72		
33	11.49	9.94	12.02	10.56	12.92	10.35	13.76	11.17	14.23	11.11	14.69	11.04	15.61	11.65		
35	10.88	9.64	11.63	10.38	12.72	10.27	13.53	11.08	14.00	11.02	14.47	10.96	15.41	11.58		
37	10.75	9.58	11.45	10.30	12.49	10.17	13.29	10.99	13.74	10.93	14.18	10.86	15.08	11.47		
39	10.62	9.52	11.26	10.21	12.26	10.07	13.04	10.89	13.47	10.83	13.90	10.76	14.76	11.37		
41	10.49	9.45	11.07	10.13	12.02	9.97	12.80	10.80	13.21	10.73	13.62	10.66	14.44	11.26		
43	10.35	9.39	10.89	10.05	11.79	9.88	12.55	10.70	12.94	10.63	13.33	10.55	14.11	11.15		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	10.42	10.34	10.26	10.17	10.09
-17.7	-18	11.06	10.97	10.88	10.79	10.70
-15.7	-16	11.69	11.60	11.50	11.41	11.32
-13.5	-14	12.20	12.10	12.00	11.91	11.81
-11.5	-12	12.70	12.60	12.50	12.40	12.30
-9.5	-10	13.21	13.11	13.00	12.90	12.79
-7.5	-8	13.71	13.61	13.50	13.39	13.28
-5.5	-6	14.28	14.17	14.06	13.94	13.83
-3.0	-4	14.84	14.73	14.61	14.49	14.37
-1.0	-2	15.41	15.29	15.17	15.04	14.91
1.0	0	15.97	15.85	15.72	15.59	15.45
2.0	1	16.26	16.13	16.00	15.86	15.73
3.0	2	16.25	16.13	16.00	15.86	15.73
5.0	4	16.25	16.13	16.00	15.86	15.73
7.0	6	16.25	16.12	16.00	15.87	15.73
9.0	8	16.93	16.80	16.68	16.54	16.40
11.5	10	17.61	17.48	17.35	17.21	17.07
13.5	12	18.53	18.39	18.25	18.12	18.17
15.5	14	19.46	19.31	19.16	19.02	19.27
16.5	16	19.93	19.77	19.61	19.48	19.82

PFA004Z047

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

Model FDE140VSXPVG Indoor unit FDE71VG (2 uints) Outdoor unit FDC140VSX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.66	9.82	12.38	10.63	12.73	10.55	13.13	10.48	13.91	11.09	14.70	10.90
13					12.08	10.00	12.83	10.81	13.21	10.73	13.62	10.66	14.45	11.26	15.28	11.07
15					12.50	10.17	13.29	10.99	13.68	10.90	14.12	10.84	14.99	11.44	15.87	11.25
17					12.92	10.35	13.75	11.17	14.16	11.09	14.62	11.02	15.54	11.62	16.45	11.42
19					13.21	10.47	14.06	11.29	14.48	11.21	14.95	11.14	15.88	11.74	16.82	11.53
21					13.50	10.60	14.36	11.41	14.80	11.33	15.28	11.26	16.23	11.85	17.19	11.65
23					13.50	10.60	14.40	11.42	14.83	11.34	15.31	11.27	16.28	11.87	17.25	11.67
25			12.53	10.79	13.50	10.60	14.43	11.43	14.87	11.35	15.35	11.28	16.33	11.89	17.30	11.68
27			12.48	10.77	13.50	10.60	14.46	11.45	14.90	11.37	15.34	11.28	16.23	11.85		
29			12.37	10.72	13.31	10.52	14.23	11.35	14.68	11.28	15.13	11.20	16.03	11.79		
31			12.26	10.67	13.11	10.43	13.99	11.26	14.45	11.19	14.91	11.12	15.82	11.72		
33	11.49	9.94	12.02	10.56	12.92	10.35	13.76	11.17	14.23	11.11	14.69	11.04	15.61	11.65		
35	10.88	9.64	11.63	10.38	12.72	10.27	13.53	11.08	14.00	11.02	14.47	10.96	15.41	11.58		
37	10.75	9.58	11.45	10.30	12.49	10.17	13.29	10.99	13.74	10.93	14.18	10.86	15.08	11.47		
39	10.62	9.52	11.26	10.21	12.26	10.07	13.04	10.89	13.47	10.83	13.90	10.76	14.76	11.37		
41	10.49	9.45	11.07	10.13	12.02	9.97	12.80	10.80	13.21	10.73	13.62	10.66	14.44	11.26		
43	10.35	9.39	10.89	10.05	11.79	9.88	12.55	10.70	12.94	10.63	13.33	10.55	14.11	11.15		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	16.13	16.00	15.87	15.74	15.61
-17.7	-18	16.19	16.07	15.94	15.81	15.68
-15.7	-16	16.26	16.13	16.00	15.87	15.74
-13.5	-14	16.26	16.13	16.00	15.87	15.74
-11.5	-12	16.25	16.13	16.00	15.87	15.74
-9.5	-10	16.25	16.13	16.00	15.87	15.74
-7.5	-8	16.25	16.12	16.00	15.87	15.74
-5.5	-6	16.25	16.13	16.00	15.87	15.74
-3.0	-4	16.25	16.13	16.00	15.87	15.73
-1.0	-2	16.25	16.13	16.00	15.86	15.73
1.0	0	16.25	16.13	16.00	15.86	15.73
2.0	1	16.26	16.13	16.00	15.86	15.73
3.0	2	16.25	16.13	16.00	15.86	15.73
5.0	4	16.25	16.13	16.00	15.86	15.73
7.0	6	16.25	16.12	16.00	15.87	15.73
9.0	8	16.93	16.80	16.68	16.54	16.40
11.5	10	17.61	17.48	17.35	17.21	17.07
13.5	12	18.53	18.39	18.25	18.12	18.17
15.5	14	19.46	19.31	19.16	19.02	19.27
16.5	16	19.93	19.77	19.61	19.48	19.82

PFA004Z047

(3) Triple type

Model FDE140VNXTVG Indoor unit FDE50VG (3 uints) Outdoor unit FDC140VNX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.66	9.70	12.38	10.49	12.73	10.41	13.13	10.34	13.91	10.92	14.70	10.73
13					12.08	9.87	12.83	10.66	13.21	10.58	13.62	10.51	14.45	11.10	15.28	10.91
15					12.50	10.05	13.29	10.84	13.68	10.76	14.12	10.69	14.99	11.28	15.87	11.08
17					12.92	10.23	13.75	11.02	14.16	10.94	14.62	10.87	15.54	11.46	16.45	11.26
19					13.21	10.35	14.06	11.14	14.48	11.06	14.95	10.99	15.88	11.58	16.82	11.38
21					13.50	10.48	14.36	11.26	14.80	11.19	15.28	11.12	16.23	11.70	17.19	11.49
23					13.50	10.48	14.40	11.28	14.83	11.20	15.31	11.13	16.28	11.71	17.25	11.51
25			12.53	10.67	13.50	10.48	14.43	11.29	14.87	11.21	15.35	11.14	16.33	11.73	17.30	11.52
27			12.48	10.64	13.50	10.48	14.46	11.30	14.90	11.23	15.34	11.14	16.23	11.70		
29			12.37	10.59	13.31	10.40	14.23	11.21	14.68	11.14	15.13	11.06	16.03	11.63		
31			12.26	10.54	13.11	10.31	13.99	11.12	14.45	11.05	14.91	10.98	15.82	11.56		
33	11.49	9.83	12.02	10.43	12.92	10.23	13.76	11.03	14.23	10.97	14.69	10.90	15.61	11.49		
35	10.88	9.53	11.63	10.25	12.72	10.14	13.53	10.93	14.00	10.88	14.47	10.82	15.41	11.42		
37	10.75	9.47	11.45	10.17	12.49	10.05	13.29	10.84	13.74	10.78	14.18	10.71	15.08	11.31		
39	10.62	9.41	11.26	10.09	12.26	9.95	13.04	10.74	13.47	10.68	13.90	10.61	14.76	11.20		
41	10.49	9.34	11.07	10.00	12.02	9.85	12.80	10.65	13.21	10.58	13.62	10.51	14.44	11.10		
43	10.35	9.28	10.89	9.92	11.79	9.75	12.55	10.55	12.94	10.48	13.33	10.41	14.11	10.99		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	10.42	10.34	10.26	10.17	10.09
-17.7	-18	11.06	10.97	10.88	10.79	10.70
-15.7	-16	11.69	11.60	11.50	11.41	11.32
-13.5	-14	12.20	12.10	12.00	11.91	11.81
-11.5	-12	12.70	12.60	12.50	12.40	12.30
-9.5	-10	13.21	13.11	13.00	12.90	12.79
-7.5	-8	13.71	13.61	13.50	13.39	13.28
-5.5	-6	14.28	14.17	14.06	13.94	13.83
-3.0	-4	14.84	14.73	14.61	14.49	14.37
-1.0	-2	15.41	15.29	15.17	15.04	14.91
1.0	0	15.97	15.85	15.72	15.59	15.45
2.0	1	16.26	16.13	16.00	15.86	15.73
3.0	2	16.25	16.13	16.00	15.86	15.73
5.0	4	16.25	16.13	16.00	15.86	15.73
7.0	6	16.25	16.12	16.00	15.87	15.73
9.0	8	16.93	16.80	16.68	16.54	16.40
11.5	10	17.61	17.48	17.35	17.21	17.07
13.5	12	18.53	18.39	18.25	18.12	18.17
15.5	14	19.46	19.31	19.16	19.02	19.27
16.5	16	19.93	19.77	19.61	19.48	19.82

PFA004Z047

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

Model FDE140VSXTVG Indoor unit FDE50VG (3 uints) Outdoor unit FDC140VSX

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.66	9.70	12.38	10.49	12.73	10.41	13.13	10.34	13.91	10.92	14.70	10.73
13					12.08	9.87	12.83	10.66	13.21	10.58	13.62	10.51	14.45	11.10	15.28	10.91
15					12.50	10.05	13.29	10.84	13.68	10.76	14.12	10.69	14.99	11.28	15.87	11.08
17					12.92	10.23	13.75	11.02	14.16	10.94	14.62	10.87	15.54	11.46	16.45	11.26
19					13.21	10.35	14.06	11.14	14.48	11.06	14.95	10.99	15.88	11.58	16.82	11.38
21					13.50	10.48	14.36	11.26	14.80	11.19	15.28	11.12	16.23	11.70	17.19	11.49
23					13.50	10.48	14.40	11.28	14.83	11.20	15.31	11.13	16.28	11.71	17.25	11.51
25			12.53	10.67	13.50	10.48	14.43	11.29	14.87	11.21	15.35	11.14	16.33	11.73	17.30	11.52
27			12.48	10.64	13.50	10.48	14.46	11.30	14.90	11.23	15.34	11.14	16.23	11.70		
29			12.37	10.59	13.31	10.40	14.23	11.21	14.68	11.14	15.13	11.06	16.03	11.63		
31			12.26	10.54	13.11	10.31	13.99	11.12	14.45	11.05	14.91	10.98	15.82	11.56		
33	11.49	9.83	12.02	10.43	12.92	10.23	13.76	11.03	14.23	10.97	14.69	10.90	15.61	11.49		
35	10.88	9.53	11.63	10.25	12.72	10.14	13.53	10.93	14.00	10.88	14.47	10.82	15.41	11.42		
37	10.75	9.47	11.45	10.17	12.49	10.05	13.29	10.84	13.74	10.78	14.18	10.71	15.08	11.31		
39	10.62	9.41	11.26	10.09	12.26	9.95	13.04	10.74	13.47	10.68	13.90	10.61	14.76	11.20		
41	10.49	9.34	11.07	10.00	12.02	9.85	12.80	10.65	13.21	10.58	13.62	10.51	14.44	11.10		
43	10.35	9.28	10.89	9.92	11.79	9.75	12.55	10.55	12.94	10.48	13.33	10.41	14.11	10.99		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature				
		℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	16.13	16.00	15.87	15.74	15.61
-17.7	-18	16.19	16.07	15.94	15.81	15.68
-15.7	-16	16.26	16.13	16.00	15.87	15.74
-13.5	-14	16.26	16.13	16.00	15.87	15.74
-11.5	-12	16.25	16.13	16.00	15.87	15.74
-9.5	-10	16.25	16.13	16.00	15.87	15.74
-7.5	-8	16.25	16.12	16.00	15.87	15.74
-5.5	-6	16.25	16.13	16.00	15.87	15.74
-3.0	-4	16.25	16.13	16.00	15.87	15.73
-1.0	-2	16.25	16.13	16.00	15.86	15.73
1.0	0	16.25	16.13	16.00	15.86	15.73
2.0	1	16.26	16.13	16.00	15.86	15.73
3.0	2	16.25	16.13	16.00	15.86	15.73
5.0	4	16.25	16.13	16.00	15.86	15.73
7.0	6	16.25	16.12	16.00	15.87	15.73
9.0	8	16.93	16.80	16.68	16.54	16.40
11.5	10	17.61	17.48	17.35	17.21	17.07
13.5	12	18.53	18.39	18.25	18.12	18.17
15.5	14	19.46	19.31	19.16	19.02	19.27
16.5	16	19.93	19.77	19.61	19.48	19.82

PFA004Z047

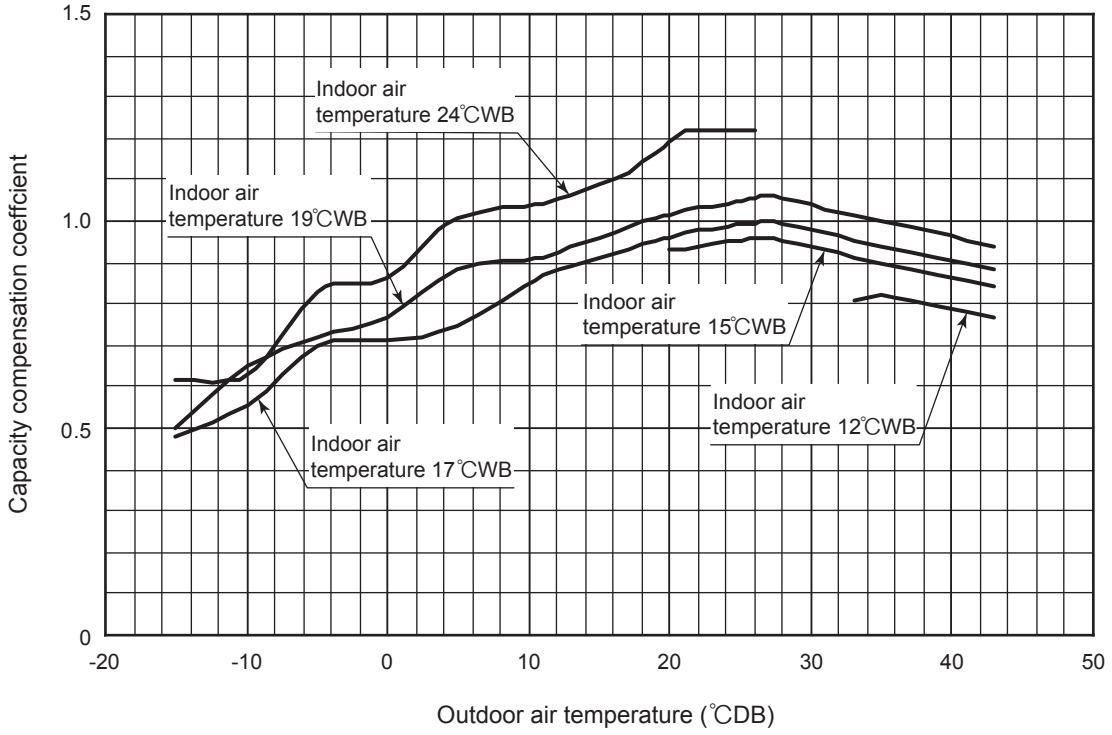
Note(1) These data show average statuses.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.(Cooling only)
(2) Capacities are based on the following conditions.
Corresponding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

[References data]

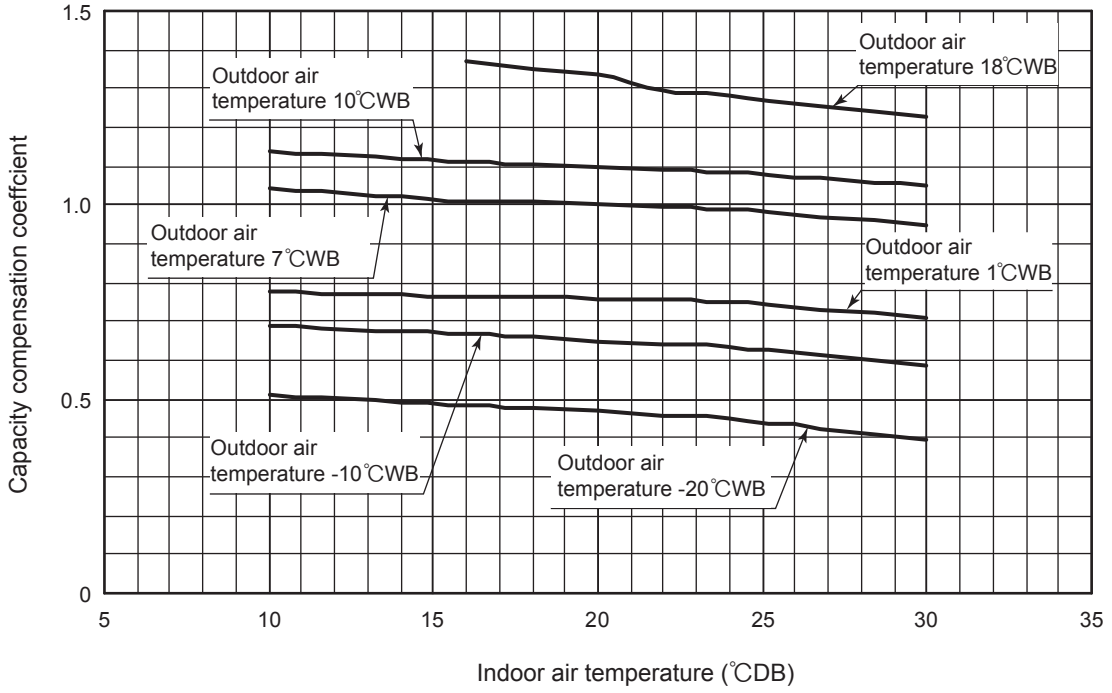
Capacity variation against outdoor and indoor temperature at the maximum compressor speed capacity compensation coefficient shows the ratio to nominal capacity.

(I) **Models SRC40, 50, 60ZMX-S**

① **Cooling**

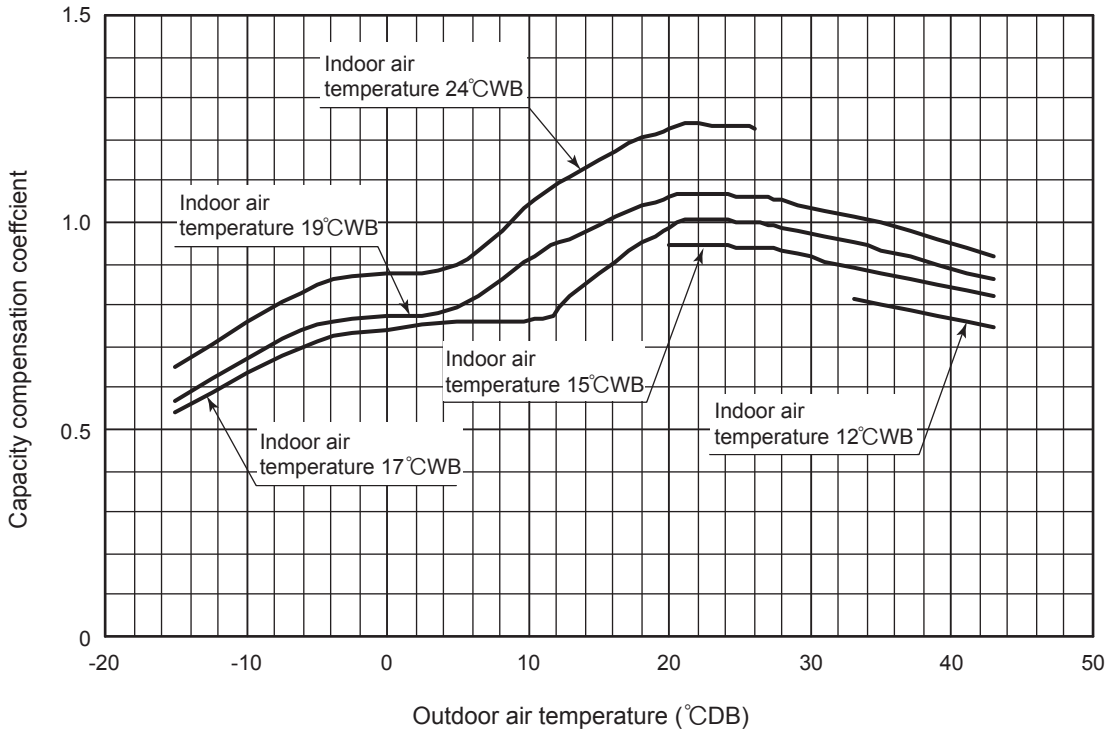


② **Heating**

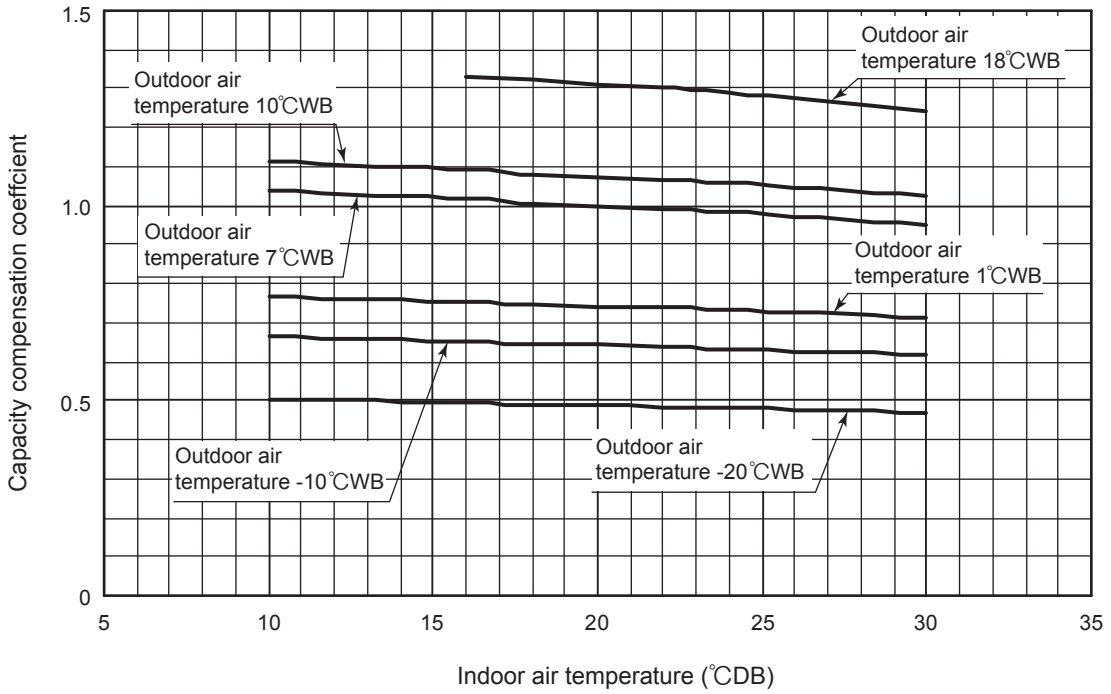


(Ⅱ) **Model FDC71VNX**

① **Cooling**

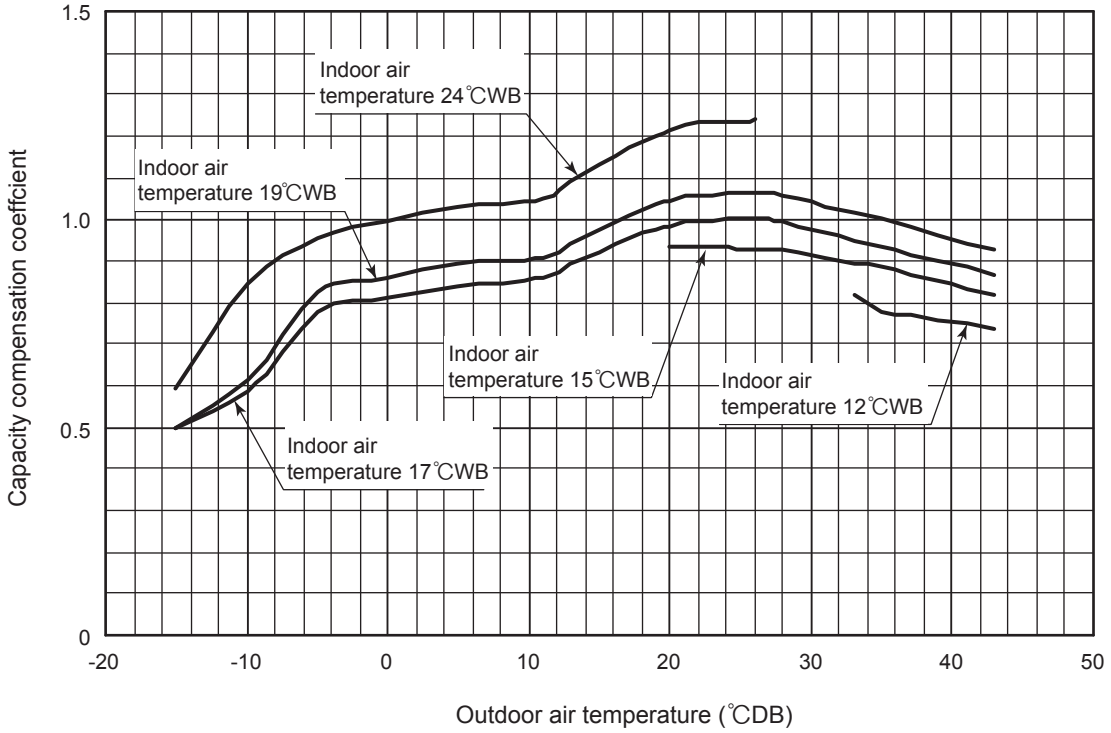


② **Heating**

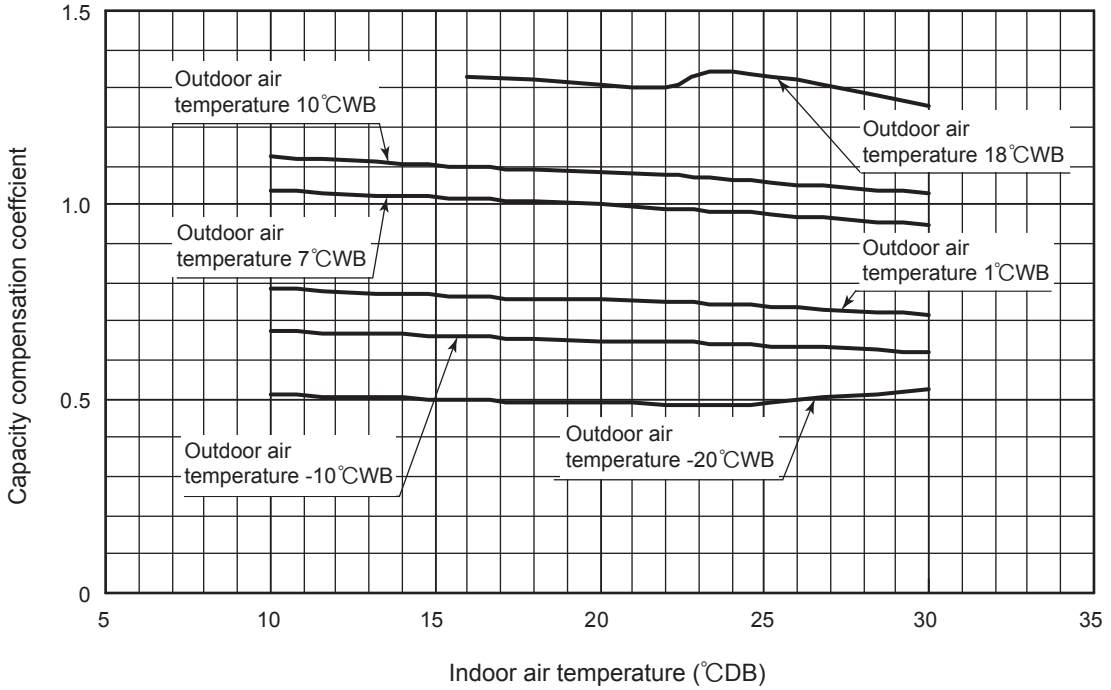


(Ⅲ) Models FDC100, 125, 140VNX, 100, 125, 140VSX

① Cooling



② Heating



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

Fan speed	P-Hi or Hi	Me	Lo
Coefficient	1.00	0.97	0.95

1.8.3 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.

(1) Models SRC40-60

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

(2) Models FDC71-140

Equivalent piping length (1)(m)			7.5	10	15	20	25	30	35	40	45	50	55
Heating			1	1	1	1	1	0.998	0.998	0.993	0.993	0.988	0.988
Cooling	FDC71 model	ϕ15.88	1	0.996	0.989	0.982	0.975	0.968	0.961	0.954	0.947	0.940	0.933
	FDC100 model		1	0.991	0.978	0.964	0.951	0.937	0.924	0.910	0.897	0.883	0.870
	FDC125 model		1	0.986	0.968	0.950	0.932	0.914	0.896	0.878	0.860	0.842	0.824
	FDC140 model		1	0.985	0.966	0.946	0.927	0.907	0.888	0.868	0.849	0.829	0.810
	FDC71 model	ϕ19.05	1.008	1.006	1.003	1	0.997	0.994	0.991	0.988	0.985	0.982	0.979
	FDC100 model		1.016	1.013	1.007	1.002	0.996	0.991	0.985	0.980	0.974	0.969	0.963
	FDC125 model		1.022	1.018	1.009	1.001	0.992	0.984	0.975	0.967	0.958	0.950	0.941
	FDC140 model		1.026	1.021	1.011	1.002	0.992	0.983	0.973	0.964	0.954	0.945	0.935

Equivalent piping length (1)(m)			60	65	70	75	80	85	90	95	100	105
Heating			0.983	0.983	0.978	0.978	0.973	0.973	0.968	0.968	0.963	0.963
Cooling	FDC71 model	ϕ15.88	—	—	—	—	—	—	—	—	—	—
	FDC100 model		0.856	0.843	0.829	0.816	0.803	0.789	0.776	0.762	0.749	0.736
	FDC125 model		0.806	0.788	0.770	0.752	0.734	0.716	0.698	0.680	0.662	0.644
	FDC140 model		0.790	0.771	0.751	0.732	0.712	0.693	0.673	0.654	0.634	0.615
	FDC71 model	ϕ19.05	—	—	—	—	—	—	—	—	—	—
	FDC100 model		0.959	0.955	0.951	0.948	0.944	0.940	0.936	0.932	0.929	0.926
	FDC125 model		0.935	0.929	0.924	0.919	0.912	0.908	0.902	0.897	0.892	0.887
	FDC140 model		0.928	0.920	0.913	0.907	0.900	0.894	0.888	0.882	0.876	0.870

Note (1) Calculate the equivalent length using the following formula.
However, install the piping so that the piping length is within +5 m of the limit length (actual length) for the respective types.

• Equivalent length =Actual length + (Equivalent bend length x number of bends in the piping.)
Equivalent length per bend. (Models FDC71-140 only)

Gas pipe diameter (mm)	ϕ12.7	ϕ15.88	ϕ19.05
Equivalent bend length	0.20	0.25	0.30

1.8.4 Height difference between the indoor unit and outdoor unit

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

Height difference between the indoor unit and outdoor unit in the vertical height difference	5m	10m	15m	20m	25m	30m
Adjustment coefficient	0.99	0.98	0.97	0.96	0.95	0.94

Piping length limitations

Item \ Model	SRC40, 50, 60	FDC71	FDC100, 125, 140
Max. one way piping length	30m	50m	100m
Max. vertical height difference	Outdoor unit is higher 20m Outdoor unit is lower 20m	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 FDE100VNXVG with the air flow "P-High", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0℃ and outdoor dry-bulb temperature 35℃ is

Net cooling capacity = 10.0 × 1.00 × 0.978 × 0.99 ≒ 9.7kW

- 10.0: Net cooling total capacity of FDE100VNXVG (Outdoor temp. : 35℃DB Indoor temp. : 19℃WB) shown in table 1.8.1
- 1.00: Air flow : P-High shown in table 1.8.2
- 0.978: Piping length :15m (Gas pipe size is ϕ15.88) shown in table 1.8.3
- 0.99: Height diff. :5m (Outdoor unit : below) shown in table 1.8.4

1.9 APPLICATION DATA

PFA012D628

1.9.1 Installation of indoor unit

This manual is for the installation of an indoor unit.
For electrical wiring work (Indoor), refer to page 71. For remote control installation, refer to page 75. For wireless kit installation, refer to page 445. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to page 89.

SAFETY PRECAUTIONS

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

⚠ WARNING

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

⚠ CAUTION

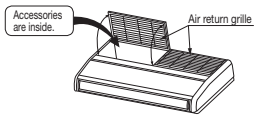
- **Perform earth wiring surely.**
  Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure, electric shock and fire due to a short circuit.
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker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

①Before installation

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

Accessory item

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



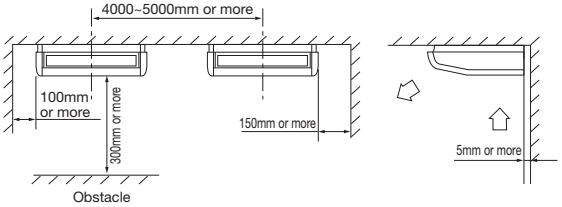
②Selection of installation location for the indoor unit

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

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

③ When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

Space for installation and service

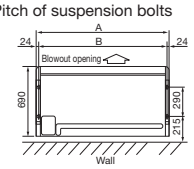


③Preparation before installation

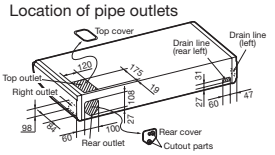
- If suspension bolt becomes longer, do reinforcement of earthquake resistant.
  - ○ For grid ceiling
    When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
  - ○ In case the unit is hanged directly from the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

Pitch of suspension bolts and pipe position

Pitch of suspension bolts



Location of pipe outlets



③Preparation before installation (continued)

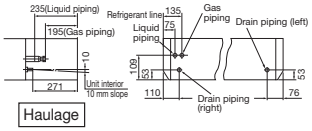
(mm)

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

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

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

Pipe position

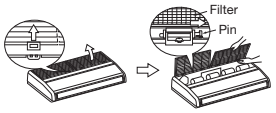


Haulage

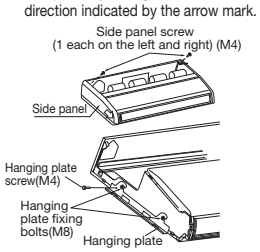
- Move the box as close to the installation area as possible packed.
- If it must be unpacked, wrap the unit with a nylon sling, and be careful not to damage the unit.
  ※Do not hold fragile plastic parts, such as the side panel, blow louver, etc.
- If you need to lay the unit on a floor after unpacking, always put it with the intake grille facing upward.

Preparation before instalation

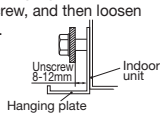
1. **Remove the air return grille.**
   Slide stoppers (4 places) of the catches, then pull out the pins (4 or 6 places).



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



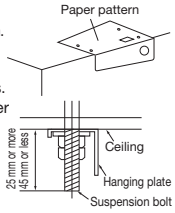
3. **Remove the hanging plate.**
   Remove the screw, and then loosen the fixing bolts.



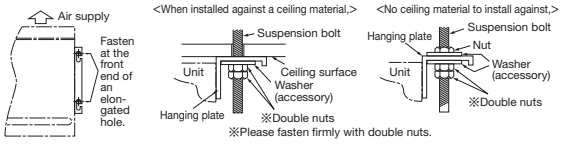
④Installation of indoor unit

Work procedure

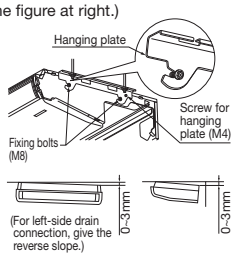
1. Select the suspension bolt locations and the pipe hole location.
   (1) Use enclosed paper pattern as a reference, and drill the holes for the suspension bolts and pipe.
   ※Decide the locations based on direct measurements.
   (2) Once the locations are properly placed, the paper pattern can be removed.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



5. Fasten the hanging plate onto the suspension bolts.



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



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

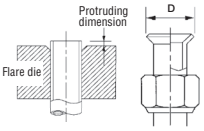
※To ensure smooth drain flow, install the unit with a descending slope toward the drain outlet.

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

⑤Refrigerant pipe

Caution

●Be sure to use new pipes for the refrigerant pipes. Use the flare nut attached to the product or a nut compatible with JIS B 8607, Class 2.
Regarding whether existing pipes can be reused or not, and the washing method, refer to the instruction manual of the outdoor unit, catalogue or technical data.
1) In case of reuse: Do not use old flare nut, but use the one attached to the unit or compatible with JIS B 8607, Class 2.
2) In case of reuse: Flare the end of pipe replaced partially for R410A.



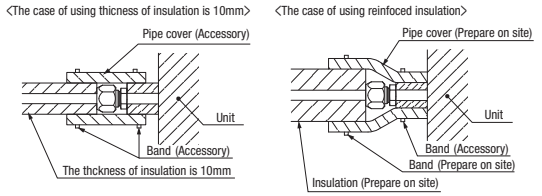
Pipe dia. d mm	Min. pipe wall thickness mm	Protruding dimension for flare, mm		Flare O.D. D mm	Flare nut tightening torque N-m
		Rigid (Clutch type)			
		For R410A	Conventional tool		
6.35	0.8	0 ~ 0.5	0.7 ~ 1.3	8.9 ~ 9.1	14 ~ 18
9.52	0.8			12.8 ~ 13.2	34 ~ 42
12.7	0.8			16.2 ~ 16.6	49 ~ 61
15.88	1			19.3 ~ 19.7	68 ~ 82
19.05	1.2			23.6 ~ 24.0	100 ~ 120

●Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
●Do not use any refrigerant other than R410A.
Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
●Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
●Use special tools for R410A refrigerant.

Work procedure

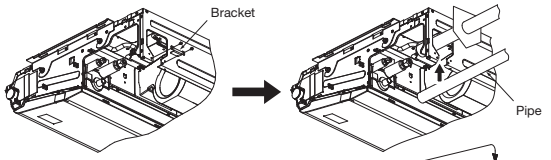
1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
   ※ Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)
   ● Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
   ●When pulling out pipes backward or upward, install them passing through the attached cover together with the electrical cabling.
   ●Seal the gap with putty, or other, to protect from dust, etc.
   ※Bend radius of pipe must be 4D or larger. Once a pipe is bent, do not readjust the bending. Do not twist a pipe or collapse to 2/3D or smaller.
   ※Do a flare connection as follows:
   ● Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   ● When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table above. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
   ● Make sure to insulate both gas pipes and liquid pipes completely.
   ※Incomplete insulation may cause dew condensation or water dropping.
   ● Use heat-resistant (120 °C or more) insulations on the gas side pipes.
   ● In case of using at high humidity condition, reinforce insulation of refrigerant pipes.
   Surface of insulation may cause dew condition or water dropping, if insulations are not reinfoced.
4. Refrigerant is charged in the outdoor unit.
   As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

Caution:
Refrigerating machine oil should not be applied to the threads of union or external surface of flare. It is because, even if the same tightening torque is applied, the oil is likely to decrease the slide friction force on the threads and increase, in turn, the axial component force so that it could crack the flare by the stress corrosion.
Refrigerating machine oil may be applied to the internal surface of flare only.

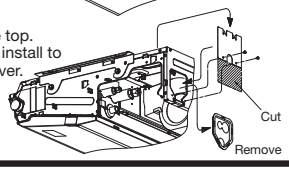


The pipe can be connected from three different directions. (back, reight, top)

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



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



⑥Drain pipe

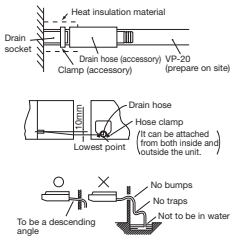
●The drain pipes may pull out either from back, right or left side.

Caution

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

Work procedure

1. Insert drain hose completely to the base, and tighten the drain hose clamp securely. (adhesive must not be used.)
   ※When plumbing on the left side, move the rubber plug and the cylindrical insulating materials by the pipe connecting hole on the left side of the unit to the right side.
   ⚠ Beware of a possible outflow of water that may occur upon removal of a drain plug.
2. Fix the drain hose at the lowest point with a hose clamp supplied as an accessory.
   ※Give a drain hose a gradient of 10mm as illustrated in the right drawing by laying it without leaving a slack.
   ● Take head of electrical cables so that they may not run beneath the drain hose.
   ⚠ A drain hose must be clamped down with a hose clamp.
   There is a possibility that drain water overflows.
3. Connect VP-20(prepare on site) to drain hose. (adhesive must not be used.)
   ※ Use commercially available rigid PVC general pipe VP-20 for drain pipe.
4. Do not to make the up-down bending and trap in the mid-way while assuming that the drain pipes is downhill. (more than 1/100)
   ● Never set up air vent.
5. Insulate the drain pipe.
   ● Insulate the drain hose clamp with the heat insulation supplied as accessories.
   ● When the unit is installed in a humid place, consider precautions against dew condensation such as heat insulation for the drain pipe.



Drain test

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

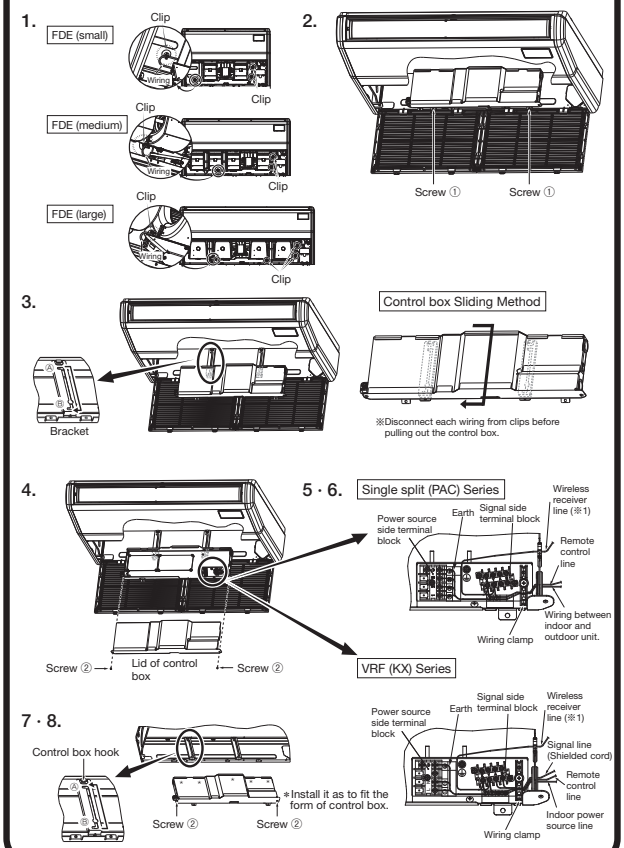
⑦Wiring-out position and wiring connection

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

1. Remove wiring from clips.
2. Remove the control box (Screw ①, ②pcs).
3. Pull out the control box by sliding along the groove on the bracket (Direction Ⓐ→Ⓑ).
4. Remove the lid of control box (Screw ②, ②pcs).
5. Hold each wiring inside the unit and connect to the terminal block surely.
6. Fix the wiring by clamp.
7. Install the lid of control box (Screw ②, ②pcs).
8. Return the control box to the original place by sliding along the groove on the bracket (Direction Ⓑ→Ⓐ).
9. Install the removed parts at their original places.

※1 Wiring for the signal receiving section of wireless kit (Optional) are connected to the X and Y terminals on the terminal block (the site connection side), when the indoor unit is shipped from the factory.
It is not necessary to disconnect these wiring when wired remote control is connected. When the wired/wireless kits are used together, it becomes necessary to set the slaves and remote control.

⑦Wiring-out position and wiring connection (continued)



⑧Control mode switching

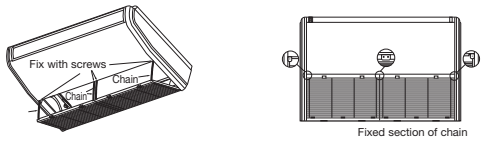
● The control content of indoor units can be switched in following way. (▭ is the default setting)

Switch No.	Control Content	
SW8-4	ON	Indoor unit silent mode
	OFF	Normal operation

⑨Attaching the air return grille

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

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



⑩Check list after installation

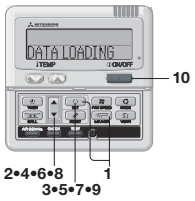
● Check the following items after all installation work completed.

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

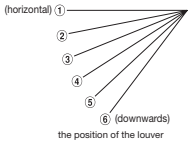
⑪How to set the airflow direction

It is possible to change the movable range of the louver on the air outlet from the wired remote control. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.

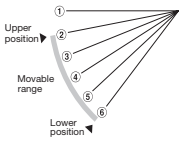
1. Stop the air-conditioner and press SET button and LOUVER button simultaneously for three seconds or more.
   - ●The following is displayed if the number of the indoor units connected to the remote control is one. Go to step 4.
     "DATA LOADING" → "No.1 ▲"
   - ●The following is displayed if the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



2. Press ▲or▼button.(selection of indoor unit) ●Select the indoor unit of which the louver is set.
   [EXAMPLE] "I/U000 ▲" ⇔ "I/U001 ⇕" ⇔ "I/U002 ⇕" ⇔ "I/U003 ⇕"
3. Press SET button.(determination of indoor unit) ●Selected indoor unit is fixed.
   [EXAMPLE] "I/U001" (displayed for two seconds) → "DATA LOADING" → "No.1 ▲"
4. Press▲or▼button.(selection of louver No.) ●Select the louver No. to be set according to the right figure.
   [EXAMPLE] "No.1 ▲" ⇔ "No.2 ⇕" ⇔ "No.3 ⇕" ⇔ "No.4 ▼"
5. Press SET button.(Determination of louver No.)
   ●The louver No. to be set is confirmed and the display shows the upper limit of the movable range.
   [EXAMPLE] If No.1 louver is selected, "No.1 UPPER2 ⇕" ←current upper limit position
6. Press ▲or ▼button.(selection of upper limit position)
   ● Select the upper limit of louver movable range.
   "position 1" is the most horizontal, and "position 6" is the most downward.
   "position --" is to return to the factory setting.
   If you need to change the setting to the default setting, use "position --".
   - "No.1 UPPER1 ▼" (the most horizotal)
   - ⇔ "No.1 UPPER2 ⇕"
   - ⇔ "No.1 UPPER3 ⇕"
   - ⇔ "No.1 UPPER4 ⇕"
   - ⇔ "No.1 UPPER5 ⇕"
   - ⇔ "No.1 UPPER6 ▲" (the most downwards)
   - ⇔ "No.1 UPPER-- ▲" (return to the default setting)



7. Press SET button.(Fixing of the upper limit position)
   ●The upper limit position is fixed and the setting position is displayed for two seconds. Then proceed to lower limit position selection display.
   [EXAMPLE] No.1 UPPER2 (displayed for two seconds) → No.1 LOWER5 ⇕ (shows current setting)
8. Press ▲or ▼button.(Selection of lower limit position)
   ●Select the lower limit position of louver.
   "position 1" is the most horizontal, and "position 6 "is the most downwards.
   "position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".
   - No.1 LOWER1 ▼ (the most horizontal)
   - No.1 LOWER2 ⇕
   - No.1 LOWER3 ⇕
   - No.1 LOWER4 ⇕
   - No.1 LOWER5 ⇕
   - No.1 LOWER6 ⇕ (the most downwards)
   - No.1 LOWER-- ▲ (return to the default setting)
9. Press SET button.(Fixing of the lower limit position)
   ●Upper limit position and lower limit position are fixed, and the set positions are displayed for two seconds, then setting is completed.
   - After the setting is completed, the louver which was set moves from the original position to the lower limit position, and goes back to the original position again. (This operation is not performed if the indoor unit and/or indoor unit fan is in operation.)
     [Example] No.1 U2 L6 (displayed for two seconds) → SET COMPLETE → No.1 ▲



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

Caution

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

ATTENTION

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

When plural remote controls are connected, louver setting operation cannot be set by slave remote control.

1.9.2 Electric wiring work installation

PSB012D999

Electrical wiring work must be performed by an electrician qualified by a local power provider according to the electrical installation technical standards and interior wiring regulations applicable to the installation site.

Security instructions

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

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

  ⚠CAUTION **: Wrong installation might cause serious consequences depending on circumstances. Both mentions the important items to protect your health and safety so strictly follow them by any means.**
- **The meanings of "Marks" used here are as shown on the right:**

  ⃠ Never do it under any circumstances. | ❶ Always do it according to the instruction.
- **Accord with following items. Otherwise, there will be the risks of electric shock and fire caused by overheating or short circuit.**

⚠WARNING

- **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
  Power source with insufficient capacity and improper work can cause electric shock and fire.
- **Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.**
  Loose connections or hold could result in abnormal heat generation or fire.
- **Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.**
  Improper fitting may cause abnormal heat and fire.
- **Use the genuine option parts. And installation should be performed by a specialist.**
  If you install the unit by yourself, it could cause water leakage, electric shock and fire.
- **Do not repair by yourself. And consult with the dealer about repair.**
  Improper repair may cause water leakage, electric shock or fire.
- **Consult the dealer or a specialist about removal of the air-conditioner.**
  Improper installation may cause water leakage, electric shock or fire.
- **Turn off the power source during servicing or inspection work.**
  If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- **Shut off the power before electrical wiring work.**
  It could cause electric shock, unit failure and improper running.

⚠CAUTION

- **Perform earth wiring surely.**
  Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock due to a short circuit.
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.
- **Make sure to install earth leakage breaker on power source line. (countermeasure thing to high harmonics.)**
  Absence of breaker could cause electric shock.
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Do not use any materials other than a fuse of correct capacity where a fuse should be used.**
  Connecting the circuit by wire or copper wire could cause unit failure and fire.
- **Use power source line of correct capacity.**
  Using incorrect capacity one could cause electric leak, abnormal heat generation and fire.
- **Do not mingle solid cord and stranded cord on power source and signal side terminal block.**
  In addition, do not mingle difference capacity solid or stranded cord.
  Inappropriate cord setting could cause loosing screw on terminal block, bad electrical contact, smoke and fire.
- **Do not turn off the power source immediately after stopping the operation.**
  Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown.
- **Do not control the operation with the circuit breaker.**
  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

Control mode switching

- The control content of indoor units can be switched in following way. (▭ is the default setting)

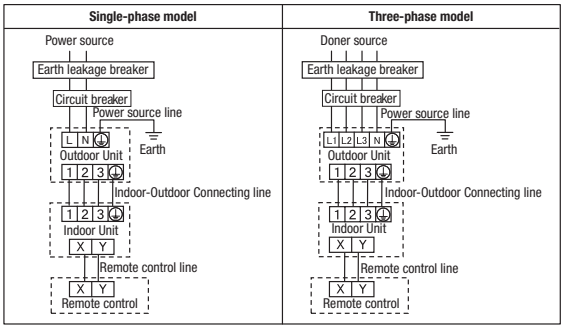
Switch No.	Control Content	
SW2	Indoor unit address (0-Fh)	
SW5-1	Master/Slave Switching (plural /Slave unit Setting)	
SW5-2		
SW6-1～4	Model capacity setting	
SW7－1	ON	Operation check, Drain motor test run
	OFF	Normal operation

①Electrical Wiring Connection

- Electrical wiring work must be performed by an electlician an qualified by a local power provider. These wiring specifications are determined on the assumption that the following instructions are observed:
  ① Do not use cords other than copper ones.
  Do not use any supply line lighter than one specified in parentheses for each type below.
  –braided cord (code designation 60245 IEC 51), if allowed in the relevant part 2;
  –ordinary tough rubber sheathed cord (code designation 60245 IEC 53);
  –flat twin tinsel cord (code designation 60227 IEC 41);
  –ordinary polyvinyl chloride sheathed cord (code designation 60227 IEC 53);
  ② Connect the power source to the outdoor unit.
  ③ Pay extra attention so as not to confuse signal line and power source line connection, because an error in their connection can be burn all the boards at once.
- Screw the line to terminal block without any looseness, certainly.
- Do not turn on the switch of power source, before all of line work is done.
- Provide a dedicated branching circuit and never share a branching circuit with other equipment. If shared, disconnection at the circuit breaker may occur, which can cause secondary damage.
- Use three-core cable as wiring between indoor and outdoor unit. As for detail, refer to "INSTALLATION MANUAL" of outdoor Unit.
- Set earth of D-type.
- Do not add cord in the middle of line (of indoor power source, remote control and signal) route on outside of unit. If connecting point is flooded, it could cause problem as for electric or communication.
  (In the case that it is necessary to set connecting point on the signal line way, perform thorough waterproof measurement.)
- Run the lines (power source, remote control and "between indoor and outdoor unit") upper ceiling through iron pipe or other tube protection to avoid the damage by mouse and so on.
- Keep "remote control line" and "power source line" away from each other on constructing of unit outside.
- Do not connect the power source line [220V/240V/380V/415V] to signal side terminal block. Otherwise, it could cause failure.
- Connection of the line ("Between indoor and outdoor unit", Earth and Remote control)
  ① Remove lid of control box before connect the above lines, and connect the lines to terminal block according to number pointed on label of terminal block.
  In addition, pay enough attention to confirm the number to lines, because there is electrical polarity except earth line.
  Furthermore, connect earth line to earth position of terminal block of power source.
  ② Install earth leakage breaker on power source line. In addition, select the type of breaker for inverter circuit as earth leakage breaker.
  ③ If the function of selected earth leakage breaker is only for earth-fault protection, hand switch (switch itself and type "B" fuse) or circuit breaker is required in series with the earth leakage breaker.
  ④ Install isolator or disconnect switch on the power source wiring in accordance with the local codes and regulations.
  The isolator should be set in the box with key to prevent touching by another person when servicing.

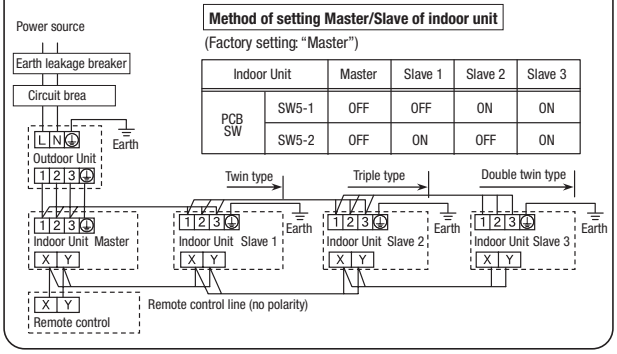
Cable connection for single unit installation

①As for connecting method of power source, select from following connecting patterns. In principle, do not directly connect power souce line to inside unit.
※As for exceptional connecting method of power souce, discuss with the power provider of the country with referring to technical documents, and follow its instruction.
②For cable size and circuit breaker selection, refer to the outdoor unit installation manual.



Cable connection for a V multi configuration installation

①Connect the same pairs number of terminal block "①, ②, and ③"and " Ⓧ and Ⓨ " between master and slave indoor units.
②Do the same address setting of all inside units belong to same refrigerant system by rotary switch SW2 on indoor unit's PCB (Printed circuit board).
③Set slave indoor unit as "slave 1" through "slave 3" by address switch SW5-1, 5-2 on PCB.
④When the AIR CON NO. button on the remote control unit is pressed after turning on the power, an indoor unit's address number will be displayed. Do not fail to confirm that the connected indoor unit's numbers are displayed on the remote control unit by pressing the ▲ or ▼ button.



Method of setting Master/Slave of indoor unit

(Factory setting: "Master")

Indoor Unit		Master	Slave 1	Slave 2	Slave 3
PCB SW	SW5-1	OFF	OFF	ON	ON
	SW5-2	OFF	ON	OFF	ON

②Remote Control, Wiring and functions

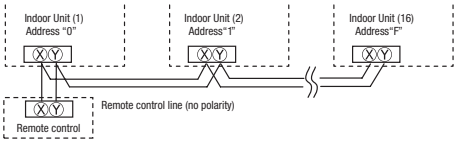
●DO NOT install it on the following places
①Places exposed to direct sunlight
②Places near heat devices
③High humidity places
④Hot surface or cold surface enough to generate condensation
⑤Places exposed to oil mist or steam directly.
⑥Uneven surface

Installation and wiring of remote control

①Install remote control referring to the attached installation manual.
②Wiring of remote control should use 0.3mm^2 ×2 core wires or cables.
The insulation thickness is 1mm or more. (on-site configuration)
③Maximum prolongation of remote control wiring is 600 m.
If the prolongation is over 100m, change to the size below.
But, wiring in the remote control case should be under 0.5mm^2 . Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.
100 - 200m ..... 0.5mm^2 × 2 cores
Under 300m ..... 0.75mm^2 × 2 cores
Under 400m ..... 1.25mm^2 × 2 cores
Under 600m ..... 2.0mm^2 × 2 cores
④Avoid using multi-core cables to prevent malfunction.
⑤Keep remote control line away from earth (frame or any metal of building).
⑥Make sure to connect remote control line to the remote control and terminal block of indoor unit. (No polarity)

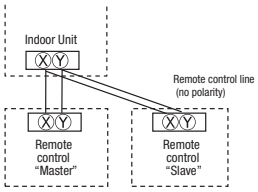
Control plural indoor units by a single remote control.

①A remote control can control plural indoor units (Up to 16).
In above setting, all plural indoor units will operate under same mode and temperature setting.
②Connect all indoor units with 2 core remote control line.
③Set unique remote control communication address from "0" to "F" to each inside unit by the rotary switch SW2 on the indoor unit's PCB.



Master/ slave setting when more than one remote control unit are used

A maximum of two remote control units can be connected to one indoor unit (or one group of indoor units.)
The air-conditioner operation follows the last operation of the remote control regardless of the master/slave setting of it.
Acceptable combination is "two (2) wired remote controls", "one (1) wired remote control and one (1) wireless kit" or "two (2) wireless kits".
Set one to "Master" and the other to "Slave".
Note:The setting "Remote control unit sensor enabled" is only selectable with the master remote control unit in the position where you want to check room temperature.



③Operation and confirmation from remote control

Operation from RC-EX1A	Operation from RC-E5

1 Check the number of units connected in the remote control system.
It checks sub units of twin, triple or W-twin connection.

"Menu"⇒"Next"⇒"Service & Maintenance"⇒ "Input password"⇒"IU address"	Press AIR CON NO button to display the IU address. Press the ▼ or ▲ button and check addresses of connected indoor units one by one.

2 Check if each unit is connected properly in the remote control system.
It cannot check main and sub units of twin, triple or W-twin connection.

When the operation is stopped, "Menu"⇒ "Next"⇒"Service & Maintenance"⇒ "Input password"⇒"IU address"⇒"check run mode"	If AIR CON NO. button is pressed when the operation is stopped, the indoor unit address is displayed. If you select one of addresses for connected indoor units by pressing the ▼ or ▲ button and press the (MODE) button, the unit starts to blow air.

3 Setting main/slave remote controls

"Menu"⇒"Next"⇒"R/C function settings"⇒ "Input password"⇒"Main/Sub of R/C"	Set SW1 to "Slave" for the slave remote control unit.

4 Checking operation data

"Menu"⇒"Next"⇒"Service & Maintenance"⇒ "Input password"⇒"Operation data"	Press the CHECK button. ⇒ "OPER DATA ▼" is displayed. ⇒ Press the (SET) button. ⇒ "DATA LOADING" is displayed. ⇒ Press the "SELECT I/U" button. ⇒ Select one of addresses for connected indoor units by pressing the ▲ or ▼ button. ⇒ Press the (SET) button. ⇒ "DATA LOADING" is displayed. ⇒ Select data by pressing the ▲ or ▼ button.

5 Checking inspection display

"Menu"⇒"Next"⇒"Service & Maintenance"⇒ "Input password"⇒"Inspection display"	Press the CHECK button. ⇒ ▼ button. ⇒ ERR DATA.⇒ Press the (SET) button. ⇒ "DATA LOADING" is displayed. ⇒ Data.

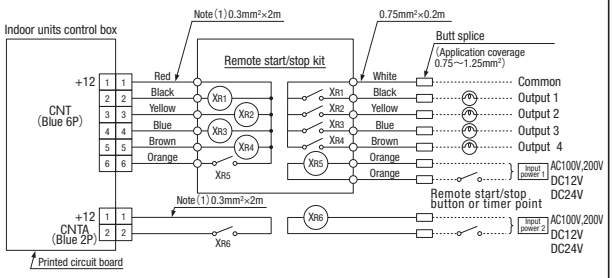
6 Cooling test run from remote control

"Menu"⇒"Next"⇒"Installation settings"⇒ "Input password"⇒"Test run"⇒ "Cooling test run"⇒"Start"	①Start the system by pressing the ON/OFF button. ②Select " (Cool)" with the (MODE) button. ③Press the TEST button for 3 seconds or longer. The screen display will switch "TEST RUN ▼ " ④When the (SET) button is pressed while " TEST RUN ▼" is indicated, a cooling test run will start. The screen display will switch "TEST RUN ".

7 Trial operation of drain pump from remote control

"Menu"⇒"Next"⇒"Installation settings"⇒ "Input password"⇒"Test run"⇒ "Drain pump test run"⇒"Run"	①Press the TEST button for three seconds or longer. The display will change " TEST RUN ▼" ②Press the ▼ button once and cause " DRAIN PUMP " to be displayed. ③When the (SET) button is pressed, a drain pump operation will start. Display: " TO STOP "

④ Function of CNT connector of indoor printed circuit board



Note (1): Do not use the length over 2 meter

●CNT connector (local) vendor model
Connector : Made by molex 5264-06
Terminals : Made by molex 5263 T

●Function

Output 1	Air-conditioner operation output (When the air-conditioner ON: X_{R1} = ON)	
Output 2	Heating output	
Output 3	Thermostat ON output (When the thermostat ON: X_{R3} = ON)	
Output 4	Air-conditioner check ON (When checking air-conditioner: X_{R4} = ON)	
Input	At shipping	X_{R5} OFF ⇒ ON: Air-conditioner operates.
		X_{R5} ON ⇒ OFF: Air-conditioner stops.
	*Functions and controls may vary depending on the switching at site.	
Input 2 (FDT etc.)	At shipping	X_{R6} OFF ⇒ ON: Air-conditioner operates.
		X_{R6} ON ⇒ OFF: Air-conditioner stops.
	*Functions and controls may vary depending on the switching at site.	

* Refer to I/U settings.

●CNTA connector is installed on FDT, etc. Refer to the spec. drawings.
CNTA connector (local) vendor model
Connector : Made by JST XAP02V-1-E
Terminals : Made by JST SXA-01T-P0.6

⑥ Operation and setting from remote control

A: Refer to the instruction manual for RC-EX series.
B: Refer to the installation manual for RC-EX series.
C: Loading a utility software vie Internet
○: Nearly same function setting and operations are possible.
△: Similar function setting and operations are possible.

	Setting & display item	Description	RC-EX series	RC-E5
1. Remote Control network				
1	Control plural indoor units by a single remote control	A remote control can control plural indoor units up to 16 (in one group of remote control network). An address is set to each indoor unit.	○	○
2	Master/slave setting of remote controls	A maximum of two remote controls (include option wireless) can be connected to one indoor unit. Set one to "Master" and the other to "Slave".	B	○
2. TOP screen, Switch manipulation			A	
1	Menu	"Control", "Settings", or "Details" can be selected. (3.-19.)	A	
2	Operation mode	"Cooling", "Heating", "Fan", "Dry" or "Auto" can be set.	A	○
3	Set temp.	"Set temperature" can be set by 0.5℃ interval.	A	○
4	Air flow direction	"Air flow direction". [Individual flap control setting] can be set.	A	○
5	Fan speed	"Fan speed" can be set.	A	○
6	Timer setting	"Timer operation" can be set.	A	○
7	ON/OFF	"On/Off operation of the system" can be done.	A	○
8	High power SW	"High power operation" or "Normal operation" can be selected.	A	
9	Energy-saving SW	"Energy-saving operation" or "Normal operation" can be selected.	A	
3. Energy-saving settin			A	
1	Auto OFF timer [Administrator password]	For preventing the timer from keeping ON, set hours to stop operation automatically with this timer. ・The selectable range of setting time is from 30 to 240 minutes (10minutes interval) ・When setting is "Valid", this timer will activate whenever the ON timer is set.	A	△
2	Peak-cut timer [Administrator password]	Power consumption can be reduced by restricting the maximum capacity. Set the [Start time], the [End time] and the capacity limit % (Peak-cut %). ・4-operation patterns per day can be set at maximum. ・The setting time can be changed by 5-minutes interval. ・The selectable range of capacity limit % (Peak-cut %) is from 0% to 40-80% (20% interval). ・Holiday setting is available.	A	
3	Automatic temp. set back [Administrator password]	After the elapse of the set time period, the current set temp. will be set back to the [Set back temp.] ・The setting can be done in cooling and heating mode respectively. ・The selectable range of the set time is from 20 min. to 120 min. (10 min. interval). ・Set the [Set back temp.] by 1℃ interval.	A	△
4. Individual flap control setting			A	
	Individual flap control setting	The moving range (the positions of upper limit and lower limit) of the flap for individual air outlet port can be set.	A	○
5. Ventilation				
1	External ventilation (In combination with ventilator)	On/Off operation of the external ventilator can be done. ・The settings of [Interlock] with AC (air-conditioner), [Single operation] of ventilator or operation [invalid] of ventilation can be done through [Ventilation settings] in the [Remote control] menu.	A	○
6. Filter sign reset			A	○
1	Filter sign reset	The filter sign can be reset.	B	
2	Setting next cleaning date	The next cleaning date can be set.	A	
7. Initial settings				
1	Clock setting	The current date and time can be set or revised.	A	△
2	Date and time display	[Display] or [Hide] the date and/or time can be set, and the [12H] or [24H] display can be set.	A	
3	Summer time	When select [Valid], the +1hour adjustment of current time can be set.When select [Invalid], the [Summer time] adjustment can be reset.	A	
4	Contrast	The contrast of LCD can be adjusted higher or lower.	A	
5	Backlight	Switching on/off a light can be set and the period of the lighting time can be set within the range of 5sec-90sec (5sec interval).	A	
6	Controller sound	It can set with or without [Controller sound (beep sound)] at touching panel.	A	
8. Timer settings			A	
1	Set On timer by hour	The period of time to start operation after stopping can be set. ・The period of set time can be set within the range of 1hour-12hours (1hr interval). ・The operation mode, set temp and fan speed at starting operation can be set.	A	△
2	Set Off timer by hour	The period of time to stop operation after starting can be set. ・The period of set time can be set within the range of 1hour-12hours (1hr interval).	A	△
3	Set On timer by clock	The clock time to start operation can be set. ・The set clock time can be set by 5 minutes interval. ・[Once (one time only)] or [Everyday] operation can be switched. ・The operation mode, set temp and fan speed at starting operation can be set.	A	△
4	Set Off timer by clock	The clock time to stop operation can be set. ・The set clock time can be set by 5 minutes interval. ・[Once (one time only)] or [Everyday] operation can be switched.	A	△
5	Confirmation of timer settings	Status of timer settings can be seen.	A	
9. Weekly timer				
1	Weekly timer [Administrator password]	On timer and Off timer on weekly basis can be set. ・8-operation patterns per day can be set at a maximum. ・The setting clock time can be set by 5 minutes interval. ・Holiday setting is available. ・The operation mode, set temp and fan speed at starting operation can be set.	A	△ △ △
10. Home leave mode				
1	Home leave mode [Administrator password]	When leaving home for a long period like a vacation leave, the unit can be operated to maintain the room temperature not to be hotter in summer or not to be colder in winter. ・The judgment to switch the operation mode (Cooling⇔Heating) is done by the both factors of the set temp. and outdoor air temp. ・The set temp. and fan speed can be set.	A	

⑥Operation and setting from remote control (continued)

	Setting & display item	Description	RC-EX series	RC-E5
11.	Administrator settings	[Administrator password]	A	
1	Enable/Disable setting	•Enable/Disable setting of operation can be set. [On/Off] [Change set temp.] [Change operation mode] [Change air flow direction] [Individual flap control setting][Fan speed] [High power operation] [Energy-saving operation] [Timer settings] [Weekly timer setting] •Request for administrator password can be set. [Individual flap control setting][Weekly timer][Energy-saving setting][Home leave mode][Administrator settings]	A	△
2	Silent mode timer	The period of time to operate the outdoor unit by prioritizing the quietness can be set. •The [Start time] and the [End time] for operating outdoor unit in silent mode can be set. •The period of the operation time can be set once a day by 5 minutes interval.	A	△
3	Setting temp. range	The upper/lower limit of indoor temp. setting range can be set. •The limitation of indoor temp. setting range can be set for each operation mode in cooling and heating.	A	△
4	Temp. increment setting	The temp increment setting can be changed by 0.5℃ or 1.0℃.	A	
5	RC display setting	Register [Room name] [Name of I/U] Display [indoor temp.] or not. Display [inspection code] or not. Display [Heating stand-by] [Defrost operation] [Auto cooling/heating] or not	A	 ○ △ ○
6	Change administrator password	The administrator password can be changed. (Default setting is "0000") The administrator password can be reset.	A B	
12.	Installer settings	[Service password]	B	
1	Installation date	The [Installation date] can be registered. •When registering the [Installation date], the [Next service date] is displayed automatically. (For changing the [Next service date]. please refer the item of [Service & Maintenance].)	B	
2	Service contact	The [Service contact] can be registered and can be displayed on the RC. •The [Contact company] can be registered within 10 characters. •The [Contact phone] can be registered within 13 digits.	B	
3	Test run	On/Off operation of the test run can be done.	B	
	Cooling test run	The [Cooling test run] can be done at 5℃ of set temp. for 30 minutes.		○
	Drain pump test run	Only the drain pump can be operated.		○
	Compressor Hz fixed operation	The [Test run] operation can be done with fixed compressor Hz set by installer.		○
4	Static pressure adjustment	In case of combination with only the ducted indoor unit which has a function of static pressure adjustment, the static pressure is adjustable.	B	
5	Change auto-address	The set address of each indoor unit decided by auto-address setting method can be changed to any other address. (For multiple KX units only)	B	△
6	Address setting of Main IU	Main indoor unit address can be set. •Only the Main indoor unit can change operation mode and the Sub indoor units dominated by the Main indoor unit shall follow. •The Main indoor unit can domain 10 indoor units at a maximum.	B	△
13.	RC function settings	[Service password]	B	
1	Main/Sub RC setting	The setting of [Main/Sub RC] can be changed.	B	○
2	RC sensor	The offset value of [RC sensor] sensing temp. can be set respectively in heating and cooling.	B	○
3	9 RC sensor adjustment	The offset value of [RC sensor] sensing temp. can be set respectively in heating and cooling. •The setting range of offset value is ±3℃ both in cooling and heating.	B	△
4	12 Operation mode	The [Valid/Invalid] setting of [Auto][Cooling][Heating] and [Dry] can be done respectively.	B	○
5	13 Fan speed	The setting of [Fan speed] can be done from following patterns.•1-speed, 2-speeds (Hi-Me), 2-speeds (Hi-Lo), 3-speeds, 4-speeds.	B	○
6	14 External input	The applicable range ([Individual] or [All units]) of CnT input to the multiple indoor units connected in one control system. •[Individual] : Only the unit received CnT input signal.•[All units] : All the units connected to one control system received CnT input signal.	B	○
7	15 Ventilation setting	The setting of [Invalid] operation of ventilator, [Interlock] with AC or [Independent] of ventilator can be selected. •When setting [Interlock], the operation of external ventilator is interlocked with the operation of AC •When setting [Independent], only the operation of external ventilator is available.	B	○
8	16 Flap control	The [Flap control] method can be switched to[Stop at fixed position] or [Stop at any position]•[Stop at fixed position] : Stop the flap at a certain position among the designated 4 positions.•[Stop at any position] : Stop the flap at any arbitrary position just after the stopping command from RC was sent.	B	○
9	17 Auto-restart	The operation control method after recovery of power blackout happened during operation can be set.	B	○
10	18 Auto temp. setting	[Valid] or [Invalid] of [Auto temp. setting] can be selected.	B	
11	19 Auto fan speed setting	[Valid] or [Invalid] of [Auto fan speed setting] can be selected.	B	
14.	I/U settings	[Service password]	B	
1	High ceiling	The fan tap of indoor fan can be changed. •[Standard] [High ceiling 1] [High ceiling 2] can be selected.	B	○
2	Filter sign	The setting of filter sign display timer can be done from following patterns.	B	○
3	External input 1	The content of control by external input can be changed.•The selectable contents of control are [On/Off] [Permission/Prohibition] [Cooling/heating] [Emergency stop]	B	○
4	External input 1 signal	The type of external input signal ([Level input]/[Pulse input]) can be changed.	B	○
5	External input 2	•The selectable contents of control are [On/Off] [Permission/Prohibition] [Cooling/heating] [Emergency stop]	B	
6	External input 2 signal	The type of external input signal ([Level input]/[Pulse input]) can be changed.	B	
7	Heating thermo-off temp. adjust.	The judgment temp. of heating thermo-off can be adjusted within the range from 0 to +3℃ (1℃ interval)	B	△
8	Return air sensor adjust.	The sensing temp. of return air temp. sensor built in the indoor unit can be adjusted within the range of ±2℃.	B	△
9	Fan control in heating thermo OFF	The fan control method at heating thermo-off can be changed.•The selectable fan control methods are [Low] [Set fan speed] [Intermittent] [Stop].	B	○
10	Anti-frost temp.	The judgment temp. of anti-frost control for the indoor unit in cooling can be changed to [Temp. High] or [Temp. Low].	B	○
11	Anti-frost control	When the anti-frost control of indoor unit in cooling is activated, the fan speed can be changed.	B	○
12	Drain pump operation	In any operation mode in addition to cooling and dry mode, the setting of drain pump operation can be done.	B	○
13	Residual fan operation in cooling	The time period of residual fan operation after stopping or thermo-off in cooling mode can be set.	B	○
14	Residual fan operation in heating	The time period of residual fan operation after stopping or thermo-off in heating mode can be set.	B	○
15	Intermittent fan operation in heating	The fan operation rule following the residual fan operation after stopping or thermo-off in heating mode can be set.	B	○
16	Fan circulator operation	In case that the fan is operated as the circulator, the fan control rule can be set.	B	
17	Control pressure adjust. (For OA processing unit only)	When only the OA processing units are operated, control pressure value can be changed.	B	○
18	Auto operation mode	The [Auto rule selection] for switching the operation mode automatically can be selected from 3 patterns.	B	
19	Thermo. rule setting	When selecting [Outdoor air temp. control], the judgment temp can be offset by outdoor temp..	B	
20	Auto fan speed control	Under the [Auto fan speed control] mode, the switching range of fan speed can be selected from following 2 patterns [Auto 1] [Auto 2]. •[Auto 1] : Hi ⇔Me⇔Lo•[Auto 2] : P-hi⇔Hi⇔Me⇔Lo	B	
15.	Service & Maintenance	[Service password]	B	
1	IU address No.	Max. 16 indoor units can be connected to one remote control, and all address No. of the connected indoor units can be displayed. •The indoor unit conforming to the address No. can be identified by selecting the address No. and tapping [Check] to operate the indoor fan.	B	○
2	Next service date	The [Next service date] can be registered.•The [Next service date] and [Service contact] is displayed on the [Periodical check] message screen.	AB	
3	Operation data	Total 39 items of [Operation data] for indoor unit and outdoor unit can be displayed.	B	○
4	Error history	[Date and time of error occurred] [I/U address] [Error code] for Max. 16 latest cases of error history can be displayed.	B	△
	Display anomaly data	The operation data just before the latest error stop can be displayed.	B	
	Reset periodical check	The timer for the periodical check can be reset.	B	○
5	Saving I/U settings	The I/U settings memorized in the indoor PCB connected to the remote control can be saved in the memory of the remote control.	B	
6	Special settings	[Erase I/U address] [CPU reset] [Initializing] [Touch panel calibration]	B	△
16.	Inspection		A	△
	Confirmation of Inspection	The address No, of anomalous indoor/outdoor unit and error code are displayed.		
17.	PC connection		C	
	USB connection	Weekly timer setting and etc., can be set from PC.		

1.9.3 Installation of wired remote control (Option)

(1) Model RC-EX1A

PJZ012D077 B

eco touch REMOTE CONTROL RC-EX1A

INSTALLATION MANUAL

1 . Safety precautions

This installation manual describes the installation methods and precautions related to the remote control. Use this manual together with the user's manuals for the indoor unit, outdoor unit and other option equipment. Please read this manual carefully before starting the installation work to install the unit properly.

Safety precautions

● Please read this manual carefully before starting installation work to install the unit properly.
Every one of the followings is important information to be observed strictly.

⚠WARNING	Failure to follow these instructions properly may result in serious consequences such as death, severe injury, etc..
⚠CAUTION	Failure to follow these instructions properly may cause injury or property damage.

It could have serious consequences depending on the circumstances.

● The following pictograms are used in the text.

⃠	Never do.	❗	Always follow the instructions given.

● Keep this manual at a safe place where you can consult with whenever necessary. Show this manual to installers when moving or repairing the unit. When the ownership of the unit is transferred, the "Installation Manual" should be given to a new owner.

⚠WARNING

Ask a professional contractor to carry out installation work according to the installation manual.
Improper installation work may result in electric shocks, fire or break-down.

Shut OFF the main power source before starting electrical work.
Otherwise, it could result in electric shocks, break-down or malfunction.

Do not install the unit in appropriate environment or where inflammable gas could generate, flow in, accumulate or leak.
If the unit is used at places where air contains dense oil mist, steam, organic solvent vapor, corrosive gas (ammonium, sulfuric compound, acid, etc) or where acidic or alkaline solution, special spray, etc. are used, it could cause electric shocks, break-down, smoke or fire as a result of significant deterioration of its performance or corrosion.

Do not install the unit where water vapor is generated excessively or condensation occurs.
It could cause electric shocks, fire or break-down.

Use the specified cables for wiring, and connect them securely with care to protect electronic parts from external forces.
Improper connections or fixing could cause heat generation, fire, etc.

Seal the inlet hole for remote control cable with putty.
If dew, water, insect, etc. enters through the hole, it could cause electric shocks, fire or break-down.

When installing the unit at a hospital, telecommunication facility, etc., take measures to suppress electric noises.

It could cause malfunction or break-down due to hazardous effects on the inverter, private power generator, high frequency medical equipment, radio communication equipment, etc.
The influences transmitted from the remote control to medical or communication equipment could disrupt medical activities, video broadcasting or cause noise interference.

⚠ CAUTION

Do not install the remote control at following places.

It could cause break-down or deformation of remote control.

(1) Where it is exposed to direct sunlight
(2) Near the equipment to generate heat
(3) Where the surface is not flat

Do not leave the remote control with its upper case removed.

When the upper case is removed, put it in a packing box or packing bag to protect internal PCBs or other parts from dust, moisture, etc.

2 . Accessories & prepare on site

Accessories	R/C main unit, wood screw (ø3.5 x 16) 2 pcs User's Manual, Installation Manual

Parts procured at site

Item name	Q'ty	Remark
Switch box For 1 piece or 2 pieces (JIS C 8340 or equivalent)	1	These are not required when installing directly on a wall.
Thin wall steel pipe for electric appliance (JIS C 8305 or equivalent)	As required	
Lock nut, bushing (JIS C 8330 or equivalent)	As required	
Lacing (JIS C 8425 or equivalent)	As required	Necessary to run R/C cable on the wall.
Putty	Suitably	For sealing gaps
Molly anchor	As required	
R/C cable (0.3 mm^2 x 2 pcs)	As required	See right table when longer than 100 m

When the cable length is longer than 100 m, the max size for wires used in the R/C case is 0.5 mm^2 . Connect them to wires of larger size near the outside of R/C. When wires are connected, take measures to prevent water, etc. from entering inside.

< 200 m	0.5 mm^2 x 2-core
< 300 m	0.75 mm^2 x 2-core
< 400 m	1.25 mm^2 x 2-core
< 600 m	2.0 mm^2 x 2-core

3. Remote control installation procedure

Determine where to install the remote control

Installation "Using a switch box"
"Installed directly on a wall"
Wiring direction "Backward"
"Upper center", "Upper left"

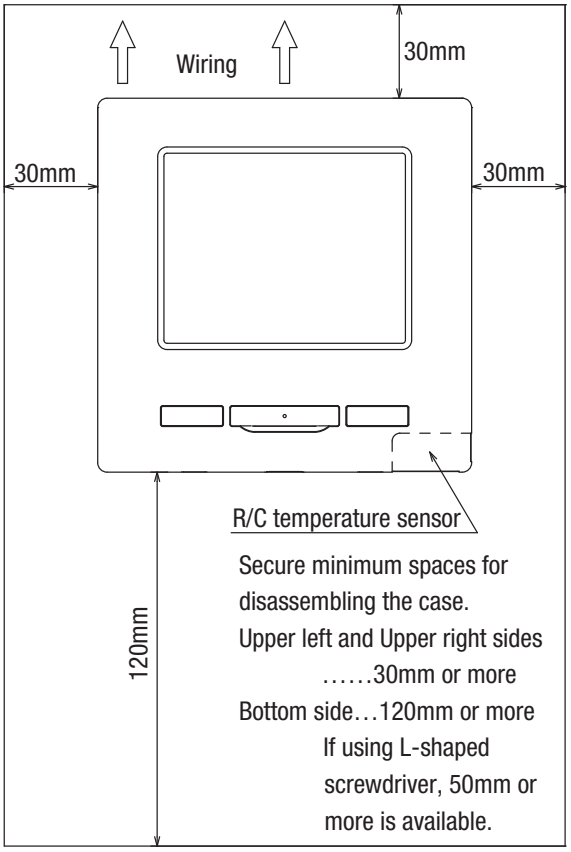
Cautions for selecting installation place

(1) Installation surface must be flat and sufficiently strong. R/C case must not be deformed.

(2) Where the R/C can detect room temperatures accurately. This is a must when detecting room temperatures with the temperature sensor of R/C.
- · Install the R/C where it can detect the average temperature in the room.
- · Install the R/C separated from a heat source sufficiently.
- · Install the R/C where it will not be influenced by the turbulence of air when the door is opened or closed.

Select a place where the R/C is not exposed to direct sunlight or blown by winds from the air-conditioner or temperatures on the wall surface will not deviate largely from actual room temperature.

Installation space



Request

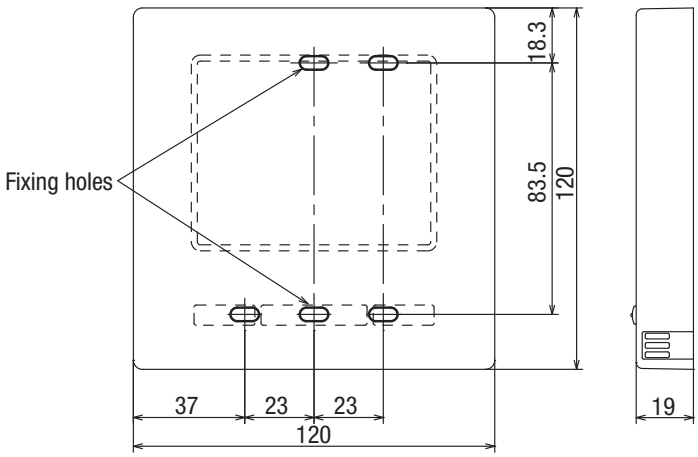
Be sure not to install R/C at a place where temperatures around the installation surface of R/C may differ largely from actual room temperature.
Difference between detected temperature and actual room temperature could cause troubles.
The correction for detected temperature by the R/C cannot offset such temperature difference because it corrects the detected temperatures itself.

Request

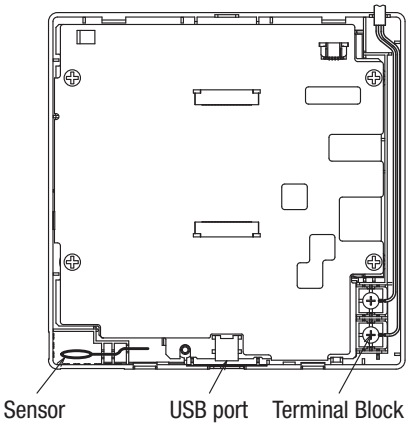
Do not install the R/C at a place where it is exposed to direct sunlight or where surrounding air temperature exceeds 40°C or drops below 0°C.
It could cause discoloration, deformation, malfunction or breakdown.

Installation procedure

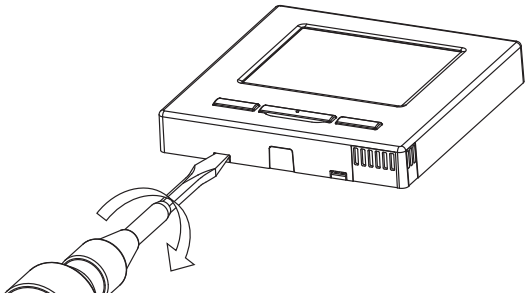
Dimensions (Viewed from front)



PCB side (Viewed from rear)



① To remove the upper case from the bottom cases of R/C
· Insert the tip of flat head screwdriver or the like in the recess at the lower part of R/C and twist it lightly to remove.

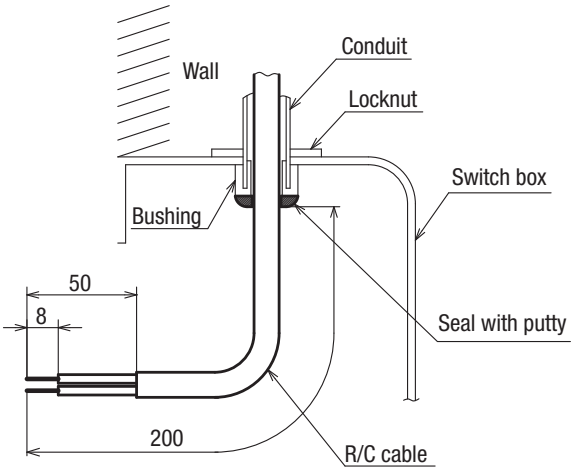


Take care to protect the removed upper case from moisture or dust.

② Connect wires from X and Y terminals of R/C to X and Y terminals of indoor unit.
R/C wires (X, Y) have no polarity.

In case of embedding wiring (When the wiring is retrieved "Backward")

③ Embed the switch box and the R/C wires beforehand.

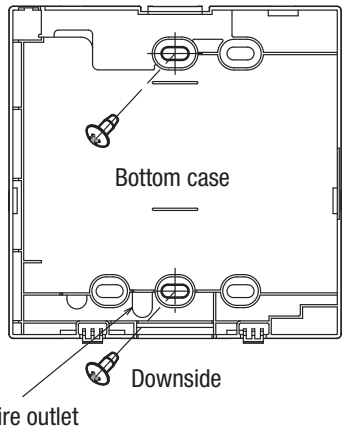


Seal the inlet hole for the R/C wiring with putty.

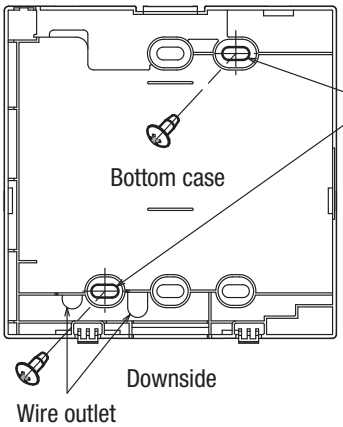
● If dust or insect enters, it could cause electric shocks, fire or breakdown.

④ When wires are passed through the bottom case, fix the bottom case at 2 places on the switch box.

Switch box for 1 pc



Switch box for 2 pcs



Cut out the thin wall part at the screw mounting section with a knife or the like before tightening the screw.

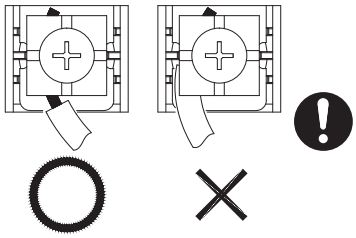
⑤ When fixing the bottom case diagonally at 2 places, cut out the thin wall section on the case.

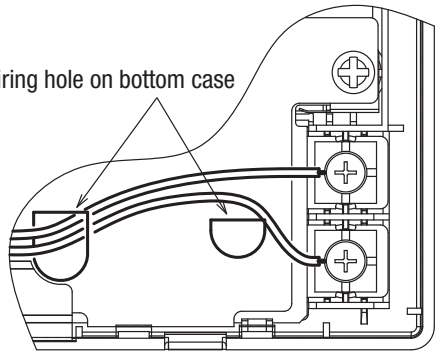
⑥ Fix wires such that the wires will run around the terminal screws on the top case of R/C.

Cautions for wire connection

Use wires of no larger than 0.5 mm^2 for wiring running through the remote control case, Take care not to pinch the sheath.

Tighten by hand (0.7 N·m or less) the wire connection. If the wire is connected using an electric driver, it may cause failure or deformation.

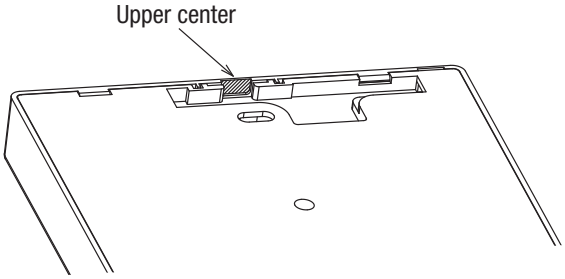




⑦ Install the upper case with care not to pinch wires of R/C.

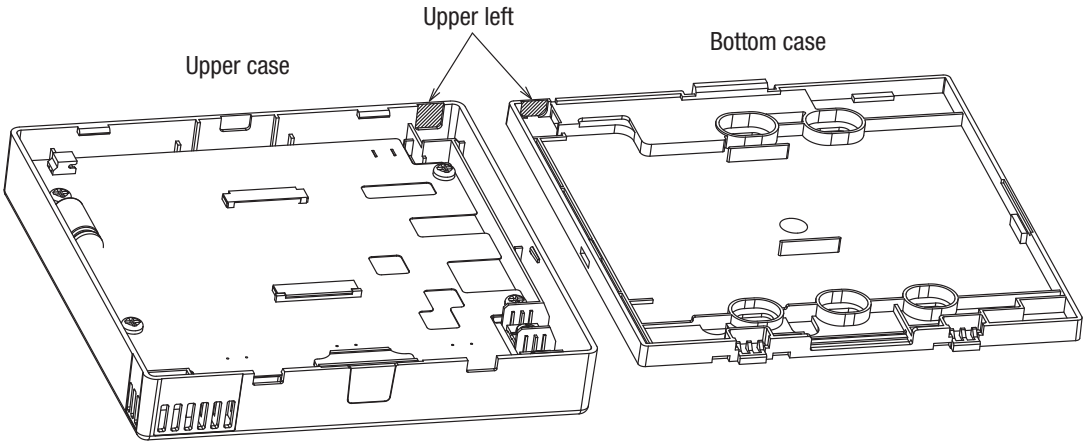
In case of exposing wiring (When the wiring is taken out from the “upper center” or “upper left” of R/C)

③ Cut out the thin wall sections on the cases for the size of wire.



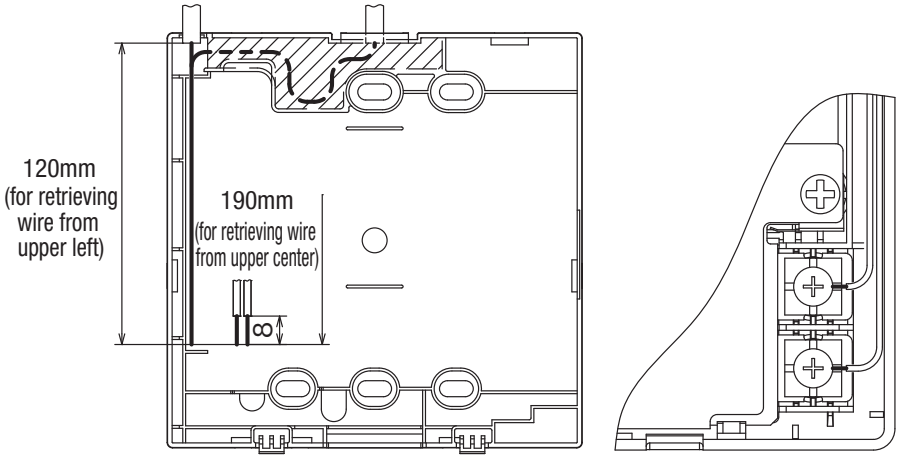
When taking the wiring out from the upper center, open a hole before separating the upper and bottom cases. This will reduce risk of damaging the PCB and facilitate subsequent work.

When taking the wiring out from the upper left, take care not to damage the PCB and not to leave any chips of cut thin wall inside.



If the hole is cut too large, moisture, dust or insects may enter.
Seal gaps with putty or the like.

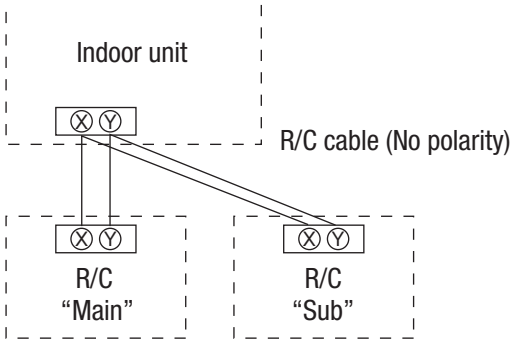
④ Fix the bottom R/C case on a flat surface with wood screws.
⑤ In case of the upper center, pass the wiring behind the bottom case. (Hatched section)
⑥ Fix wires such that the wires will run around the terminal screw of the top case of R/C.
⑦ Install the top case with care not to pinch wires of R/C.



Main/Sub setting when more than one remote control are used

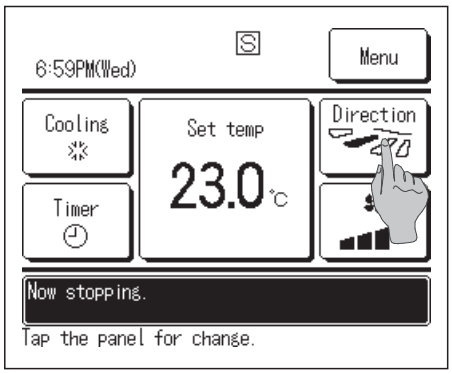
Main-Sub setting for use of two or more R/C

Up to two units of R/C can be used at the maximum for 1 indoor unit or 1 group.
One is main R/C and the other is sub R/C.
Operating range is different depending on the main or sub R/C.



Set the "Main" and "Sub" as described at Section 7 of installtion manual attached to the remote control.

R/C function	Main	Sub
Run/Stop, setting temperature, fan speed and flap direction operations	○	○
High power and energy-saving operations	○	○
Energy-saving setting	○	—
R/C sensor	○	—
Test run menu operation	○	—
Room temperature range setting	○	—
Indoor unit settings	○	—
Individual flap control	○	—
Operation data display	○	—
Error history display	○	○



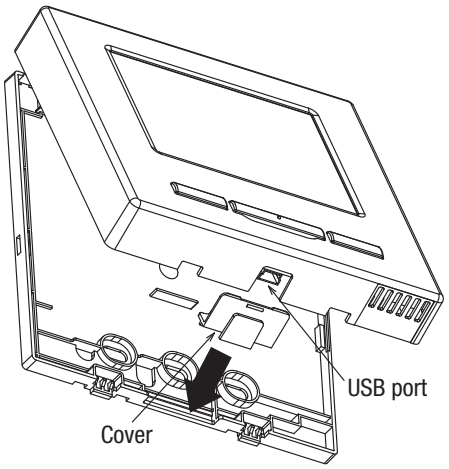
Note: Connection to personal computer

It can be set from a personal computer via the USB port (mini-B).
Connect after removing the cover for USB port of upper case.

Replace the cover after use.
If dust, insect, etc. enters, it could cause electric shocks or breakdown.

Special software is necessary for the connection.
For details, view the web site or refer to the engineering data.

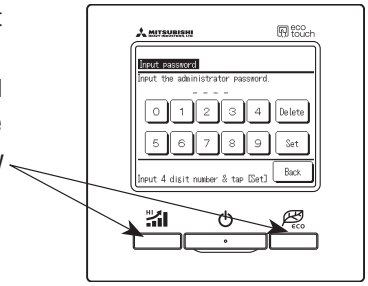
Do not connect to a personal computer without using the special software.
Do not connect the personal computer to the USB simultaneously with other USB devices.
It could cause malfunction or breakdown of R/C or personal computer.



Note: Initializing of password

Administrator password (for daily setting items) and service password (for installation, test run and maintenance) are used.

- ○ The administrator password at factory default is “0000”. This setting can be changed (Refer to User's Manual). When the administrator password is forgotten, it can be initialized, if the [High power] and the [Energy-saving] buttons are pushed simultaneously for 5 seconds on the administrator password input screen.
- ○ Service password is “9999”, which cannot be changed.
  When the administrator password is input, the service password is also accepted.



(2) Model RC-E5

PJA012D730

Read together with indoor unit's installation manual.

⚠WARNING

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

⚠CAUTION

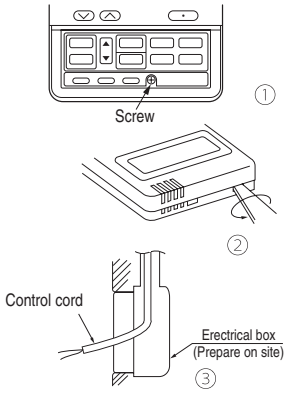
- DO NOT install the remote control at the following places in order to avoid malfunction.
  (1) Places exposed to direct sunlight
  (2) Places near heat devices
  (3) High humidity places
  (4) Hot surface or cold surface enough to generate condensation
  (5) Places exposed to oil mist or steam directly
  (6) Uneven surface
- DO NOT leave the remote control without the upper case.
  In case the upper cace needs to be detached, protect the remote control with a packaging box or bag in order to keep it away from water and dust.

Accessories	Remote control, wood screw (ø3.5×16) 2 pieces
Prepare on site	Remote control cord (2 cores) the insulation thickness in 1mm or more. [In case of embedding cord] Erectrical box, M4 screw (2 pieces) [In case of exposing cord] Cord clamp (if needed)

Installation procedure

① Open the cover of remote control, and remove the screw under the buttons without fail.

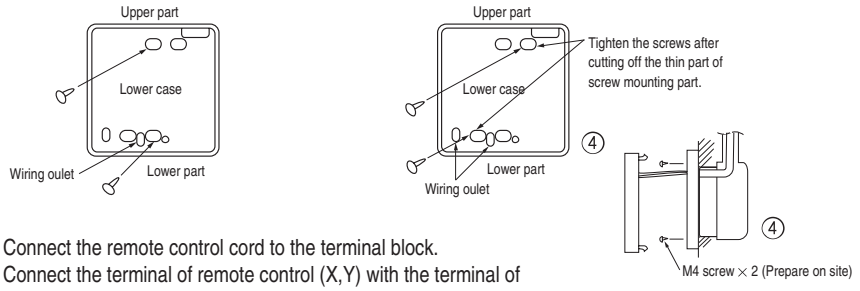
② Remove the upper case of remote control.
Insert a flat-blade screwdriver into the dented part of the upper part of the remote control, and wrench slightly.



[In case of embedding cord]

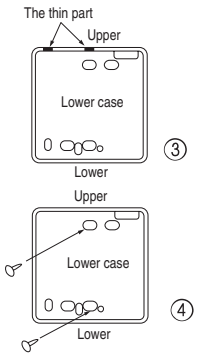
③ Embed the erectrical box and remote control cord beforehand.

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



⑤ Connect the remote control cord to the terminal block.
Connect the terminal of remote control (X,Y) with the terminal of indoor unit (X,Y). (X and Y are no polarity)

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

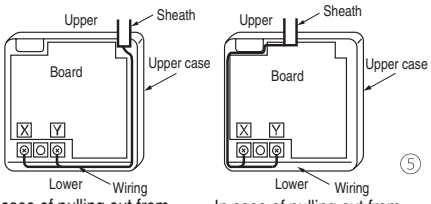


[In case of exposing cord]

③ You can pull out the remote control cord from left upper part or center upper part.
Cut off the upper thin part of remote control lower case with a nipper or knife, and grind burrs with a file etc.

④ Install the lower case to the flat wall with attached two wooden screws.

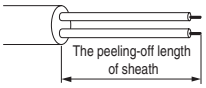
⑤ Connect the remote control cord to the terminal block.
Connect the terminal of remote control (X,Y) with the terminal of indoor unit (X,Y).
(X and Y are no polarity)
Wiring route is as shown in the right diagram depending on the pulling out direction.



In case of pulling out from upper left
In case of pulling out from upper center

The wiring inside the remote control case should be within 0.3mm^2 (recommended) to 0.5mm^2.
The sheath should be peeled off inside the remote control case.
The peeling-off length of each wire is as below.

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



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

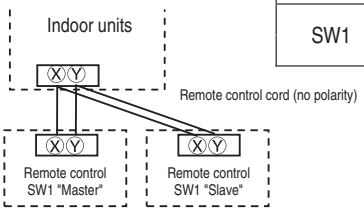
Installation and wiring of remote control

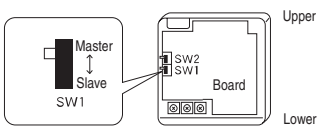
① Wiring of remote control should use 0.3mm^2 × 2 core wires or cables. (on-site configuration)
② Maximum prolongation of remote control wiring is 600 m.
If the prolongation is over 100m, change to the size below.
But, wiring in the remote control case should be under 0.5mm^2 . Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.
100 - 200m·····0.5mm^2 × 2 cores
Under 300m·····0.75mm^2 × 2 cores
Under 400m·····1.25mm^2 × 2 cores
Under 600m·····2.0mm^2 × 2 cores

Master/ slave setting when more than one remote controls are used

A maximum of two remote controls can be connected to one indoor unit (or one group of indoor units.)

Switch	Setting	Contents
SW1	M	Master remote control
	S	Slave remote control





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

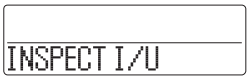
The indication when power source is supplied

When power source is turned on, the following is displayed on the remote control until the communication between the remote control and indoor unit settled.
Master remote control : "WAIT M"
Slave remote control : "WAIT S"

At the same time, a mark or a number will be displayed for two seconds first.
This is the software's administration number of the remote control, not an error cord.

※ The left mark is only an example. Other marks may appear.

When remote control cannot communicate with the indoor unit for half an hour, the below indication will appear.
Check wiring of the indoor unit and the outdoor unit etc.



The range of temperature setting

When shipped, the range of set temperature differs depending on the operation mode as below.

Heating : 16~30˚C (55~86˚F)

Except heating (cooling, fan, dry, automatic) : 18~30˚C (62~86˚F)

●Upper limit and lower limit of set temperature can be changed with remote control.

Upper limit setting: valid during heating operation. Possible to set in the range of 20 to 30˚C (68 to 86˚F).

Lower limit setting: valid except heating (automatic, cooling, fan, dry) Possible to set in the range of 18 to 26°C (62 to 79°F).

When you set upper and lower limit by this function, control as below.

1. When ⑫TEMP RANGE SET, remote control function of function setting mode is "INDN CHANGE" (factory setting),
   【If upper limit value is set】
   During heating, you cannot set the value exceeding the upper limit.

   【If lower limit value is set】
   During operation mode except heating, you cannot set the value below the lower limit.

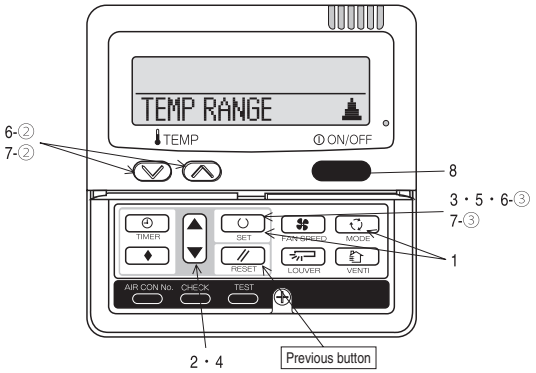
2. When ⑫TEMP RANGE SET, remote control function of function setting mode is "NO INDN CHANGE"
   【If upper limit value is set】
   During heating, even if the value exceeding the upper limit is set, upper limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

   【If lower limit value is set】
   During except heating, even if the value lower than the lower limit is set, lower limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

●How to set upper and lower limit value

1. Stop the air-conditioner, and press (SET) and (MODE) button at the same time for over three seconds.
   The indication changes to "FUNCTION SET ▼".
2. Press ▼ button once, and change to the "TEMP RANGE ▲ " indication.
3. Press (SET) button, and enter the temperature range setting mode.
4. Select "UPPER LIMIT ▼" or "LOWER LIMIT ▲" by using ▲ ▼ button.
5. Press (SET) button to fix.
6. When "UPPER LIMIT ▼" is selected (valid during heating)
   ① Indication: " ∨ ∧ SET UP" → "UPPER 30˚C ∨"
   ② Select the upper limit value with temperature setting button ∨ ∧. Indication example: "UPPER 26˚C ∨ ∧" (blinking)
   ③ Press (SET) button to fix. Indication example: "UPPER 26˚C" (Displayed for two seconds)
   After the fixed upper limit value displayed for two seconds, the indication will return to "UPPER LIMIT ▼".
7. When "LOWER LIMIT ▲" is selected (valid during cooling, dry, fan, automatic)
   ① Indication: " ∨ ∧ SET UP" → "LOWER 18˚C ∧"
   ② Select the lower limit value with temperature setting button ∨ ∧. Indication example: "LOWER 24˚C ∨ ∧" (blinking)
   ③ Press (SET) button to fix. Indication for example: "LOWER 24˚C" (Displayed for two seconds)
   After the fixed lower limit value displayed for two seconds, the indication will return to "LOWER LIMIT ▼".
8. Press ON/OFF button to finish.

- It is possible to finish by pressing ON/OFF button on the way, but unfinished change of setting is unavailable.
- During setting, if you press (RESET) button, you return to the previous screen.



The functional setting

●The initial function setting for typical using is performed automatically by the indoor unit connected, when remote control and indoor unit are connected.
As long as they are used in a typical manner, there wiil be no need to change the initial settings.
If you would like to change the initial setting marked "○", set your desired setting as for the selected item.
The procedure of functional setting is shown as the following diagram.

[Flow of function setting]

Start : Stop air-conditioner and press "○" (SET) and "⟲" (MODE) buttons at the same time for over three seconds.
Finalize : Press "○" (SET) button.
Reset : Press "⊘" (RESET) button.
Select : Press ▲ ▼ button.
End : Press ON/OFF button.
It is possible to finish above setting on the way, and unfinished change of setting is unavailable.
"○" : Initial settings
"※" : Automatic criterion

Record and keep the setting

Consult the technical data etc. for each control details

Stop air-conditioner and press ○ (SET) + ⟲ (MODE) buttons at the same time for over three seconds.

FUNCTION SET ▼

To next page

FUNCTION ▼ (Remote control function)

Function	setting		
01 ESP SET			
	ESP VALID	○	Validate setting of ESP:External Static Pressure
	ESP INVALID		Invalidate setting of ESP
02 AUTO RUN SET			
	AUTO RUN ON	※	
	AUTO RUN OFF	※	Automatical operation is impossible
03 TEMP SW			
	VALID	○	
	INVALID		Temperature setting button is not working
04 MODE SW			
	VALID	○	
	INVALID		Mode button is not working
05 ON/OFF SW			
	VALID	○	
	INVALID		On/Off button is not working
06 FAN SPEED SW			
	VALID	※	
	INVALID	※	Fan speed button is not working
07 LOUVER SW			
	VALID	※	
	INVALID	※	Louver button is not working
08 TIMER SW			
	VALID	○	
	INVALID		Timer button is not working
09 SENSOR SET			
	SENSOR OFF	○	Remote thermistor is not working.
	SENSOR ON		Remote thermistor is working.
	SENSOR +3.0℃		Remote thermistor is working, and to be set for producing +3.0˚C increase in temperature.
	SENSOR +2.0℃		Remote thermistor is working, and to be set for producing +2.0˚C increase in temperature.
	SENSOR +1.0℃		Remote thermistor is working, and to be set for producing +1.0˚C increase in temperature.
	SENSOR -1.0℃		Remote thermistor is working, and to be set for producing -1.0˚C increase in temperature.
	SENSOR -2.0℃		Remote thermistor is working, and to be set for producing -2.0˚C increase in temperature.
	SENSOR -3.0℃		Remote thermistor is working, and to be set for producing -3.0˚C increase in temperature.
10 AUTO RESTART			
	INVALID	○	
	VALID		
11 VENT LINK SET			
	NO VENT	○	
	VENT LINK		In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), the operation of ventilation device is linked with the operation of indoor unit.
	NO VENT LINK		In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), you can operate /stop the ventilation device independently by ⟲ (VENT) button.
12 TEMP RANGE SET			
	INDN CHANGE	○	If you change the range of set temperature, the indication of set temperature will vary following the control.
	NO INDN CHANGE		If you change the range of set temperature, the indication of set temperature will not vary following the control, and keep the set temperature.
13 I/U FAN			
	HI-MID-LO	※	Airflow of fan becomes of ※- ※- ※ or the four speed of ※- ※- ※- ※.
	HI-LO	※	Airflow of fan becomes of ※- ※.
	HI-MID		Airflow of fan becomes of ※- ※.
	1 FAN SPEED	※	Airflow of fan is fixed at one speed.
14 POSITION			If you change the remote control function "14 POSITION", you must change the indoor function "04 POSITION" accordingly.
	4POSITION STOP	○	You can select the louver stop position in the four.
	FREE STOP		The louver can stop at any position.
15 MODEL TYPE			
	HEAT PUMP	※	
	COOLING ONLY	※	
16 EXTERNAL CONTROL SET			
	INDIVIDUAL	○	If you input signal into CNT of the indoor printed circuit board from external, the indoor unit will be operated independently according to the input from external.
	FOR ALL UNITS		If you input into CNT of the indoor printed circuit board from external, all units which connect to the same remote control are operated according to the input from external.
17 ROOM TEMP INDICATION SET			
	INDICATION OFF	○	
	INDICATION ON		In normal working indication, indoor unit temperature is indicated instead of airflow. (Only the master remote control can be indicated.)
18 INDICATION			
	INDICATION ON	○	
	INDICATION OFF		Heating preparation indication should not be indicated.
19 ℃/℉ SET			
	℃	○	Temperature indication is by degree C
	℉		Temperature indication is by degree F

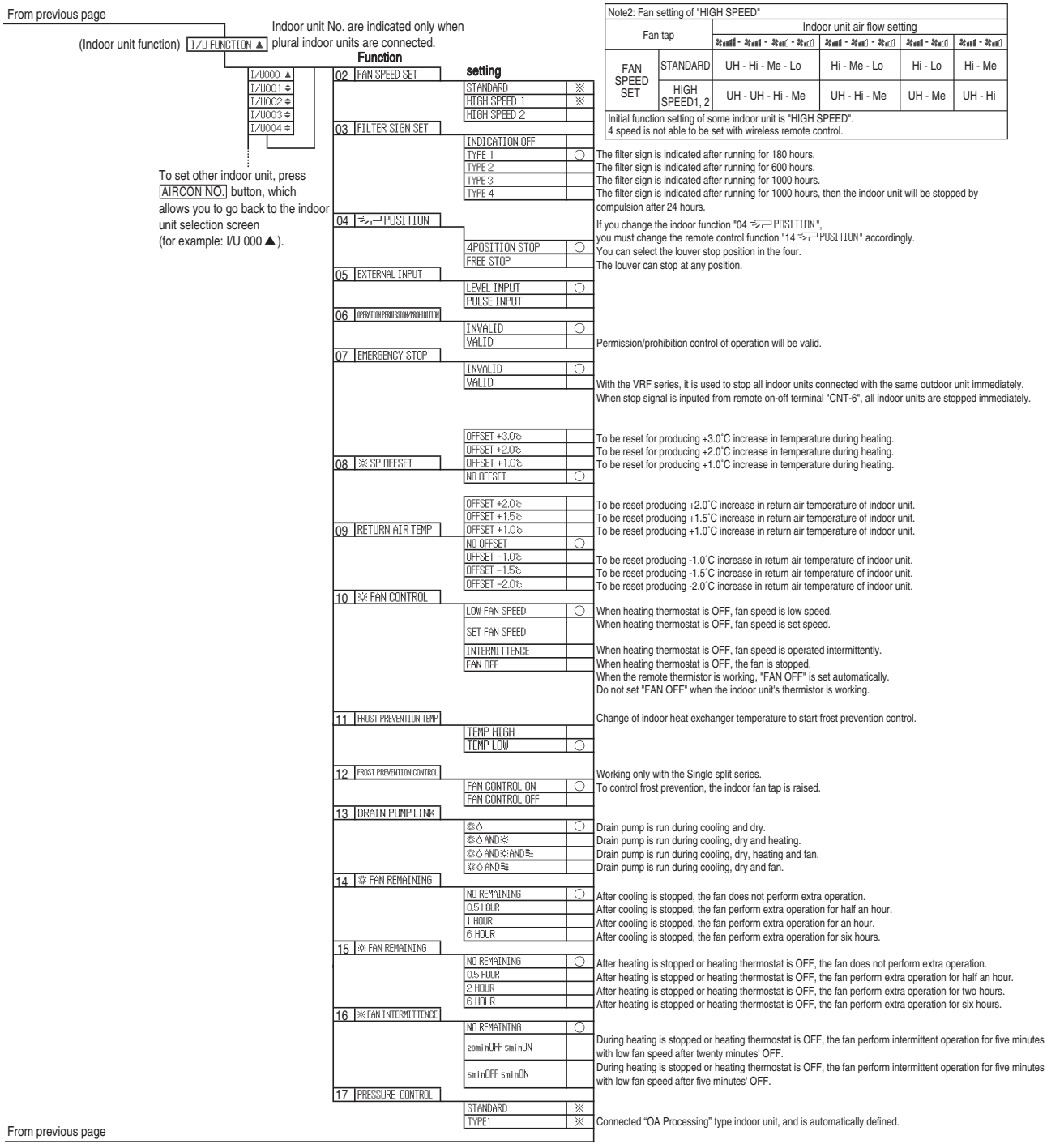
To next page

ON/OFF button (finished)

Note 1: The initial setting marked "※" is decided by connected indoor and outdoor unit, and is automatically defined as following table.

Function No.	Item	Default	Model
Remote control function02	AUTO RUN SET	AUTO RUN ON	"Auto-RUN" mode selectable indoor unit.
		AUTO RUN OFF	Indoor unit without "Auto-RUN" mode
Remote control function06	FAN SPEED SW	VALID	Indoor unit with two or three step of air flow setting
		INVALID	Indoor unit with only one of air flow setting
Remote control function07	LOUVER SW	VALID	Indoor unit with automatically swing louver
		INVALID	Indoor unit without automatically swing louver
Remote control function13	I/U FAN	HI-MID-LO	Indoor unit with three step of air flow setting
		HI-LO	Indoor unit with two step of air flow setting
		HI-MID	
		1 FAN SPEED	Indoor unit with only one of air flow setting
Remote control function15	MODEL TYPE	HEAT PUMP	Heat pump unit
		COOLING ONLY	Exclusive cooling unit

Note 3: As for plural indoor unit, set indoor functions to each master and slave indoor unit.
But only master indoor unit is received the setting change of indoor unit function "05 EXTERNAL INPUT" and "06 PERMISSION / PROHIBISHION".



Note2: Fan setting of "HIGH SPEED"

Fan tap		Indoor unit air flow setting			
		- - -	- -	-	-
FAN SPEED SET	STANDARD	UH - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
	HIGH SPEED1, 2	UH - UH - Hi - Me	UH - Hi - Me	UH - Me	UH - Hi

Initial function setting of some indoor unit is "HIGH SPEED".
4 speed is not able to be set with wireless remote control.

How to set function

1. **Stop air-conditioner and press (SET) (MODE) buttons at the same time for over three seconds, and the "FUNCTION SET ▼" will be displayed.**

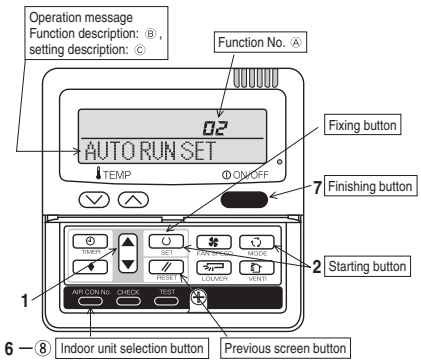
   FUNCTION SET ▼

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

   FUNCTION ▼

   I/U FUNCTION ▲

5. **Press (SET) button.**



6. **【On the occasion of remote control function selection】**

① "DATA LOADING" (Indication with blinking)
↓
Display is changed to "01 ESP SET".

② Press ▲ or ▼ button.
"No. and function"are indicated by turns on the remote control function table, then you can select from them.
(For example)

02 ← Function No.
AUTO RUN SET ← Function

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

02
AUTO RUN ON ← Setting

④ Press ▲ or ▼ button.
Select the setting.

02
AUTO RUN ON
↕
02
AUTO RUN OFF

⑤ Press (SET)
"SET COMPLETE" will be indicated, and the setting will be completed.
Then after "No. and function" indication returns, Set as the same procedure if you want to set continuously ,and if to finish, go to 7.

02
SET COMPLETE

7. **Press ON/OFF button.**
   Setting is finished.

【On the occasion of indoor unit function selection】

① "DATA LOADING" (Blinking for 2 to 23 seconds to read the data)
↓
Indication is changed to "02 FAN SPEED SET".
Go to ②.

[Note]

(1) If plural indoor units are connected to a remote control, the indication is "I/U 000" (blinking) ← The lowest number of the indoor unit connected is indicated.

I/U000 ▲

(2) Press ▲ or ▼ button.
Select the number of the indoor unit you are to set
If you select "ALL UNIT ▼", you can set the same setting with all unites.

(3) Press (SET) button.

② Press ▲ or ▼ button.
"No. and function" are indicated by turns on the indoor unit function table, then you can select from them.
(For example)

02 ← Function No.
FAN SPEED SET ← Function

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

02
STANDARD ← Setting

④ Press ▲ or ▼ button.
Select the setting.

⑤ Press (SET) button.
"SET COMPLETE" will be indicated, and the setting will be completed.
Then after "No. and function" indication returns, set as the same procedure if you want to set continuously , and if to finish, go to 7.

02
SET COMPLETE

※ When plural indoor units are connected to a remote control, press the AIRCON NO. button, which allows you to go back to the indoor unit selection screen. (example "I/U 000 ▲")

- It is possible to finish by pressing ON/OFF button on the way, but unfinished change of setting is unavailable.
- During setting, if you press (RESET) button, you return to the previous screen.
- Setting is memorized in the control and it is saved independently of power failure.

【How to check the current setting】

When you select from "No. and funcion" and press set button by the previous operation, the "Setting" displayed first is the current setting.
(But, if you select "ALL UNIT ▼ ", the setting of the lowest number indoor unit is displayed.)

1.9.4 Installation of outdoor unit

RWC012A038A

(1) Models SRC40-60ZMX-S

Model 40·50·60
R410A REFRIGERANT USED

- **This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 67.**
- **When install the unit, be sure to check whether the selection of installation place, power source specifications, usage limitation (piping length, height differences between indoor and outdoor units, power source voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

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

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

⚠ WARNING

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

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

⚠ CAUTION

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

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

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

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

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

Check before installation work

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

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

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

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

Notabilia as a unit designed for R410A

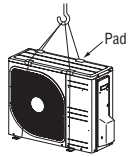
- Do not use any refrigerant other than R410A. R410A will rise to pressure about 1.6 times higher than that of a conventional refrigerant.
  A cylinder containing R410A has a pink indication mark on the top.
- A unit designed for R410A has adopted a different size indoor unit service valve charge port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

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

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

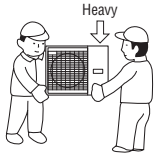
1) Delivery

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



2) Portage

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



3) Selecting the installation location

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

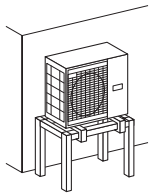
- A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
- A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit.
- A place where the unit is not exposed to oil splashes.
-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

Do not install the unit in places which exposed to sea breeze (e.g. coastal area) or calcium chloride (e.g. snow melting agent), exposed to ammonia substance (e.g. organic fertilizer).

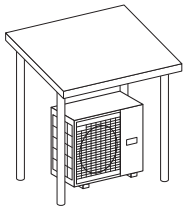
4) Caution about selection of installation location

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

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



2 Install the unit under or provide the roof on site.

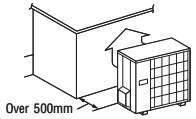


Since drain water generated by defrost control may freeze, following measures are required.

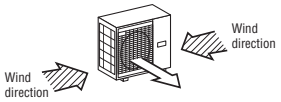
- Do not execute drain piping work by using a drain elbow and drain grommets (accessories). [Refer to Drain piping work.]

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

1 Place the unit outlet side is turned to the wall.



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



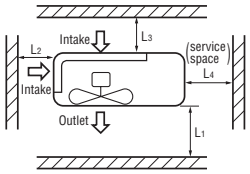
5) Installation space

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

(mm)

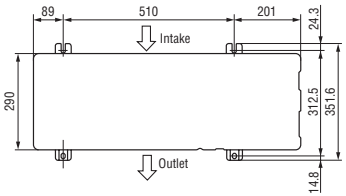
Size \ Example installation	Model 40, 50, 60			
	I	II	III	IV
L1	Open	280	280	180
L2	100	75	Open	Open
L3	100	80	80	80
L4	250	Open	250	Open

The height of a wall is 1200mm or less.

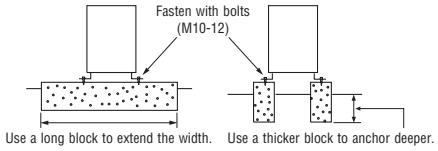


6) Installation

① Anchor bolt fixed position



② Notabilia for installation



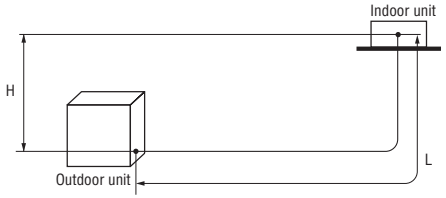
- In installing the unit, fix the unit's legs with bolts specified on the above.
- The protrusion of an anchor bolt on the front side must be kept within 15mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- Refer to the above illustrations for information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

2. REFRIGERANT PIPING WORK

1) Restrictions on unit installation and use

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

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



⚠CAUTION

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

2) Determination of pipe size

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

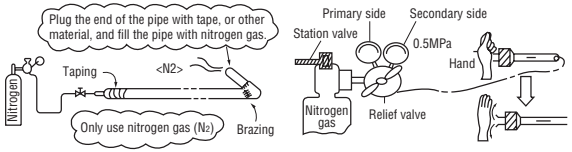
	Model 40, 50, 60	
	Gas pipe	Liquid pipe
Outdoor unit connected	ø12.7 Flare	ø6.35 Flare
Refrigerant piping (branch pipe L)	ø12.7	ø6.35
Indoor unit connected	ø12.7	ø6.35

When pipe is brazing.

About brazing

Brazing must be performed under a nitrogen gas flow.

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



3) Refrigerant pipe wall thickness and material

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

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

Pipe diameter [mm]	ø6.35	ø12.7
Minimum pipe wall thickness [mm]	0.8	0.8
Pipe material*	O-type pipe	O-type pipe

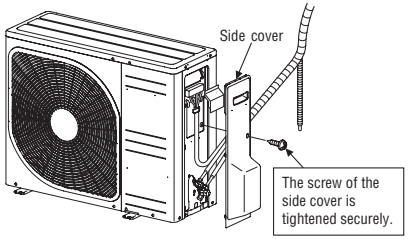
*Phosphorus deoxidized seamless copper pipe ICS 23.040.15, ICS 77.150.30

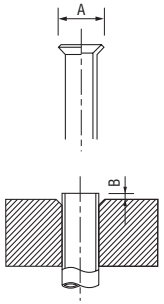
4) On-site piping work

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

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

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





Flared pipe end : A (mm)

Copper pipe outer diameter	A 0 −04
ø6.35	9.1
ø12.7	16.6

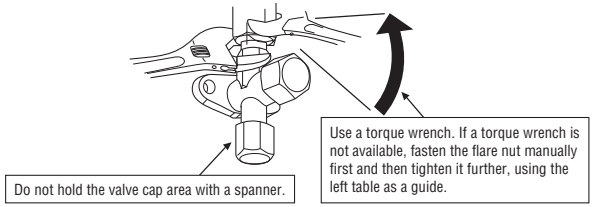
Copper pipe protrusion for flaring : B (mm)

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

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

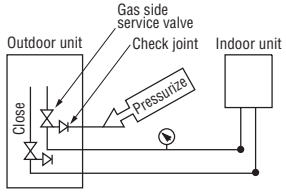
Fix both liquid and gas service valves at the valve main bodies as illustrated on the right, and then fasten them, applying appropriate fastening torque.

Service valve size (mm)	Tightening torque (N·m)	Tightening angle ( )	Recommended length of a tool handle (mm)
ø6.35 (1/4")	14～18	45～60	150
ø12.7 (1/2")	49～61	30～45	250



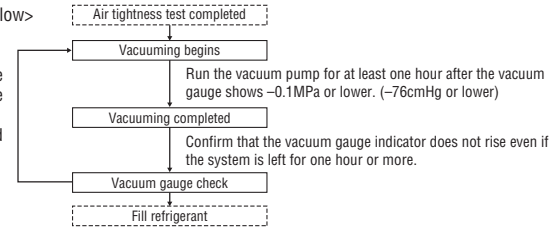
5) Air tightness test

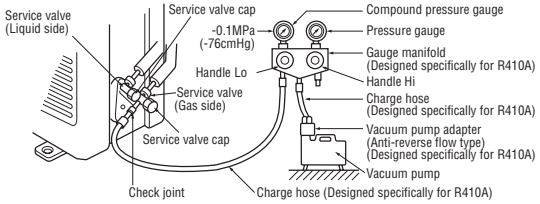
① Although outdoor and indoor units themselves have been tested for air tightness at the factory, check the connecting pipes after the installation work for air tightness from the service valve's check joint equipped on the outdoor unit side. While conducting a test, keep the service valve shut all the time.
a) Raise the pressure to 0.5MPa, and then stop. Leave it for five minutes to see if the pressure drops.
b) Then raise the pressure to 1.5MPa, and stop. Leave it for five more minutes to see if the pressure drops.
c) Then raise the pressure to the specified level (4.15MPa), and record the ambient temperature and the pressure.
d) If no pressure drop is observed with an installation pressurized to the specified level and left for about one day, it is acceptable. When the ambient temperature fall 1 C, the pressure also fall approximately 0.01MPa. The pressure, if changed, should be compensated for.
e) If a pressure drop is observed in checking e) and a) – d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair it. After repair, conduct an air tightness test again.
② In conducting an air tightness test, use nitrogen gas and pressurize the system with nitrogen gas from the gas side. Do not use a medium other than nitrogen gas under any circumstances.



6) Evacuation

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





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

Service valve size (mm)	Service valve cap tightening torque (N·m)	Check joint blind nut tightening torque (N·m)
ø6.35 (1/4")	20～30	10～12
ø12.7 (1/2")	25～35	

Pay attention to the following points in addition to the above for the R410A and compatible machines.
- To prevent a different oil from entering, assign dedicated tools, etc. to each refrigerant type. Under no circumstances must a gauge manifold and a charge hose in particular be shared with other refrigerant types (R22, R407C, etc.).
- Use a counterflow prevention adapter to prevent vacuum pump oil from entering the refrigerant system.

7) Additional refrigerant charge

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

	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe ø6.35)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
Model 40, 50, 60	0.02	1.50	15

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

Formula to calculate the volume of additional refrigerant required

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

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

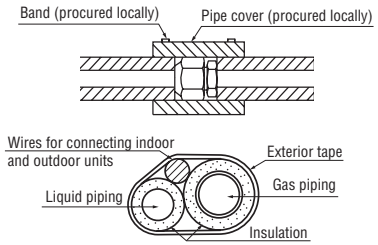
(2) Charging refrigerant
- Since R410A refrigerant must be charged in the liquid phase, you should charge it, keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
- Charge refrigerant always from the liquid side service port with the service valve shut.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

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

8) Heating and condensation prevention

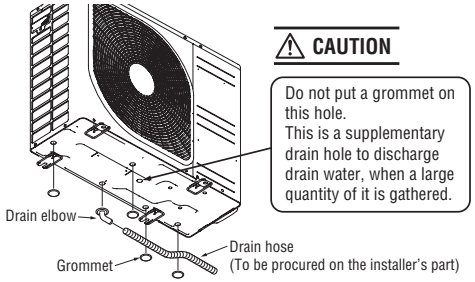
(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
- Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.

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

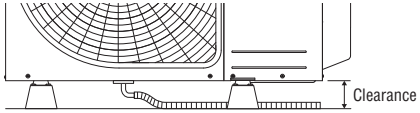


3. DRAIN PIPING WORK

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



- When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks.
  Then, please secure space for the drain elbow and the drain hose.



4. ELECTRICAL WIRING WORK For details of electrical cabling, refer to the indoor unit installation manual.

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

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

  Use polychloroprene sheathed flexible cord (code designation 60245 IEC57) for supply cords of parts of appliances for outdoor use.
- Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire.
  If improperly grounded, an electric shock or malfunction may result.
- A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
- The installation of an impulse withstanding type earth leakage breaker is necessary. A failure to install an earth leakage breaker can result in an accident such as an electric shock or a fire.
- Do not turn on the power until the electrical work is completed.
- Do not use a condensive capacitor for power factor improvement under any circumstances. (It dose not improve power factor, while it can cause an abnormal overheat accident)
- For power source cables, use conduits.
- Do not lay electronic control cables (remote control and signaling wires) and other cables together outside the unit. Laying them together can result in the malfunctioning or a failure of the unit due to electric noises.
- Fasten cables so that may not touch the piping, etc.
- When cables are connected, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)
- Never use a shield cable.
- SRC-ZMXA-S complies with the DRED (Demand Response Enabling Devices) standard AS/NZS4755.3.1 and supports demand response modes 1, 2, and 3 (DRM1, 2, and 3). Since the air-conditioner limits the electric power or energy by receiving the DRED input signal, the sense of cooling operation or heating operation may deteriorate over time. The outdoor unit of this air-conditioner is equipped with a terminal block for DRED input and supports ELV (Extra-Low Voltage) complying with AS/NZS60335.1.

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

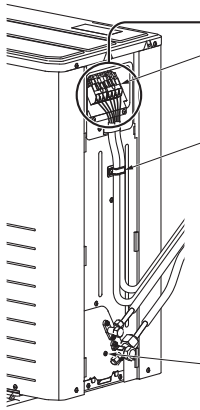
Use cables for interconnection wiring to avoid loosening of the wires. CENELEC code for cables Required field cables.

H05RNR4G1.5 (Example) or 245IEC57

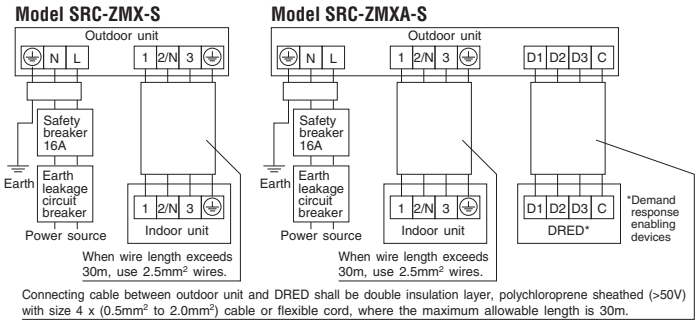
H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth. rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm^2)

Main fuse specification

Specification	Part No.
250V 20A	SSA564A136A

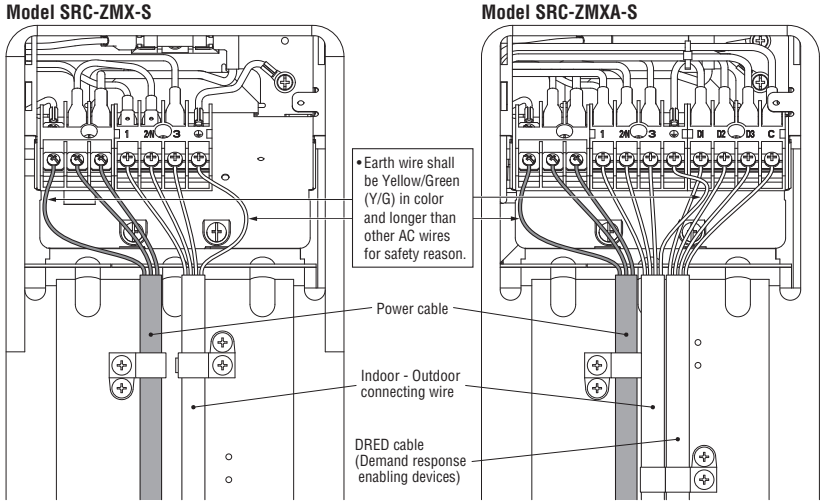


Power cable, indoor-outdoor connecting wires



- Always perform grounding system installation work with the power cord unplugged.
- Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire.
- In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.
- Grounding terminals are provided in the control box.

Power cable, indoor - outdoor connecting wire circuit diagram



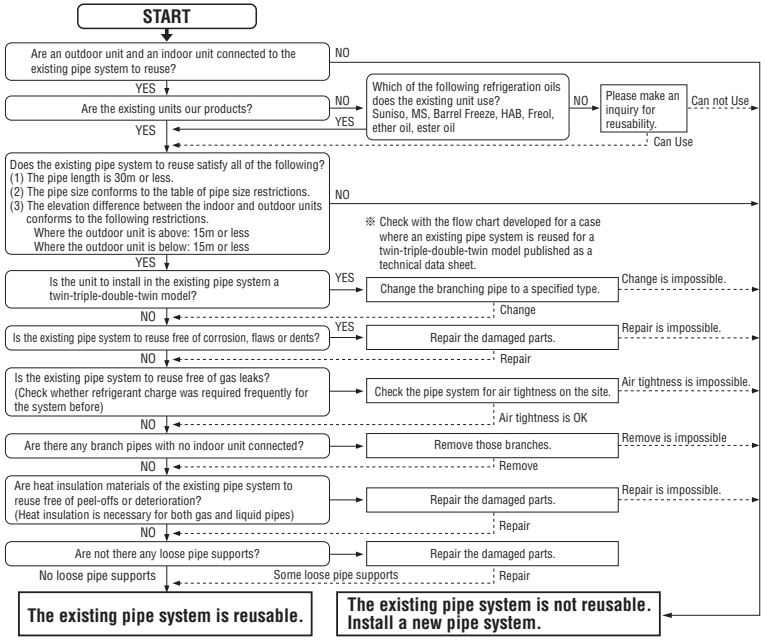
⚠ CAUTION Always use an earth leakage circuit breaker designed for inverter circuits to prevent a faulty operation.

Phase	Earth leakage breaker	Switchgear or Circuit Breaker		Power source (minimum)	Interconnecting and grounding wires (minimum)
		Switch breaker	Over current protector rated capacity		
Single-phase	15A, 30mA, 0.1sec or less	30A	16A	2.0mm²	1.5mm² X 4

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

5. UTILIZATION OF EXISTING PIPING

Check whether an existing pipe system is reusable or not by using the following flow chart.



<Table of pipe size restrictions>

◎: Standard pipe size ○: Usable △: Restricted to shorter pipe length limits

Additional charge volume per meter of pipe		0.02kg/m	0.06kg/m
Pipe size	Liquid pipe	ø6.35	ø9.52
	Gas pipe	ø12.7	ø12.7
40	Usability	◎	△
	Maximum one-way pipe length	30	10
	Length covered without additional charge	15	5
50	Usability	◎	△
	Maximum one-way pipe length	30	10
	Length covered without additional charge	15	15
60	Usability	◎	△
	Maximum one-way pipe length	30	10
	Length covered without additional charge	15	5

- **Please consult with our distributor in the area, if you need to recover refrigerant and charge it again.**
- Any combinations of pipe sizes not listed in the table are not usable.

Formula to calculate additional charge volume

Additional charge volume (kg) =
(Main pipe length (m) – Length covered without additional charge shown in the table (m)) X Additional charge volume per meter of pipe shown in the table (kg/m)

※ If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged.
Example) When an 60 is installed in a 10m long existing pipe system (liquid ø9.52, gas ø12.7), the quantity of refrigerant to charge additionally should be (10m–5m) x 0.06kg/m = 0.3 kg.

⚠ WARNING

<Where the existing unit can be run for a cooling operation.>
Carry out the following steps with the excising unit (in the order of (1), (2), (3) and (4))

(1) Run the unit for 30 minutes for a cooling operation.
(2) Stop the indoor fan and run the unit for 3 minutes for a cooling operation (returning liquid)
(3) Close the liquid side service valve of the outdoor unit and pump down (refrigerant recovery)
(4) Blow with nitrogen gas. ※ If discolored refrigeration oil or any foreign matters is discharged by the blow, wash the pipe system or install a new pipe system.
- For the flare nut, do not use the old one, but use the one supplied with the outdoor unit. Process a flare to the dimensions specified for R410A.

<Where the existing unit cannot be run for a cooling operation.>
Wash the pipe system or install a new pipe system.
- If you choose to wash the pipe system, please contact our distributor in the area.

INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and ensure that the unit operates properly.
Explain to the customer how to use the unit and how to take care of the unit following the instruction manual.

After installation

- ☐ Power cables and connecting wires are securely fixed to the terminal block.
- ☐ The power source voltage is correct as the rating.
- ☐ The drain hose is fixed securely.
- ☐ Service valve is fully open.
- ☐ No gas leaks from the joints of the service valve.
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.
- ☐ The reverse flow check cap is attached.
- ☐ The cover of the pipe cover (A) faces downward to prevent rain from entering.
- ☐ Gaps are properly sealed between the pipe covers (A) (B) and the wall surface / pipes.
- ☐ The screw of the side cover is tightened securely.

(2) Model FDC71VNX

PSB012D909P P

Inverter driven split PAC
71V
Designed for R410A refrigerant

◎This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 67.
◎When install the unit, be sure to check whether the selection of installation place, power source specifications, usage limitation (piping length, height differences between indoor and outdoor units, power source voltage and etc.) and installation spaces

SAFETY PRECAUTIONS

- We recommend you to read this "SAFETY PRECAUTIONS" carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.
- The precautions described below are divided into ⚠WARNING and ⚠CAUTION. The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the ⚠WARNING and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in ⚠CAUTION. **These are very important precautions for safety. Be sure to observe all of them without fail.**
- The meaning of "Marks" used here are as shown below.

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

- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user

Check before installation work

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

⚠ WARNING

❗

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction.
- **Install the system in full accordance with the instruction manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause fall of the unit, water leaks, electric shocks, fire, refrigerant leak, substanard performance, contrl failure and personal injury.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with ISO5149.**
  Consult the expert about prevention measures. If the density of refrigerant exceeds the limit in the event of leakage, lack of oxygen can occur, which can cause serious accidents.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Hang up the unit at the specified points with ropes which can support the weight in lifting for portage. And to avoid jolting out of alignment, be sure to hang up the unit at 4-point support.**
  An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power source with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire,
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.

❗

- **Do not perform brazing work in the airtight room**
  It can cause lack of oxygen.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by using double spanners and torque wrench according to prescribed method. Be sure not to tighten the flare nut too much.**
  Loose flare connection or damage on the flare part by tightening with excess torque can cause burst or refrigerant leaks which may result in lack of oxygen.
- **Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening service valves before completed connection of refrigerant piping work, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked into refrigerant circuit, which can cause burst or personal injury due to anomalously high pressure in the refrigerant
- **Only use prescribed option parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not perform any change of protective device itself or its setup condition**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.
- **Be sure to switch off the power source in the event of installation, inspection or servicing.**
  If the power source is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Consult the dealer or an expert regarding removal of the unit.**
  Incorrect installation can cause water leaks, electric shocks or fire.
- **Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.**
  If disconnecting refrigerant pipes in state of opening service valves before compressor stopping, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant circuit

⊘

- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not run the unit with removed panels or protections**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair.**
  If you repair or modify the unit, it can cause water leaks, electric shocks or fire.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting. Never connect the grounding wire to a gas pipe because if gas leaks,it could cause explosion or ignition.
- **Use the circuit breaker for all pole with correct capacity.**
  Using the incorrect circuit breaker, it can cause the unit malfunction and fire.
- **Install isolator or disconnect switch on the power source wiring in accordance with the local codes and regulations.**
  The isolator should be locked in accordanced with EN60204-1.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **Pay attention not to damage the drain pan by weld spatter when welding work is done near the indoor unit.**
  If weld spatter entered into the indoor unit during welding work, it can cause pin-hole in drain pan and result in water leakage. To prevent such damage, keep the indoor unit in its packing or cover it.
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **Perform installation work properly according to this installation manual.**
  Improper installation can cause abnormal vibrations or increased noise generation.
- **Earth leakage breaker must be installed**
  If the earth leakage breaker is not installed, it can cause fire or electric shocks.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place..
- **When the outdoor unit is installed on a roof or a high place, provide permanent ladders and handrails along the access route and fences and handrails around the outdoor unit.**
  If safety facilities are not provided, it can cause personal injury due to falling from the installation place.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base flame can cause the unit falling down and cause personal injury.
- **Do not install the unit in the locations listed below**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual)
  - Locations where the unit is exposed to chimney smoke
  - Locations at high altitude (more than 1000m high)
  - Locations with ammonic atmospheres (e.g. organic fertilizer)
  - Locations with calcium chloride (e.g. snow melting agent)
  - Locations where heat radiation from other heat source can affect the unit
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit
  - Locations where short circuit of air can occur (in case of multiple units installation)
  - Locations where strong air blows against the air outlet of outdoor unit

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

  It can affect surrounding environment and cause a claim
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not touch any buttons with wet hands**
  It can cause electric shocks
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not clean up the unit with water**
  It can cause electric shocks
- **Do not operate the outdoor unit with any article placed on it.**
  You may incur property damage or personal injure from a fall of the article.
- **Do not step onto the outdoor unit.**
  You may incur injury from a drop or fall.

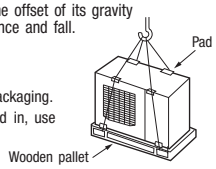
Notabilia as a unit designed for R410A

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

	Dedicated R410A tools
a)	Gauge manifold
b)	Charge hose
c)	Electronic scale for refrigerant charging
d)	Torque wrench
e)	Flare tool
f)	Protrusion control copper pipe gauge
g)	Vacuum pump adapter
h)	Gas leak detector

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

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

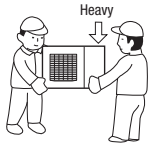


1) Delivery

- Deliver the unit as close as possible to the installation site before removing it from the packaging.
- When some compelling reason necessitates the unpacking of the unit before it is carried in, use nylon slings or protective wood pieces so as not to damage the unit by ropes lifting it.

2) Portage

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



3) Selection of installation location for the outdoor unit

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

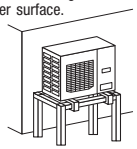
○ A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
○ A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit
○ A place where the unit is not exposed to oil splashes.
○ A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

Do not install the unit in places which exposed to sea breeze (e.g. coastal area) or calcium chloride (e.g. snow melting agent), exposed to ammonia substance (e.g. organic fertilizer).

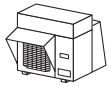
4) Caution about selection of installation location

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

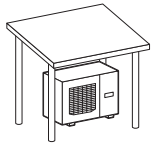
1. Install the unit on the base so that the bottom is higher than snow cover surface.



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



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

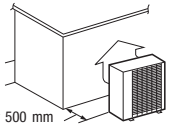


Since drain water generated by defrost control may freeze, following measures are required.

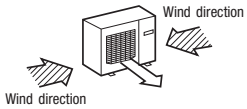
- Don't execute drain piping work by using a drain elbow and drain grommets (optional parts). [Refer to Drain piping work.]
- Recommend setting Defrost Control (SW3-1) and Snow Guard Fan Control (SW3-2). [Refer to Setting SW3-1, SW3-2.]
- Attach heater on a base plate on site, if there is possibility to freeze drain water.
  In case that the product has a corrective drainage system, the drainage paths should have suitable measure against freezing but be sure not to melt the material of drainage paths with heat.

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

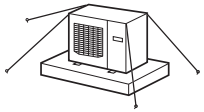
1.Install the outlet air blow side of the unit to face a wall of building, or provide a fence or a windbreak screen.



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



3.The unit should be installed on the stable and level foundation. If the foundation is not level, tie down the unit with wires.

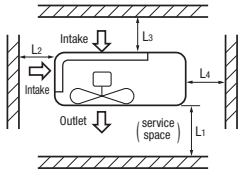


5) Installation space

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

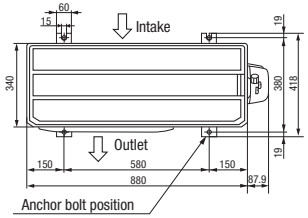
(mm)

Size \ Example installation	71V		
	Ⅰ	Ⅱ	Ⅲ
L1	Open	Open	500
L2	300	250	Open
L3	100	150	100
L4	250	250	250

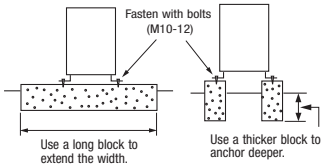


6) Installation

① Anchor bolt fixed position



② Notabilia for installation



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

7) To run the unit for a cooling operation, when the outdoor temperature is –5°C or lower.

- When the outdoor air temperature is -5°C or lower, provide a snow hood to the outdoor unit on site. So that strong wind will not blow against the outdoor heat exchanger directly. Regarding outline of a snow hood, refer to our technical manual.

2. REFRIGERANT PIPING WORK

1) Restrictions on unit installation and use

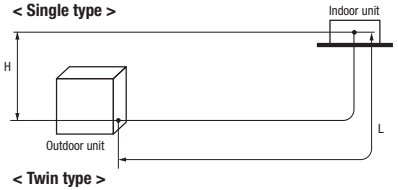
- Check the following points in light of the indoor unit specifications and the installation site.
- Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

Descriptions		Dimensional limitations	Marks appearing in the drawing	
			Single type	Twin type
One-way pipe length of refrigerant piping		≦50m	L	L+L1+L2
Main pipe length		≦50m	—	L
One-way pipe length after the first branching point		≦20m	—	L1, L2
One-way pipe length difference from the first branching point to the indoor unit		≦10m	—	| L1−L2 |
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher,	≦30m	H	H
	When the outdoor unit is positioned lower,	≦15m		
Elevation difference between indoor units		≦0.5m	—	h

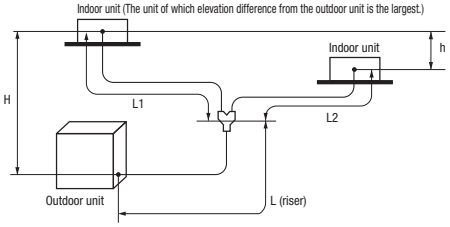
⚠CAUTION

- The use restrictions appearing in the table above are applicable to the standard pipe size combinations shown in the table below. Where an existing pipe system is utilized, different one-way pipe length restrictions should apply depending on its pipe size. For more information, please see " 6. UTILIZATION OF EXISTING PIPING."

< Single type >



< Twin type >



2) Determination of pipe size

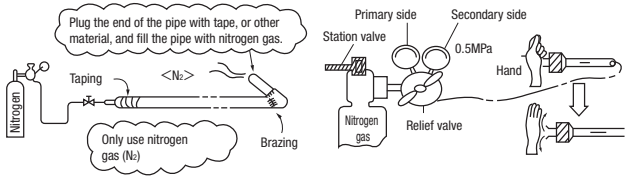
● Determine refrigerant pipe size pursuant to the following guidelines based on the indoor unit specifications.

		Model 71V	
		Gas pipe	Liquid pipe
Outdoor unit connected		ϕ15.88	ϕ9.52
		Flare	Flare
Refrigerant piping (Main pipe L)		ϕ15.88	ϕ9.52
In the case a single type	Indoor unit connectied	ϕ15.88	ϕ9.52
	Capacity of indoor unit	Model 71V	
In the case a twin type	Branching pipe set	DIS-WA1	
	Refrigerant piping (branch pipe L1,L2)	ϕ12.7	ϕ9.52
	Indoor unit connectied	ϕ12.7	ϕ6.35
	Capacity of indoor unit	Model 40V ×2	

About brazing

Brazing must be performed under a nitrogen gas flow.

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



⚠CAUTION

- ●When the 40V model is connected as an indoor unit, always use a ϕ9.52 liquid pipe for the branch (branching pipe – indoor unit) and a different diameter joint supplied with the branching pipe set for connection with the indoor unit (ϕ6.35 on the liquid pipe side).
  If a ϕ6.35 pipe is used for connection with a branching pipe, a refrigerant distribution disorder may occur, causing one of the indoor units to fall short of the rated capacity.
- ●A riser pipe must be a part of the main. A branching pipe set should be installed horizontally at a point as close to an indoor unit as possible.
  A branching part must be dressed with a heat-insulation material supplied as an accessory.
- ●For the details of installation work required at and near a branching area, see the installation manual supplied with your branching pipe set.

3) Refrigerant pipe wall thickness and material

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

Pipe diameter [mm]	6.35	9.52	12.7	15.88
Minimum pipe wall thickness [mm]	0.8	0.8	0.8	1.0
Pipe material*	O-type pipe	O-type pipe	O-type pipe	O-type pipe

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

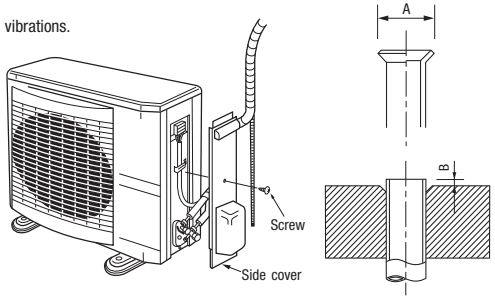
*Phosphorus deoxidized seamless copper pipe C1220T, JIS H3300

4) On-site piping work

⚠IMPORTANT

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

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



Flared pipe end: A (mm)

Copper pipe outer diameter	A 0 −0.4
ϕ6.35	9.1
ϕ9.52	13.2
ϕ12.7	16.6
ϕ15.88	19.7

Copper pipe protrusion for flaring: B (mm)

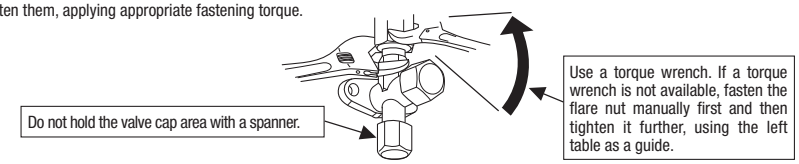
Copper pipe outer diameter	In the case of a rigid (clutch) type	
	With an R410A tool	With a conventional tool
ϕ6.35	0～0.5	0.7～1.3
ϕ9.52		
ϕ12.7		
ϕ15.88		

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

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

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

Service valve size (mm)	Tightening torque (N-m)	Tightening angle (°)	Recommended length of a tool handle (mm)
ϕ6.35 (1/4")	14～18	45～60	150
ϕ9.52 (3/8")	34～42	30～45	200
ϕ12.7 (1/2")	49～61	30～45	250
ϕ15.88(5/8")	68～82	15～20	300

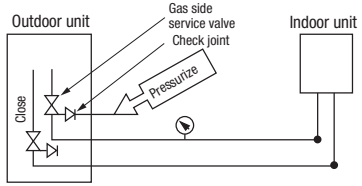


5) Air tightness test

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

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

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



4. ELECTRICAL WIRING WORK For details of electrical cabling, refer to the indoor unit installation manual.

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

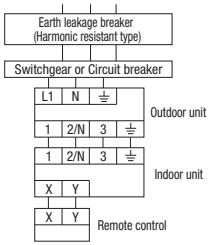
- Do not use any supply cord lighter than one specified in parentheses for each type below.
  - braided cord (code designation 60245 IEC 51),
  - ordinary tough rubber sheathed cord (code designation 60245 IEC 53)
  - flat twin tinsel cord (code designation 60227 IEC 41);

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

Power cable, indoor-outdoor connecting wires

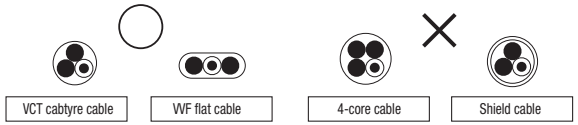
- Always perform grounding system installation work with the power cord unplugged.

⚠ CAUTION Always use an earth leakage circuit breaker designed for inverter circuits to prevent a faulty operation.

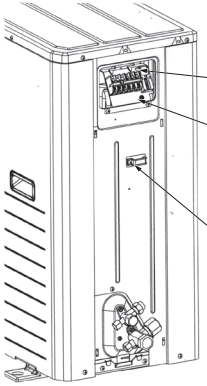


Model	Power source	Power cable thickness (mm^2)	MAX. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness x number
71V	Single phase 3 wire 220-240V 50Hz 220V 60Hz	3.5	17	21	ϕ1.6mm	ϕ1.6mm x 3

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



- Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire.
- In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.
- Grounding terminals are provided in the control box.



Power source, signal line and ground terminal block

Grounding terminal

○ Do not connect to the grounding wire from another unit, but install a dedicated wire up to the grounding wire from the distribution board.

Wiring clamp

○ Fasten cables and protect the terminal connections from external force.

Wiring diagram

○ It is attached on the back side of the service panel.

Main fuse specification

Model	Specification	Part No.
71V	250V 20A	SSA564A117

5. TEST RUN

⚠ WARNING

- Before conduct a test run, make sure that the service valves are closed.
- Turn on power 6 hours prior to a test run to energize the crank case heater.
- In case of the first operation after turning on power, even if the unit does not move for 30 minutes, it is not a breakdown.
- Always give a 3-minute or longer interval before you start the unit again whenever it is stopped.
- Removing the service panel will expose high-voltage live parts and high-temperature parts, which are quite dangerous. Take utmost care not to incur an electric shock or burns. Do not leave the unit with the service panel open.

} A failure to observe these instructions can result in a compressor breakdown.

⚠ CAUTION

- When you operate switches for on-site setting, be careful not to touch a live part.
- You cannot check discharge pressure from the liquid service valve charge port.
- The 4-way valve (20S) is energized during a heating operation.
- When power source is cut off to reset the unit, give 3 or more minutes before you turn on power again after power is cut off. If this procedure is not observed in turning on power again, “E-5” (Communication error) may occur.

6) Evacuation

<Work flow>

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

Run the vacuum pump for at least one hour after the vacuum gauge shows -101kPa or lower. (-755mmHg or lower)

Confirm that the vacuum gauge indicator does not rise even if the system is left for one hour or more.

Airtightness test completed → Vacuuming begins → Vacuuming completed → Vacuum gauge check → Fill refrigerant

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

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

○Use a counterflow prevention adapter to prevent vacuum pump oil from entering the refrigerant system.

7) Additional refrigerant charge

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

	Standard refrigerant charge volume (kg)	Pipe length for standard refrigerant charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
Model 71V	2.35	20	0.06	2.95	30

- This unit contains factory charged refrigerant covering 30m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30m refrigerant piping. When refrigerant piping exceeds 30m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30m.
- When refrigerant piping is shorter than 3m, reduce refrigerant by 1kg from the factory charged volume and adjust to 1.95kg.
- If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size. For further information, please see "6. UTILIZATION OF EXISTING PIPING."

Formula to calculate the volume of additional refrigerant required

Additional charge volume (kg) = { Main pipe length (m) − Length covered without additional charge 30 (m) } x 0.06 (kg/m) + Total length of branch pipes (m) x 0.06 (kg/m)

*When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.

- For an installation measuring 3m or longer, but not more than 20m, in pipe length, please charge the standard refrigerant charge volume, when you recharge refrigerant after servicing etc.
- When refrigerant piping is shorter than 3m, recharge 1.95kg of refrigerant.

Ex.) For a 10m installation, charge 2.35 kg of refrigerant.
For a 25m installation, charge "2.35 + (25-20) x 0.06 = 2.65 kg."

(2) Charging refrigerant

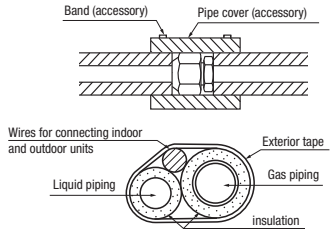
- Since R410A refrigerant must be charged in the liquid phase, you should charge it, keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
- Charge refrigerant always from the liquid side service port with the service valve shut. When you find it difficult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

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

8) Heating and condensation prevention

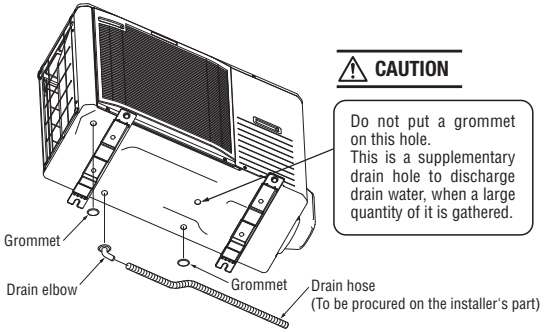
(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
- Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.

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



3. DRAIN PIPING WORK

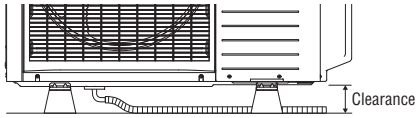
- Execute drain piping by using a drain elbow and drain grommets supplied separately as optional parts, where water drained from the outdoor unit is a problem.
- Water may drip where there is a larger amount of drain water. Seal around the drain elbow and drain grommets with putty or adequate caulking material.
- Condensed water may flow out from vicinity of service valve or connected pipes.
- Where you are likely to have several days of sub-zero temperatures in a row, do not use a drain elbow and drain grommets. (There is a risk of drain water freezing inside and blocking the drain.)
- Do not use drain elbow and grommet made of plastic for drain piping when base heater for outdoor unit is used. Plastic grommet and elbow will be damaged and burnt in worst case.
- Prepare another drain tray made of metallic material for collecting drain when base heater is used.



⚠ CAUTION

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

- When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks.
Then, please secure space for the drain elbow and the drain hose.



About insulation resistance

● An insulation resistance value may drop to several M ohms immediately after installation or when the unit is left for a long time without power, because refrigerant is gathered in the compressor. When the earth-leakage breaker is actuated due to low insulation resistance, please check the following:

(1) Check whether a normal insulation resistance value is restored about 6 hours after power is turned. Turning on power will energize the compressor and heat it to evaporate refrigerant gathered in it.

(2) Check whether the earth-leakage breaker is a harmonic resistant type.
This unit is equipped with an inverter and therefore, the use of a harmonic resistant type earth-leakage breaker is necessary to prevent a false actuation.

1) Test run method

Please remove a side cover.

(1) A test run can be initiated from an outdoor unit by using SW5-3 and SW5-4 for on-site setting.
(2) Switching SW5-3 to ON will start the compressor.
(3) The unit will start a cooling operation, when SW5-4 is OFF, or a heating operation, when SW5-4 is ON.
(4) **Do not fail to switch SW5-3 to OFF when a test run is completed.**

※ **In case of the first operation after turning on the power source, when the unit runs in the cooling mode at outside temperature 5°C or lower, it automatically changes into the cooling mode after it runs in the heating mode for 10 minutes.**

SW-5-3	SW-5-4	
ON	OFF	Cooling during a test run
	ON	Heating during a test run
OFF	—	Normal or After the test operation

2) Checking the state of the unit in operation

Please remove a service panel.

Use check joints provided on the piping before and after the four-way valve installed inside the outdoor unit for checking discharge pressure and suction pressure.
As indicated in the table shown on the right, pressure detected at each point will vary depending on whether a cooling or heating operation has been selected.

	Check joint of the pipe	Charge port of the gas operation valve
Cooling operation	Discharge pressure (High pressure)	Suction pressure (Low pressure)
Heating operation	Suction pressure (Low pressure)	Discharge pressure (High pressure)

3) Setting SW3-1, SW3-2.

Please remove a service panel.

(1) Defrost control switching (SW3-1)
・When this switch is turned ON, the unit will run in the defrost mode more frequently.
・Set this switch to ON, when installed in a region where outdoor temperature falls below zero during the season the unit is run for a heating operation.

(2) Snow guard fan control (SW3-2)
・When this switch is turned on, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature falls to 3℃ or lower and the compressor is not running.
・When the unit is used in a very snowy country, set this switch to ON.

4) Failure diagnosis in a test run

Error indicated on the remote control unit	Printed circuit board LED(The cycles of 5 seconds)		Failure event	Action
	Red LED	Green LED		
E34	Blinking once	Blinking continuously	Open phase	Check power cables for loose contact or disconnection
E40	Blinking once	Blinking continuously	63H1 actuation or operation with service valves shut (occurs mainly during a heating operation)	1. Check whether the service valves are open. 2. If an error has been canceled when 3 minutes have elapsed since a compressor stop, you can restart the unit by effecting Check Reset from the remote control unit.
E49	Blinking once	Blinking continuously	Low pressure error or operation with service valves shut (occurs mainly during a cooling operation)	

● If an error code other than those listed above is indicated, refer to the wiring diagram of the outdoor unit and the indoor unit.

5) The state of the electronic expansion valve.

The following table illustrates the steady states of the electronic expansion valve.

	When power is turned on	When the unit comes to a normal stop		When the unit comes to an abnormal stop	
		During a cooling operation	During a heating operation	During a cooling operation	During a heating operation
Valve for a cooling operation	Complete shut position	Complete shut position	Full open position	Full open position	Full open position
Valve for a heating operation	Full open position	Full open position	Complete shut position	Full open position	Full open position

6) Heed the following on the first operation after turning on the circuit breaker.

This outdoor unit may start in the standby mode (waiting for a compressor startup), which can continue up to 30 minutes, to prevent the oil level in the compressor from lowering on the first operation after turning on the circuit breaker. If that is the case, do not suspect a unit failure.

Items to check before a test run

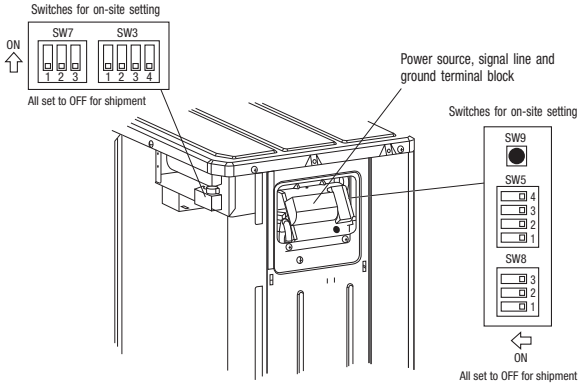
● When you leave the outdoor unit with power supplied to it, be sure to close the panel.

Item No.used in the installation manual	Item	Check item	Check
2	Refrigerant plumbing	If brazed, was it brazed under a nitrogen gas flow?	
		Were air-tightness test and vacuum extraction surely performed?	
		Are heat insulation materials installed on both liquid and gas pipes?	
		Are service valves surely opened for both liquid and gas systems?	
		Have you recorded the additional refrigerant charge volume and refrigerant pipe length on the panel's label?	
4	Electric wiring	Is the unit free of cabling errors such as uncompleted connection, an absent or reversed phase?	
		Are properly rated electrical equipments used for circuit breakers and cables?	
		Doesn't cabling cross-connect between units, where more than one unit are installed?	
		Aren't indoor-outdoor signal wires connected to remote control wires?	
		Do indoor-outdoor connecting cables connect between the same terminal numbers?	
		Are either VCT cabtyre cables or WF flat cables used for indoor-outdoor connecting cables?	
		Does grounding satisfy the D type grounding (type III grounding) requirements?	
		Is the unit grounded with a dedicated grounding wire not connected to another unit's grounding wire?	
		Are cables free of loose screws at their connection points?	
		Are cables held down with cable clamps so that no external force works onto terminal connections?	
—	Indoor unit	Is indoor unit installation work completed?	
		Where a face cover should be attached onto an indoor unit, is the face cover attached to the indoor unit?	

Test run procedure

● Always carry out a test run and check the following in order as listed.

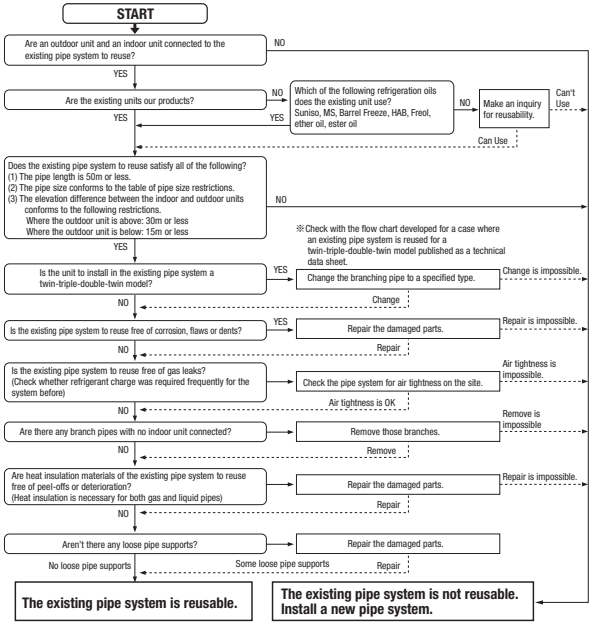
Turn	The contents of operation	Check
①	Open the gas side service valve fully.	
②	Open the liquid side service valve fully.	
③	Close the panel.	
④	Where a remote control unit is used for unit setup on the installation site, follow instructions for unit setup on the installation site with a remote control unit.	
⑤	SW5-3 / SW5-4 OFF: the unit will start a cooling operation.	
	SW5-3 / SW5-4 ON: the unit will start a heating operation.	
⑥	When the unit starts operation, press the wind direction button provided on the remote control unit to check its operation.	
⑦	Place your hand before the indoor unit's diffuser to check whether cold (warm) winds come out in a cooling (heating) operation.	
⑧	Make sure that a red LED is not blinking.	
⑨	When you complete the test run, please turn on SW5-3 for 1 second and be sure to end a test run.	
⑩	Where options are used, check their operation according to the respective instruction manuals.	



※1 Do not operate SW3-3, SW5-1, SW5-2, SW7, SW8-2, SW8-3.
※2 Refer to TECHNICAL MANUAL about SW9. (Pump down SW)

6. UTILIZATION OF EXISTING PIPING.

Check whether an existing pipe system is reusable or not by using the following flow chart.



⚠ WARNING <Where the existing unit can be run for a cooling operation.>

Carry out the following steps with the excising unit (in the order of (1), (2), (3) and (4))

(1) Run the unit for 30 minutes for a cooling operation.
(2) Stop the indoor fan and run the unit for 3 minutes for a cooling operation (returning liquid)
(3) Close the liquid side service valve of the outdoor unit and pump down (refrigerant recovery)
(4) Blow with nitrogen gas. ※ If discolored refrigeration oil or any foreign matters is discharged by the blow, wash the pipe system or install a new pipe system.

- For the flare nut, do not use the old one, but use the one supplied with the outdoor unit. Process a flare to the dimensions specified for R410A.
- **Turn on-site setting switch SW8-1** to the ON position. (Where the gas pipe size is ϕ19.05)

<Table of pipe size restrictions>

◎:Standard pipe size ○:Usable △:Restricted to shorter pipe length limits Cool↓: Cooling capacity drop

Additional charge volume per meter of pipe		0.06kg/m		0.08kg/m
Pipe size	Liquid pipe	ϕ9.52	ϕ9.52	ϕ12.7
	Gas pipe	ϕ12.7	ϕ15.88	ϕ15.88
71V	Usability	Cool↓	◎	△
	Maximum one-way pipe length	35	50	25
	Length covered without additional charge	30	30	15

- **The pipe length should be at least 5m. If the pipe length is shorter than 5m, the quantity of refrigerant needs to be reduced. Please consult with our distributor in the area, if you need to recover refrigerant and charge it again.**
- Any combinations of pipe sizes not listed in the table are not usable.

<Pipe system after the branching pipe>

◎:Standard pipe size ○:Usable

Additional charging amount of refrigerant per 1m			0.06kg/m	
Pipe size	Liquid pipe		ϕ9.52	
	Gas pipe		ϕ12.7	ϕ15.88
Model	Combination type	Combination of capacity		
71V	Twin	40+40	◎	○

- Any combinations of pipe sizes not listed in the tableare not usable.

<The model types of existing units of which branching pipes are reusable.>

In case of replacement of used branching pipes, please use our genuine branching pipes.

Formula to calculate additional charge volume

Additional charge volume (kg) = {Main pipe length (m) − Length covered without additional charge shown in the table (m)} × Additional charge volume per meter of pipe shown in the table (kg/m) + Total length of branch pipes (m) × Additional charge volume per meter of pipe shown in the table (kg/m)

※ If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged.

Example) When an 71V (single installation) is installed in a 30m long existing pipe system (liquid ϕ12.7, gas ϕ15.88), the quantity of refrigerant to charge additionally should be (30m-15m) x 0.08kg/m = 1.2 kg.

Example) When an 71V (twin installation) is installed in a 30m long existing pipe system (main pipe length 20m, liquid ϕ12.7, gas ϕ15.88; pipe length after branching pipe 5m x 2, liquid ϕ9.52, gas ϕ12.7), the quantity of refrigerant to charge additionally should be (20m-15m) x 0.08kg/m + 5m x 2 x 0.06kg/m = 1.0 kg.

<Where the existing unit cannot be run for a cooling operation.>

Wash the pipe system or install a new pipe system.

- If you choose to wash the pipe system, contact our distributor in the area.

(3) Models FDC100-140VNX, 100-140VSX

PSB012D955T

Inverter driven split PAC
100VN～140VN,100VS～140VS
100VNX～140VNX,100VSX～140VSX
Designed for R410A refrigerant

◎This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 67 .
◎When install the unit, be sure to check whether the selection of installation place, power source specifications, usage limitation (piping length, height differences between indoor and outdoor units, power source voltage and etc.) and installation spaces

SAFETY PRECAUTIONS

- We recommend you to read this "SAFETY PRECAUTIONS" carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.
- The precautions described below are divided into ⚠WARNING and ⚠CAUTION. The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the ⚠WARNING and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in ⚠CAUTION. **These are very important precautions for safety. Be sure to observe all of them without fail.**
- The meaning of "Marks" used here are as shown below.

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

- For 3 phase power source outdoor unit,EN61000-3-2 is not applicable if consent by the utility company or nortification to the utility company is given before usage.
- 3 phase power source unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. If installed as a house-hold appliance it could cause electromagnetic interference.
- 5 and 6 HP units of single phase power source are equipment complying with IEC 61000-3-12.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user

Check before installation work

[Accessory]

Edging		1 piece	knock-out hole protection

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

⚠ WARNING

❗

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction.
- **Install the system in full accordance with the instruction manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause fall of the unit, water leaks, electric shocks, fire, refrigerant leak, substandard performance, control failure and personal injury.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with ISO5149.**
  Consult the expert about prevention measures. If the density of refrigerant exceeds the limit in the event of leakage, lack of oxygen can occur, which can cause serious accidents.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Hang up the unit at the specified points with ropes which can support the weight in lifting for portage. And to avoid jolting out of alignment, be sure to hang up the unit at 4-point support.**
  An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power source with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire,
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.

❗

- **Do not perform brazing work in the airtight room**
  It can cause lack of oxygen.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by using double spanners and torque wrench according to prescribed method. Be sure not to tighten the flare nut too much.**
  Loose flare connection or damage on the flare part by tightening with excess torque can cause burst or refrigerant leaks which may result in lack of oxygen.
- **Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening service valves before completed connection of refrigerant piping work, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked into refrigerant circuit, which can cause burst or personal injury due to anomalously high pressure in the refrigerant
- **Only use prescribed option parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not perform any change of protective device itself or its setup condition**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.
- **Be sure to switch off the power source in the event of installation, inspection or servicing.**
  If the power source is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Consult the dealer or an expert regarding removal of the unit.**
  Incorrect installation can cause water leaks, electric shocks or fire.
- **Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.**
  If disconnecting refrigerant pipes in state of opening service valves before compressor stopping, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant circuit

⊘

- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not run the unit with removed panels or protections**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair.**
  If you repair or modify the unit, it can cause water leaks, electric shocks or fire.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting. Never connect the grounding wire to a gas pipe because if gas leaks,it could cause explosion or ignition.
- **Use the circuit breaker for all pole with correct capacity.**
  Using the incorrect circuit breaker, it can cause the unit malfunction and fire.
- **Install isolator or disconnect switch on the power source wiring in accordance with the local codes and regulations.**
  The isolator should be locked in accordanced with EN60204-1.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **Pay attention not to damage the drain pan by weld spatter when welding work is done near the indoor unit.**
  If weld spatter entered into the indoor unit during welding work, it can cause pin-hole in drain pan and result in water leakage. To prevent such damage, keep the indoor unit in its packing or cover it.
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **Perform installation work properly according to this installation manual.**
  Improper installation can cause abnormal vibrations or increased noise generation.
- **Earth leakage breaker must be installed**
  If the earth leakage breaker is not installed, it can cause fire or electric shocks.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place..
- **When the outdoor unit is installed on a roof or a high place, provide permanent ladders and handrails along the access route and fences and handrails around the outdoor unit.**
  If safety facilities are not provided, it can cause personal injury due to falling from the installation place.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base flame can cause the unit falling down and cause personal injury.
- **Do not install the unit in the locations listed below**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual)
  - Locations where the unit is exposed to chimney smoke
  - Locations at high altitude (more than 1000m high)
  - Locations with ammonic atmospheres (e.g. organic fertilizer).
  - Locations with calcium chloride (e.g. snow melting agent).
  - Locations where heat radiation from other heat source can affect the unit
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit
  - Locations where short circuit of air can occur (in case of multiple units installation)
  - Locations where strong air blows against the air outlet of outdoor unit

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

  It can affect surrounding environment and cause a claim
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not touch any buttons with wet hands**
  It can cause electric shocks
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not clean up the unit with water**
  It can cause electric shocks
- **Do not operate the outdoor unit with any article placed on it.**
  You may incur property damage or personal injure from a fall of the article.
- **Do not step onto the outdoor unit.**
  You may incur injury from a drop or fall.

Notabilia as a unit designed for R410A

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

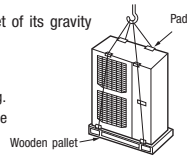
	Dedicated R410A tools
a)	Gauge manifold
b)	Charge hose
c)	Electronic scale for refrigerant charging
d)	Torque wrench
e)	Flare tool
f)	Protrusion control copper pipe gauge
g)	Vacuum pump adapter
h)	Gas leak detector

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

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

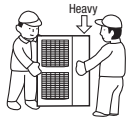
1) Delivery

- Deliver the unit as close as possible to the installation site before removing it from the packaging.
- When some compelling reason necessitates the unpacking of the unit before it is carried in, use nylon slings or protective wood pieces so as not to damage the unit by ropes lifting it.



2) Portage

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



3) Selection of installation location for the outdoor unit

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

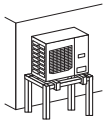
○ A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
○ A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit
○ A place where the unit is not exposed to oil splashes.
○ A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

Do not install the unit in places which exposed to sea breeze (e.g. coastal area) or calcium chloride (e.g. snow melting agent), exposed to ammonia substance (e.g. organic fertilizer).

4) Caution about selection of installation location

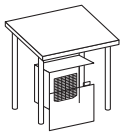
(1) If the unit is installed in the area where the snow will accumulate, following measures are required.
The bottom plate of unit and intake, outlet may be blocked by snow.

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



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

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

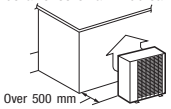


Since drain water generated by defrost control may freeze, following measures are required.

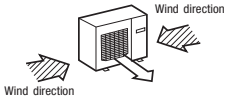
- Don't execute drain piping work by using a drain elbow and drain grommets (optional parts). [Refer to Drain piping work.]
- Recommend setting Defrost Control (SW3-1) and Snow Guard Fan Control (SW3-2). [Refer to Setting SW3-1, SW3-2.]
- Attach heater on a base plate on site, if there is possibility to freeze drain water.
  In case that the product has a corrective drainage system, the drainage paths should have suitable measure against freezing but be sure not to melt the material of drainage paths with heat.

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

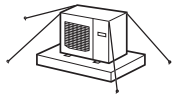
1.Install the outlet air blow side of the unit to face a wall of building, or provide a fence or a windbreak screen.



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



3.The unit should be installed on the stable and level foundation. If the foundation is not level, tie down the unit with wires.

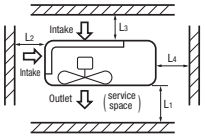


5) Installation space

- Walls surrounding the unit in the four sides are not acceptable.
- There must be a 1-meter or larger space in the above.
- Where a danger of short-circuiting exists, install guide louvers.
- When more than one unit is installed, provide sufficient intake space consciously so that short-circuiting may not occur.
- Where piling snow can bury the outdoor unit, provide proper snow guards.
- A barrier wall placed in front of the exhaust diffuser must not be higher than the unit.

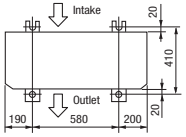
(mm)

Size \ Example installation	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

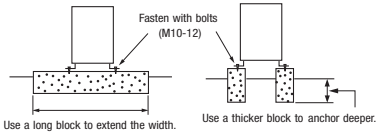


6) Installation

① Anchor bolt fixed position



② Notabilia for installation



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

7) To run the unit for a cooling operation, when the outdoor temperature is –5°C or lower.

- When the outdoor air temperature is -5°C or lower, provide a snow hood to the outdoor unit on site.
  So that strong wind will not blow against the outdoor heat exchanger directly. Regarding outline of a snow hood, refer to our technical manual.

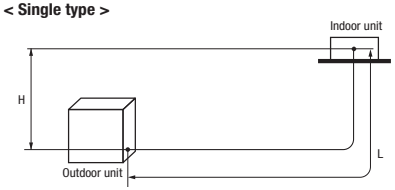
2. REFRIGERANT PIPING WORK

1) Restrictions on unit installation and use

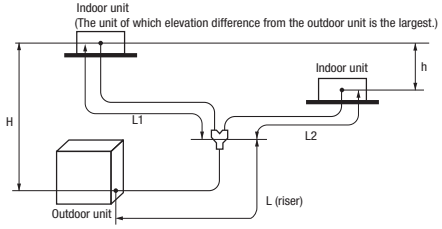
- Check the following points in light of the indoor unit specifications and the installation site.
- Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

Descriptions	One-way pipe length difference from the first branching point to the indoor unit			Marks appearting in the drawing		< 3m	≧ 3m
	Model for outdoor units		Dimensional limitations	Single type	Twin type	Triple type A	Triple type B
One-way pipe length of refrigerant piping	100VN,125VN,100VS,125VS		≦ 50m	L	L+L1+L2	—	—
	140VN,140VS					L+L1+L2+L3	L+La+L1+L2+L3
	100VNX,125VNX,100VSX,125VSX		≦ 100m			—	—
	140VNX,140VSX					L+L1+L2+L3	L+La+L1+L2+L3
Main pipe length	100VN,125VN,100VS,125VS		≦ 50m	—	L	—	—
	140VN,140VS					L	L
	100VNX,125VNX,100VSX,125VSX		≦ 100m			—	—
	140VNX,140VSX					L	L
One-way pipe length between the first branching point from to the second branching point	Triple type	140VN,140VS, 140VNX,140VSX	≦ 5m	—	—	—	La
One-way pipe length after the first branching point	Twin type	All Models	≦ 30m	—	L1, L2	—	—
	Triple type	140VN,140VS, 140VNX,140VSX			—	L1, L2, L3	L1 (1)
One-way pipe length after the first branching point and second branching point	Triple type	140VN,140VS 140VNX,140VSX	≦ 27m	—	—	—	La+L2, La+L3 (1)
One-way pipe length difference from the first branching point to the indoor unit	Twin type	All Models	≦ 10m	—	| L1−L2 |	—	—
	Triple type	140VN,140VS, 140VNX,140VSX	≦ 3m		—	| L1−L2 | , | L2−L3 | , | L3−L1 |	
			≦ 10m			—	L1−(La+L2), L1−(La+L3) (1)
One-way pipe length difference from the second branching point to the indoor unit	Triple type	140VN,140VS, 140VNX,140VSX	≦ 10m	—	—	—	| L2−L3 |
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher,		≦ 30m	H	H	H	H
	When the outdoor unit is positioned lower,		≦ 15m				
Elevation difference between indoor units			≦ 0.5m	—	h	h1, h2, h3	h1, h2, h3

< Single type >



< Twin type >

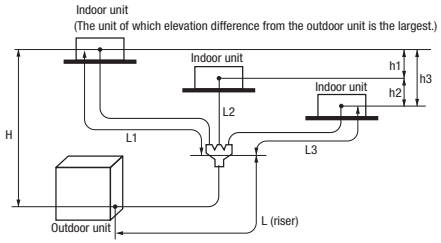


⚠CAUTION

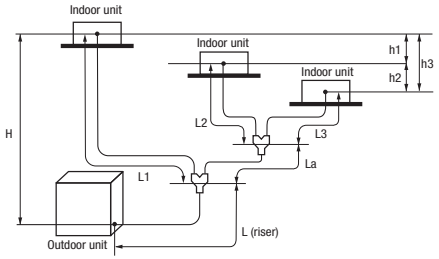
- The use restrictions appearing in the table above are applicable to the standard pipe size combinations shown in the table below. Where an existing pipe system is utilized, different one-way pipe length restrictions should apply depending on its pipe size. For more information, see " 6. UTILIZATION OF EXISTING PIPING."
- With the triple pipe connection, the way of use is different when the difference of one-way pipe length after the first branching point is 3m to 10m. For details, refer to the above table and right figure.

Note (1) Install the indoor units so that L + L1 becomes the longest one-way pipe.
Keep the pipe length difference between L1 and (La + L2) or (La + L3) within 10m.

< Triple type A >



< Triple type B >



2) Determination of pipe size

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

		Model 100V		Model 125V		Model 140V	
		Gas pipe	Liquid pipe	Gas pipe	Liquid pipe	Gas pipe	Liquid pipe
Outdoor unit connected		ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52
		Flare	Flare	Flare	Flare	Flare	Flare
Refrigerant piping (Main pipe L)		ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52
In the case of a single type	Indoor unit connected	ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52
	Capacity of indoor unit	Model 100V		Model 125V		Model 140V	
In the case of a twin type	Branching pipe set	DIS-WA1		DIS-WA1		DIS-WA1	
	Refrigerant piping (branch pipe L1,L2)	ϕ12.7	ϕ9.52	ϕ12.7	ϕ9.52	ϕ15.88	ϕ9.52
	Indoor unit connected	ϕ12.7	ϕ6.35	ϕ12.7	ϕ6.35	ϕ15.88	ϕ9.52
	Capacity of indoor unit	Model 50V×2		Model 60V×2		Model 71V×2	
In the case of a triple type A	Branching pipe set	–		–		DIS-TA1	
	Refrigerant piping (branch pipe L1,L2,L3)					ϕ12.7	ϕ9.52
	Indoor unit connected					ϕ12.7	ϕ6.35
	Capacity of indoor unit					Model 50Vx3	
In the case of a triple type B	Branching pipe set	–		–		DIS-WA1	
	Refrigerant piping (branch pipe La)					ϕ15.88	ϕ9.52
	Refrigerant piping (branch pipe L1)					ϕ12.7	ϕ9.52
	Branching pipe set (After branch pipe La)					DIS-WA1	
	Refrigerant piping (branch pipe L2,L3)					ϕ12.7	ϕ9.52
	Indoor unit connected					ϕ12.7	ϕ6.35
	Capacity of indoor unit					Model 50V×3	

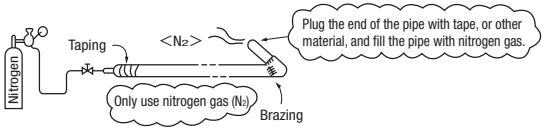
⚠CAUTION

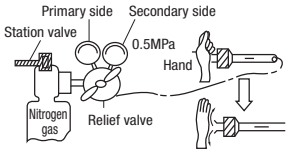
- When the 50V or 60V model is connected as an indoor unit, always use a ϕ9.52 liquid pipe for the branch (branching pipe – indoor unit) and a different diameter joint supplied with the branching pipe set for connection with the indoor unit (ϕ6.35 on the liquid pipe side).
  If a ϕ6.35 pipe is used for connection with a branching pipe, a refrigerant distribution disorder may occur, causing one of the indoor units to fall short of the rated capacity.
- A riser pipe must be a part of the main. A branching pipe set should be installed horizontally at a point as close to an indoor unit as possible.
  A branching part must be dressed with a heat-insulation material supplied as an accessory.
- For the details of installation work required at and near a branching area, see the installation manual supplied with your branching pipe set.

About brazing

Brazing must be performed under a nitrogen gas flow.

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





3) Refrigerant pipe wall thickness and material

- Select refrigerant pipes of the table shown on the right wall thickness and material as specified for each pipe size.
- This unit uses R410A. Always use 1/2H pipes having a 1.0mm or thicker wall for ϕ19.05 or larger pipes, because O-type pipes do not meet the pressure resistance requirement.

Pipe diameter [mm]	6.35	9.52	12.7	15.88	22.22	25.4	28.58
Minimum pipe wall thickness [mm]	0.8	0.8	0.8	1.0	1.0	1.0	1.0
Pipe material*	O-type pipe	O-type pipe	O-type pipe	O-type pipe	1/2H-type pipe	1/2H-type pipe	1/2H-type pipe

*Phosphorus deoxidized seamless copper pipe C1220T, JIS H3300

NOTE

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

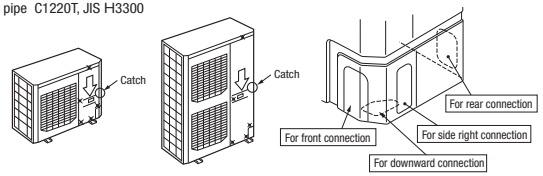
4) On-site piping work

⚠IMPORTANT

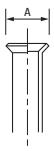
- Take care so that installed pipes may not touch components within a unit. If touching with an internal component, it will generate abnormal sounds and/or vibrations.

How to remove the service panel

First remove the five screws (✕ mark) of the service panel and push it down into the direction of the arrow mark and then remove it by pulling it toward you.

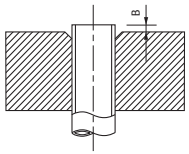


- The pipe can be laid in any of the following directions: side right, front, rear and downward.
- Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area and attach an edging material supplied as an accessory by cutting it to an appropriate length before laying a pipe.
- Carry out the on site piping work with the service valve fully closed.
- Give sufficient protection to a pipe end (compressed and blazed, or with an adhesive tape) so that water or foreign matters may not enter the piping.
- Bend a pipe to a radius as large as practical.(R100~R150) Do not bend a pipe repeatedly to correct its form.
- Flare connection is used between the unit and refrigerant pipe. Flare a pipe after engaging a flare nut onto it. Flare dimensions for R410A are different from those for conventional R407C. Although we recommend the use of flaring tools designed specifically for R410A, conventional flaring tools can also be used by adjusting the measurement of protrusion B with a protrusion control gauge.
- The pipe should be anchored every 1.5m or less to isolate the vibration.
- Tighten a flare joint securely with a double spanner.



Flared pipe end: A (mm)

Copper pipe outer diameter	A $^{0}_{-0.4}$
ϕ6.35	9.1
ϕ9.52	13.2
ϕ12.7	16.6
ϕ15.88	19.7



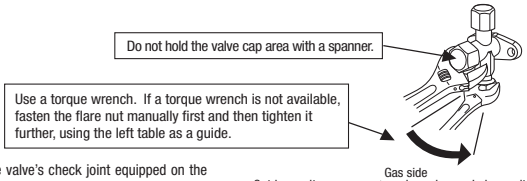
Copper pipe protrusion for flaring: B (mm)

Copper pipe outer diameter	In the case of a rigid (clutch) type	
	With an R410A tool	With a conventional tool
ϕ6.35	0~0.5	0.7~1.3
ϕ9.52		
ϕ12.7		
ϕ15.88		

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

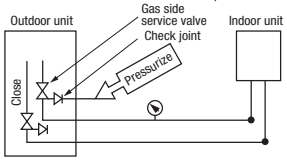
Fix both liquid and gas service valves at the valve main bodies as illustrated on the right, and then fasten them, applying appropriate fastening torque.

Service valve size (mm)	Tightening torque (N-m)	Tightening angle (°)	Recommended length of a tool handle (mm)
φ6.35 (1/4")	14～18	45～60	150
φ9.52 (3/8")	34～42	30～45	200
φ12.7 (1/2")	49～61	30～45	250
φ15.88 (5/8")	68～82	15～20	300



5) Air tightness test

① Although outdoor and indoor units themselves have been tested for air tightness at the factory, check the connecting pipes after the installation work for air tightness from the service valve's check joint equipped on the outdoor unit side. While conducting a test, keep the service valve shut all the time.
a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
d) If no pressure drop is observed with an installation pressurized to the specified level and left for about one day, it is acceptable. When the ambient Temperature fall 1℃, the pressure also fall approximately 0.01 MPa. The pressure, if changed, should be compensated for.
e) If a pressure drop is observed in checking e) and a) – d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair it. After repair, conduct an air-tightness test again.
② In conducting an air-tightness test, use nitrogen gas and pressurize the system with nitrogen gas from the gas side. Do not use a medium other than nitrogen gas under any circumstances.



6) Evacuation

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

Airtightness test completed
↓
Vacuuming begins
↓
Vacuuming completed
↓
Vacuum gauge check
↓
Fill refrigerant

Run the vacuum pump for at least one hour after the vacuum gauge shows -101kPa or lower. (-755mmHg or lower)
Confirm that the vacuum gauge indicator does not rise even if the system is left for one hour or more.

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

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

7) Additional refrigerant charge

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

<Single type>

Item / Capacity	Standard refrigerant charge volume (kg)	Pipe length for standard refrigerant charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
100VN～140VN 100VS～140VS	2.0	0	0.06	3.8	30
100VNX～140VNX 100VSX～140VSX	2.7			4.5	

<Twin, triple type>

Item / Capacity	Standard refrigerant charge volume (kg)	Pipe length for standard refrigerant charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)		Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
			Main pipe	Branch pipe		
100VN～140VN 100VS～140VS	2.0	0	0.06		3.8	30
100VNX～140VNX 100VSX～140VSX	2.7				4.5	

- A standard refrigerant charge volume means a refrigerant charge volume for an installation with 0m long refrigerant piping.
- This unit contains factory charged refrigerant covering 30m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30m refrigerant piping. When refrigerant piping exceeds 30m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30m.
- When refrigerant piping is shorter than 3m, reduce refrigerant by 1kg from the factory charged volume and adjust to 2.8kg or 3.5kg.
- If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size. For further information, see "6. UTILIZATION OF EXISTING PIPING."

Formula to calculate the volume of additional refrigerant required

Additional charge volume (kg) = { Main pipe length (m) – Length covered without additional charge 30 (m) } x 0.06 (kg/m) + Total length of branch pipes (m) x 0.06 (kg/m)

*When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.

- **To charge refrigerant again, recover refrigerant from the system first and then charge the volume calculated from the above table (Standard refrigerant charge volume + additional charge volume for total pipe length.)**

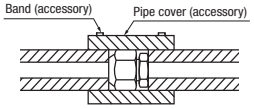
(2) Charging refrigerant

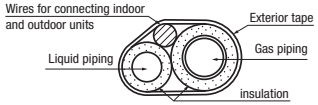
- Since R410A refrigerant must be charged in the liquid phase, you should charge it, keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
- Charge refrigerant always from the liquid side service port with the service valve shut. When you find it difficult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

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

8) Heating and condensation prevention

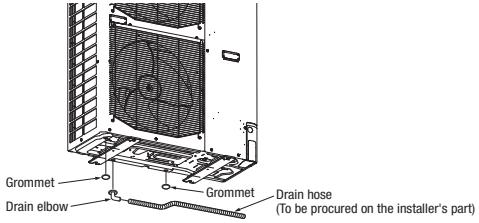
(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
(2) Use a heat insulating material that can withstand 120℃ or a higher temperature. Poor heat insulating capacity can cause heat insulation problems or cable deterioration.
- Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.
- All gas pipes must be securely heat insulated in order to prevent damage from dripping water that comes from the condensation formed on them during a cooling operation or personal injury from burns because their surface can reach quite a high temperature due to discharged gas flowing inside during a heating operation.
- Wrap indoor units' flare joints with heat insulating parts (pipe cover) for heat insulation (both gas and liquid pipes).
- Give heat insulation to both gas and liquid side pipes. Bundle a heat insulating material and a pipe tightly together so that no gaps may be left between them and wrap them together with a connecting cable by a dressing tape.
- Although it is verified in a test that this air-conditioning unit shows satisfactory performance under JIS condensation test conditions, **both gas and liquid pipes need to be dressed with 20 mm or thicker heat insulation materials above the ceiling where relative humidity exceeds 70%.**



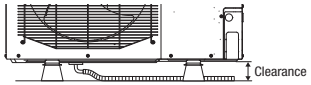


3. DRAIN PIPING WORK

- Execute drain piping by using a drain elbow and drain grommets supplied separately as option parts, where water drained from the outdoor unit is a problem.
- Water may drip where there is a larger amount of drain water. Seal around the drain elbow and drain grommets with putty or adequate caulking material.
- Condensed water may flow out from vicinity of service valve or connected pipes.
- Where you are likely to have several days of sub-zero temperatures in a row, do not use a drain elbow and drain grommets. (There is a risk of drain water freezing inside and blocking the drain.)
- Do not use drain elbow and grommet made of plastic for drain piping when base heater for outdoor unit is used. Plastic grommet and elbow will be damaged and burnt in worst case.
- Prepare another drain tray made of metallic material for collecting drain when base heater is used.



- When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks.
  Then, please secure space for the drain elbow and the drain hose.

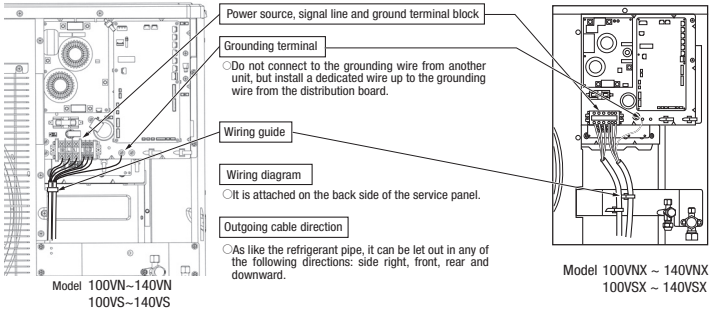


4. ELECTRICAL WIRING WORK For details of electrical cabling, refer to the indoor unit installation manual.

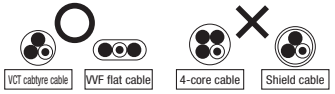
Electrical installation work must be performed by an electrical installation service provider qualified by a power provider of the country. Electrical installation work must be executed according to the technical standards and other regulations applicable to electrical installations in the country.

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

  Do not use anything lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC57) for supply cords of parts of appliances for outdoor use.
- Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire. If improperly grounded, an electric shock or malfunction may result.
- A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
- The installation of an impulse withstanding type earth leakage breaker is necessary. A failure to install an earth leakage breaker can result in an acccident such as an electric shock or a fire.



- Do not turn on the power until the electrical work is completeted .
- Do not use a condensive capacitor for power factor improvement under any circumstances. (It dose not improve power factor, while it can cause an abnormal overheat accident)
- For power source cables, use conduits.
- Do not lay electronic control cables (remote control and signaling wires) and other cables together outside the unit. Laying them together can result in the malfunctioning or a failure of the unit due to electric noises.
- Fasten cables so that may not touch the piping, etc.
- When cables are connected, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)
- Always use a three-core cable for an indoor-outdoor connecting cable. Never use a shield cable.
- ● Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire.
- ● In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.
- ● Grounding terminals are provided in the control box.



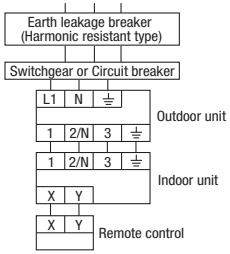
Main fuse specification

Model	Specification	Part No.
100VN~140VN 100VNX~140VNX	250V 30A	SSA564A049A
100VS~140VS 100VSX~140VSX	—	—

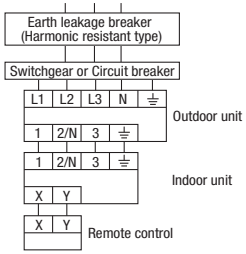
Power cable, indoor-outdoor connecting wires

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

⚠ CAUTION Always use an earth leakage circuit breaker designed for inverter circuits to prevent a faulty operation.



Model 100VN ~ 140VN
100VNX ~ 140VNX



Model 100VS ~ 140VS
100VSX ~ 140VSX

Model	Power source	Power cable thickness(mm²)	MAX. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness × number
100VN～140VN	Single phase 3 wire 220-240V 50Hz 220V 60Hz	5.5	24	25	ϕ1.6mm	ϕ1.6mm x 3
100VNX						
125VNX,140VNX			26	23		
100VS～140VS	3 phase 4 wire 380-415V 50Hz 380V 60Hz	3.5	15	27		
100VSX～140VSX						

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

※At the connection with the duct type indoor unit.

Model	Power source	Power cable thickness(mm²)	MAX. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness × number
100VN,100VNX	Single phase 3 wire 220-240V 50Hz 220V 60Hz	5.5	25	24	ϕ1.6mm	ϕ1.6mm x 3
125VN			27	22		
140VN		8	28	32		
125VNX			29	31		
140VNX			30	30		
100VS,100VSX	3 phase 4 wire 380-415V 50Hz 380V 60Hz	3.5	16	26		
125VS,125VSX			18	23		
140VS,140VSX			19	21		

5. TEST RUN

⚠ WARNING

- Before conduct a test run, make sure that the service valves are closed.
- Turn on power 6 hours prior to a test run to energize the crank case heater.
- In case of the first operation after turning on power, even if the unit does not move for 30 minutes, it is not a breakdown.
- Always give a 3-minute or longer interval before you start the unit again whenever it is stopped.

} A failure to observe these instructions can result in a compressor breakdown.

- Removing the service panel will expose high-voltage live parts and high-temperature parts, which are quite dangerous. Take utmost care not to incur an electric shock or burns. Do not leave the unit with the service panel open.

⚠ CAUTION

- When you operate switches (SW3, SW5) for on-site setting, be careful not to touch a live part.
- You cannot check discharge pressure from the liquid service valve charge port.
- The 4-way valve (20S) is energized during a heating operation.
- When power source is cut off to reset the unit, give 3 or more minutes before you turn on power again after power is cut off. If this procedure is not observed in turning on power again, "Communication error between outdoor and indoor unit" may occur.

1) Test run method

(1) A test run can be initiated from an outdoor unit by using SW3-3 and SW3-4 for on-site setting.
(2) Switching SW3-3 to ON will start the compressor.
(3) The unit will start a cooling operation, when SW3-4 is OFF, or a heating operation, when SW3-4 is ON.
(4) **Do not fail to switch SW3-3 to OFF when a test run is completed.**

SW-3-3	SW-3-4	
ON	OFF	Cooling during a test run
	ON	Heating during a test run
OFF	—	Normal or After the test operation

2) Checking the state of the unit in operation

Use check joints provided on the piping before and after the four-way valve installed inside the outdoor unit for checking discharge pressure and suction pressure.
As indicated in the table shown on the right, pressure detected at each point will vary depending on whether a cooling or heating operation has been selected.

	Check joint of the pipe	Charge port of the gas operation valve
Cooling operation	Discharge pressure (High pressure)	Suction pressure (Low pressure)
Heating operation	Suction pressure (Low pressure)	Discharge pressure (High pressure)

3) Setting SW3-1, SW3-2, on-site

(1) Defrost control switching (SW3-1)
・When this switch is turned ON, the unit will run in the defrost mode more frequently.
・Set this switch to ON, when installed in a region where outdoor temperature falls below zero during the season the unit is run for a heating operation.
(2) Snow guard fan control (SW3-2)
・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℃ or lower and the compressor is not running.
・When the unit is used in a very snowy country, set this switch to ON.

4) Failure diagnosis in a test run

Error indicated on the remote control unit	Printed circuit board LED(The cycles of 5 seconds)		Failure event	Action
	Red LED	Green LED		
E34	Blinking once	Blinking continuously	Open phase	Check power cables for loose contact or disconnection
E40	Blinking once	Blinking continuously	63H1 actuation or operation with service valves shut (occurs mainly during a heating operation)	1. Check whether the service valves are open. 2. If an error has been canceled when 3 minutes have elapsed since a compressor stop, you can restart the unit by effecting Check Reset from the remote control unit.
E49	Blinking once	Blinking continuously	Low pressure error or operation with service valves shut (occurs mainly during a cooling operation)	

- If an error code other than those listed above is indicated, refer to the wiring diagram of the outdoor unit and the indoor unit.

5) The state of the electronic expansion valve.

The following table illustrates the steady states of the electronic expansion valve.

	When power is turned on	When the unit comes to a normal stop		When the unit comes to an abnormal stop	
		During a cooling operation	During a heating operation	During a cooling operation	During a heating operation
Valve for a cooling operation	Complete shut position	Complete shut position	Full open position	Full open position	Full open position
Valve for a heating operation	Full open position	Full open position	Complete shut position	Full open position	Full open position

6) Heed the following on the first operation after turning on the circuit breaker.

This outdoor unit may start in the standby mode (waiting for a compressor startup), which can continue up to 30 minutes, to prevent the oil level in the compressor from lowering on the first operation after turning on the circuit breaker. If that is the case, do not suspect a unit failure.

Items to check before a test run

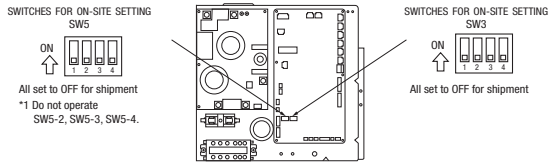
- When you leave the outdoor unit with power supplied to it, be sure to close the panel.

Item No.used in the installation manual	Item	Check item	Check
2	Refrigerant plumbing	If brazed, was it brazed under a nitrogen gas flow?	
		Were air-tightness test and vacuum extraction surely performed?	
		Are heat insulation materials installed on both liquid and gas pipes?	
		Are service valves surely opened for both liquid and gas systems?	
		Have you recorded the additional refrigerant charge volume and refrigerant pipe length on the panel's label?	
4	Electric wiring	Is the unit free of cabling errors such as uncompleted connection, an absent or reversed phase?	
		Are properly rated electrical equipments used for circuit breakers and cables?	
		Doesn't cabling cross-connect between units, where more than one unit are installed?	
		Aren't indoor-outdoor signal wires connected to remote control wires?	
		Do indoor-outdoor connecting cables connect between the same terminal numbers?	
		Are either VCT cabtyre cables or WF flat cables used for indoor-outdoor connecting cables?	
		Does grounding satisfy the D type grounding (type III grounding) requirements?	
		Is the unit grounded with a dedicated grounding wire not connected to another unit's grounding wire?	
		Are cables free of loose screws at their connection points?	
		Are cables held down with cable clamps so that no external force works onto terminal connections?	
—	Indoor unit	Is indoor unit installation work completed?	
		Where a face cover should be attached onto an indoor unit, is the face cover attached to the indoor unit?	

Test run procedure

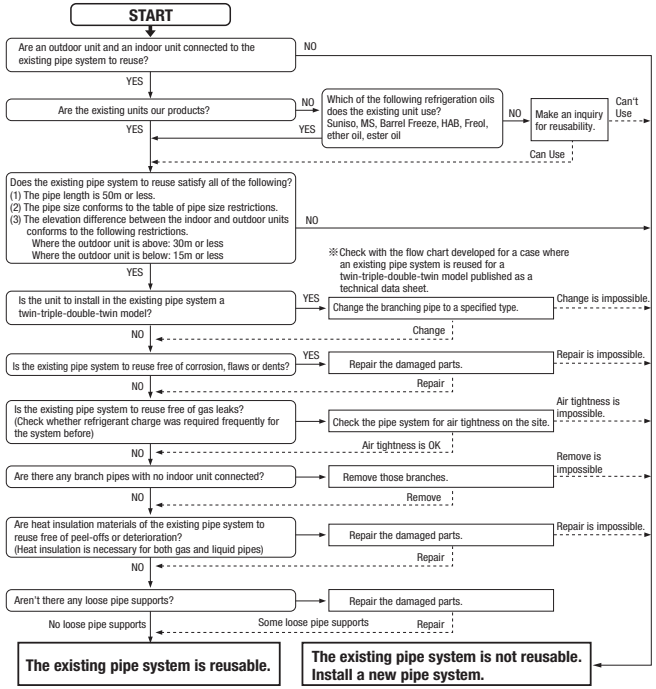
- Always carry out a test run and check the following in order as listed.

Turn	The contents of operation	Check
①	Open the gas side service valve fully.	
②	Open the liquid side service valve fully.	
③	Close the panel.	
④	Where a remote control unit is used for unit setup on the installation site, follow instructions for unit setup on the installation site with a remote control unit.	
⑤	SW3-3 ON / SW3-4 OFF: the unit will start a cooling operation.	
	SW3-3 ON / SW3-4 ON: the unit will start a heating operation.	
⑥	When the unit starts operation, press the wind direction button provided on the remote control unit to check its operation.	
⑦	Place your hand before the indoor unit's diffuser to check whether cold (warm) winds come out in a cooling (heating) operation.	
⑧	Make sure that a red LED is not blinking.	
⑨	When you complete the test run, do not forget to turn SW3-3 to the OFF position.	
⑩	Where options are used, check their operation according to the respective instruction manuals.	



6. UTILIZATION OF EXISTING PIPING.

Check whether an existing pipe system is reusable or not by using the following flow chart.



⚠ WARNING <Where the existing unit can be run for a cooling operation.>

Carry out the following steps with the excising unit (in the order of (1), (2), (3) and (4))

(1) Run the unit for 30 minutes for a cooling operation.
(2) Stop the indoor fan and run the unit for 3 minutes for a cooling operation (returning liquid)
(3) Close the liquid side service valve of the outdoor unit and pump down (refrigerant recovery)
(4) Blow with nitrogen gas. ※ If discolored refrigeration oil or any foreign matters is discharged by the blow, wash the pipe system or install a new pipe system.
- For the flare nut, do not use the old one, but use the one supplied with the outdoor unit. Process a flare to the dimensions specified for R410A.
- **Turn on-site setting switch SW5-1** to the ON position. (Where the gas pipe size is φ19.05)

<Where the existing unit cannot be run for a cooling operation.>

Wash the pipe system or install a new pipe system.
- If you choose to wash the pipe system, contact our distributor in the area.

<Table of pipe size restrictions>

◎:Standard pipe size ○:Usable
△:Restricted to shorter pipe length limits ×:Not usable

Additional charging amount of refrigerant per 1m		0.06kg/m		0.08kg/m	
Pipe size	Liquid pipe	φ9.52	φ9.52	φ12.7	φ12.7
	Gas pipe	φ15.88	φ19.05	φ15.88	φ19.05
100VN 100VS	Usability	◎	○※1	△	△※1
	Maximum one-way pipe length	50	50	25	25
	Length covered without additional charge	30	30	15	15
125VN 125VS	Usability	◎	○※1	△	△※1
	Maximum one-way pipe length	50	50	25	25
	Length covered without additional charge	30	30	15	15
140VN 140VS	Usability	◎	○※1	△	△※1
	Maximum one-way pipe length	50	50	25	25
	Length covered without additional charge	30	30	15	15

Additional charging amount of refrigerant per 1m		0.02kg/m	0.06kg/m		0.08kg/m	
Pipe size	Liquid pipe	φ6.35	φ9.52	φ9.52	φ12.7	φ12.7
	Gas pipe	φ15.88	φ15.88	φ19.05	φ15.88	φ19.05
100VNX 100VSX	Usability	△	◎	○※1	△	△※1
	Maximum one-way pipe length	20	100	100	50	50
	Length covered without additional charge	10	30	30	15	15
125VNX 125VSX	Usability	△	◎	○※1	△	△※1
	Maximum one-way pipe length	20	100	100	50	50
	Length covered without additional charge	10	30	30	15	15
140VNX 140VSX	Usability	△	◎	○※1	△	△※1
	Maximum one-way pipe length	20	100	100	50	50
	Length covered without additional charge	10	30	30	15	15

<Pipe system after the branching pipe>

			After 1st branch ※4			After 2nd branch		
Additional charging amount of refrigerant per 1m			0.06kg/m			0.06kg/m		
Pipe size	Liquid pipe		φ9.52			φ9.52		
	Gas pipe		φ12.7	φ15.88	φ19.05※1	φ12.7	φ15.88	φ19.05※1
Model	Combination type	Combination of capacity						
100V	Twin	50+50	◎	○	×	—	—	—
125V	Twin	60+60	◎	○	×	—	—	—
140V	Twin	71+71	×	◎	○	—	—	—
	Triple A	50+50+50	◎	○	×	—	—	—
	Triple B	50+50+50	×	◎※5	○※5	◎	○	×

※1 Because of its insufficient pressure resistance, **turn the dip switch SW5-1** provided on the outdoor unit board to the ON position for φ19.05 × t1.0.
(In the case of a twin-triple-double-twin model, this also applies to the case where φ19.05 × t1.0 is used in a pipe system after the first branching point.)
However, you need not turn the dip switch SW5-1 to the ON position, if 1/2H pipes or pipes having 1.2 or thicker walls are used.

※2 When the main pipe length exceeds 40m, a significant capacity drop may be experienced due to pressure loss in the liquid pipe system. Use φ12.7 for the liquid main.

※3 Keep the total pipe length, not one-way pipe length, below the specified maximum pipe length.

※4 Piping size after branch should be equal or smaller than main pipe size.

※5 Piping size from first branch to indoor unit should be φ9.52 (Liquid) / φ12.7 (Gas).

- When refrigerant piping is shoter than 3m, reduce refrigerant by 1kg from factory charged volume.
- Any combinations of pipe sizes not listed in the table or marked with × in the table are not usable.

<The model types of existing units of which branching pipes are reusable.>

Models later than Type 8.
- FDC ＊＊＊8□□□
- FDCP ＊＊＊8□□□

The branching pipes used with models other than those listed above are not reusable because of their insufficient pressure resistance. Please use our genuine branching pipes for R410A.

- ＊＊＊ are numbers representing horsepower. □□□ is an alphanumeric letter.

Formula to calculate additional charge volume

Additional charge volume (kg) = {Main pipe length (m) − Length covered without additional charge shown in the table (m)} × Additional charge volume per meter of pipe shown in the table (kg/m) + Total length of branch pipes (m) × Additional charge volume per meter of pipe shown in the table (kg/m)

※ If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged.
Example) When an 140V (single installation) is installed in a 20m long existing pipe system (liquid φ12.7, gas φ19.05), the quantity of refrigerant to charge additionally should be (20m-15m) x 0.08kg/m = 0.4 kg.

1.9.5 Instructions for branching pipe set (DIS-WA1, WB1, TA1, TB1)

For R410A

PSB012D865 F

⚠ WARNING / CAUTION

- This set is for R410A refrigerant.
- Select a branching pipe set correctly rated for the combined total capacity of connected indoor units and install it according to this manual.
  An improperly installed branching pipe set can cause degraded performance or an abnormal unit stop.
- Provide good heat insulation to the pipes by following instructions contained in this manual.
  Improper heat insulation can result in degraded performance or a water leak accident from condensation.
- Please make sure that only parts supplied as accessories or the manufacturer's approved parts are used in installing the unit, because a leak of refrigerant can result in a lack-of-oxygen accident, if it reaches a concentration beyond the tolerable limit.

This manual explains how to use a branching pipe set that is indispensable in connecting pipes for a twin/triple/double-twin configuration installation (system). For the details of piping work, unit installation work and electrical installation work, please refer to the installation manuals and installation guides supplied with your outdoor and indoor units.

1. Branching pipe set specifications

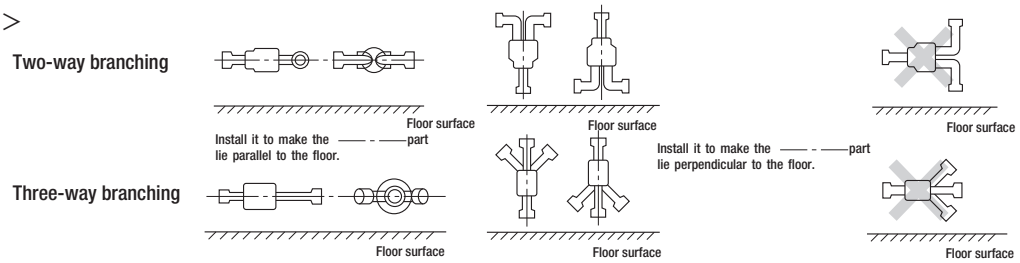
(1) Please make sure that you have chosen the right branching pipe set and the specifications of the parts contained in it by checking with the table below.
(2) Connect pipes as illustrated in the table below. The pipe from an outdoor unit must be brazed to the pipe connection port "①" and the pipes from indoor units to "②," "③" and "④."

Branching pipe set type	Supported outdoor/indoor unit combinations		Part lists			
	Outdoor unit model	Indoor unit model	Branching pipe set for a liquid pipe	Branching pipe set for a gas pipe	Different diameter pipe joint	Heat insulation material
DIS-WA1 (Two-way branching set)	3HP	1.5HP＋1.5HP	ID9.52 ① ② ③ ID9.52 ID9.52 1 piece	ID15.88 ① ② ③ ID15.88 ID15.88 1 piece	Joint A ID9.52 2 pieces Flare joint (for indoor unit side connection) Joint B OD15.88 ID12.7 2 pieces	One each for liquid and gas
	4HP	2HP＋2HP				
		1.5HP＋2.5HP				
	5HP	2.5HP＋2.5HP				
		2HP＋3HP				
	6HP	3HP＋3HP				
		2HP＋4HP				
DIS-WB1 (Two-way branching set)	8HP	4HP＋4HP	ID9.52 ① ② ③ ID12.7 ID9.52 1 piece	ID15.88 ① ② ③ ID25.4 ID15.88 1 piece	Joint C OD12.7 ID9.52 1 piece	One each for liquid and gas
		3HP＋5HP				
	10HP	5HP＋5HP				
DIS-TA1 (Three-way branching set)	6HP	2HP＋2HP＋2HP	ID9.52 ① ② ③ ④ ID9.52 1 piece	ID12.7 ① ② ③ ④ ID15.88 1 piece	Joint A ID9.52 3 pieces Flare joint (for indoor unit side connection)	One each for liquid and gas
DIS-TB1 (Three-way branching set)	8HP	3HP＋3HP＋3HP	ID9.52 ① ② ③ ④ ID9.52 1 piece	ID15.88 ① ② ③ ④ ID25.4 1 piece	Joint A ID9.52 2 pieces Flare joint (for indoor unit side connection) Joint B OD15.88 ID12.7 1 piece Joint D ID12.7 OD9.52 1 piece	One each for liquid and gas

(3) To connect pipes for a Double Twin installation (involving 4 indoor units), please see 2-7. "Double Twin configuration."
(4) A branching pipe set must always be installed into the posture as illustrated in the drawing below.

ID stands for inner diameter and OD, outer diameter.

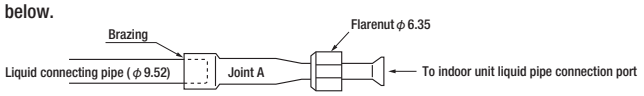
＜Posture to install into＞



2. Pipe connecting procedure

Braze the different diameter pipe joint found in the set matching the connected outdoor and indoor unit capacities according to the instructions set out below.

⚠ CAUTION In connecting an indoor unit of which capacity is 1.5HP, 2HP or 2.5HP, always use a φ9.52 liquid pipe to connect to the branching pipe (branching pipe – indoor unit).
In connecting to an indoor unit (liquid pipe side: φ6.35), use the different diameter pipe joint A supplied with the set and follow the procedure set out below.



2-1 DIS-WA1

Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
3HP	1.5HP＋1.5HP		ID12.7 Joint B ② ① ID15.88 ③ Joint B ID12.7
4HP	2HP＋2HP	Flare joint (φ6.35) Joint A Connecting pipe (φ9.52) ① ② ③ ID9.52 ⚠ CAUTION Reference Joint A Flare joint (φ6.35)	
	1.5HP＋2.5HP		ID12.7 Joint B ② ① ID15.88 ③ Joint B ID12.7 ※A ID12.7 Joint B ② ① ID15.88 ③ ID15.88
5HP	2.5HP＋2.5HP		ID12.7 Joint B ② ① ID15.88 ③ Joint B ID12.7 ※A ID15.88 ② ① ID15.88 ③ ID15.88
	2HP＋3HP	Flare joint (φ6.35) Joint A Connecting pipe (φ9.52) ① ② ID9.52 ③ ID9.52 ⚠ CAUTION Reference	ID12.7 Joint B ② ① ID15.88 ③ ID15.88
6HP	3HP＋3HP	ID9.52 ② ① ID9.52 ③ ID9.52	ID15.88 ② ① ID15.88 ③ ID15.88
	2HP＋4HP	Flare joint (φ6.35) Joint A Connecting pipe (φ9.52) ① ② ID9.52 ③ ID9.52 ⚠ CAUTION Reference	ID12.7 Joint B ② ① ID15.88 ③ ID15.88

Note When connect the indoor unit of an old model that is shown in the model list, use the joint supplied with the branch piping set like ※A

2-2 DIS-WB1

Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
8HP	3HP＋5HP	ID9.52 ② ID9.52 ① Joint C ③ ID9.52	ID15.88 ② ① ID25.4 ③ ID15.88
	4HP＋4HP		
10HP	5HP＋5HP	ID9.52 ② ① ID12.7 ③ ID9.52	ID15.88 ② ① ID25.4 ③ ID15.88

2-3 DIS-TA1

Applicable to the difference in length of pipes after the branch being less than 3 m
* Connection is not allowed when the difference in length of pipes is larger than 3 m.

Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
6HP	2HP＋2HP＋2HP	Connecting pipe (φ9.52) Joint A ② ③ ID9.52 ① ④ Flare joint (φ6.35) Joint A ⚠ CAUTION Reference	ID12.7 ① ② ③ ④ ID15.88

2-4 DIS-TB1

Applicable to the difference in length of pipes after the branch being less than 3 m
* Connection is not allowed when the difference in length of pipes is larger than 3 m.

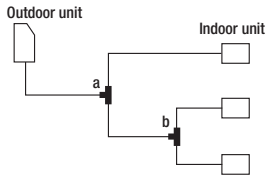
Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
8HP	3HP＋3HP＋3HP	① ID9.52 ② ③ ④ ID9.52	ID15.88 ① ② ③ ④ ID25.4

▷ OLD Model list

model name
FDTA251R
FDENA251R
FDKNA251R
FDURA251R
FDUMA252R

2-5. Triple type for same model/same capacity or different model/same capacity

When the difference in length of pipes after the branch is longer than 3 m and shorter than 10 m

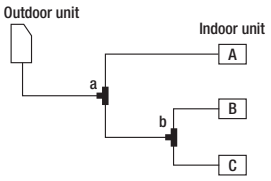


Outdoor unit model	Indoor unit model	Branching pipe	Branching pipe set type	Liquid branching pipe	Gas branching pipe
6HP	2HP＋2HP＋2HP	a	DIS-WA1	Flare joint (φ6.35) Joint A Connecting pipe (φ9.52) ① ② ID9.52 ③ ID9.52 ⚠ CAUTION Reference	ID12.7 Joint B ② ① ID15.88 ③ ID15.88
		b		Flare joint (φ6.35) Joint A Connecting pipe (φ9.52) ① ② ID9.52 ③ ⚠ CAUTION Reference Joint A Flare joint (φ6.35)	ID12.7 Joint B ② ① ID15.88 ③ Joint B ID12.7
8HP	3HP＋3HP＋3HP	a	DIS-WB1	ID9.52 ② ID9.52 ① Joint C ③ ID9.52	ID15.88 ② ① ID25.4 ③ ID15.88
		b	DIS-WA1	ID9.52 ② ① ID9.52 ③ ID9.52	ID15.88 ② ① ID15.88 ③ ID15.88

2-6. Triple type for same model/different capacity or different model/different capacity

Applicable to the difference in length of pipes after the branch being less than 3 m

* Connection is not allowed when the difference in length of pipes is larger than 3 m.



Connecting position

Outdoor unit model	Indoor unit model	A	B	C
10HP	2.5HP+2.5HP+5HP	5HP	2.5HP	2.5HP
	3HP+3HP+4HP	4HP	3HP	3HP

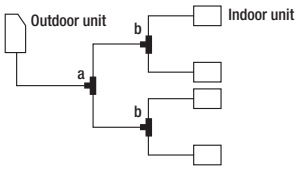
Outdoor unit model	Indoor unit model	Branching pipe	Branching pipe set type	Liquid branching pipe	Gas branching pipe
10HP	2.5HP+2.5HP+5HP	a	DIS-WB1	ID9.52 ② ① ID12.7 ③ ID9.52	ID15.88 ② ① ID25.4 ③ ID15.88
		b	DIS-WA1	Flare joint (φ6.35) Joint A Connecting pipe (φ9.52) ID9.52 ② ① ③ CAUTION Reference Joint A Flare joint (φ6.35)	ID12.7 Joint B ① ② ID15.88 ③ Joint B ID12.7 ※A ID15.88 ② ① ID15.88 ③ ID15.88
10HP	3HP+3HP+4HP	a	DIS-WB1	ID9.52 ② ① ID12.7 ③ ID9.52	ID15.88 ② ① ID25.4 ③ ID15.88
		b	DIS-WA1	ID9.52 ② ① ID9.52 ③ ID9.52	ID15.88 ② ① ID15.88 ③ ID15.88

Note When connect the indoor unit of an old model that is shown in the model list, use the joint supplied with the branch piping set like※ A.

2-7. Double Twin type

Pipes should be connected as follows for a Double Twin installation (4 connected indoor units. The capacity of an outdoor unit available for this configuration is either 8HP or 10HP only):

Outdoor unit capacity	Indoor unit capacity
8HP	2HP×4 units
10HP	2.5HP×4 units



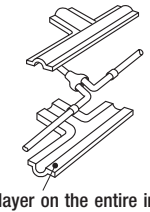
Branching pipe	Branching pipe set type	Outdoor unit model	Liquid branching pipe	Gas branching pipe
a	DIS-WB1	8HP	ID9.52 ② ① ID9.52 ③ ID9.52 Joint C	ID15.88 ② ① ID25.4 ③ ID15.88
		10HP	ID9.52 ② ① ID12.7 ③ ID9.52	
b	DIS-WA1	8HP	Flare joint (φ6.35) Joint A Connecting pipe (φ9.52) ID9.52 ② ① ③ CAUTION Reference Joint A Flare joint (φ6.35)	ID12.7 Joint B ① ② ID15.88 ③ Joint B ID12.7
		10HP		※A ID15.88 ② ① ID15.88 ③ ID15.88 ID12.7 Joint B ① ② ID15.88 ③ Joint B ID12.7

Note When connect the indoor unit of an old model that is shown in the model list, use the joint supplied with the branch piping set like※ A.

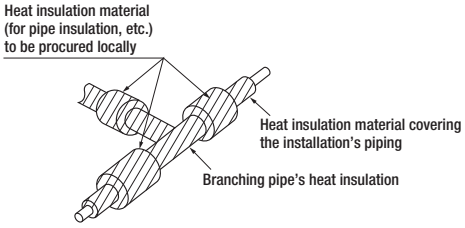
3. Heat insulation work

(1) Condensation can also occur on liquid pipes with this model. Please provide good heat insulation to both liquid and gas pipes.

(2) For the heat insulation of a branching pipe, always use the heat insulation material supplied with the set and provide heat insulation according to the instructions set out below.



1. It has an adhesive layer on the entire inner face. Remove a separator and wrap it around the branching pipe.



2. Apply a heat insulation material (to be procured locally) to the joint between the branching pipe's heat insulation and the heat insulation material covering the installation's piping as described above and wrap a tape over the gap shown as a hatched (///) area to complete dressing of the piping.

1.10 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

1.10.1 Remote control

(1) Wired remote control

Model RC-EX1A

All icons are shown for the sake of explanation.

⑦ **Clock, R/C name display**
Displays the current time and the name of R/C

⑪ **Change set temp button**
Displays the temperature which is set currently.Tap this button to change the set temperature.

⑩ **Change operation mode button**
Displays the operation mode which is selected currently. Tap this button to change the operation mode.

⑭ **Timer button**
Displays simplified contents of the timer which is set currently.
(When two or more timers are set, contents of the timer which will be operated immediately after is displayed.)
Tap this button to set the timer.

② **switch (High Power switch)**
Pushing this button starts the high power operation.

① **switch (Run/Stop switch)**
One push on the button starts operation and another push stops operation.

⑥ **USB port (mini-B)**
USB connector (mini-B) allows connecting to a personal computer.
For operating methods, refer to the instruction manual attached to the software for personal computer (eco-touch remote control RC-EX1, utility software).

⑤ **LCD display (With backlight)**
A tap on the LCD lights the backlight.
The backlight turns off automatically if there is no operation for certain period of time.
Lighting period of the backlight lighting can be changed.
If the backlight is ON setting, when the screen is tapped while the backlight is turned off, the backlight only is turned on.(Operations with switches ①,② and ③ are excluded.)

⑧ **Icon display**
Each icon is displayed when one of following settings is going on.(It is referring to the following figure for details.)

⑨ **Menu button**
When setting or changing other than the following ⑩-⑭, tapthemenubutton.When menu items are displayed, select one and set.

⑫ **Flap direction button**
Displays the flap direction which is selected currently.
Tap this button to change the flap direction.

⑬ **Fan speed change button**
Displays the fan speed which is selected currently.
Tap this button to change the fan speed.

⑮ **Message display**
Status of air-conditioner operation and messages of the R/C operations etc.are displayed.

③ **switch (Energy Saving switch)**
Pushing this button starts the energy-saving operation.

④ **Operation lamp**
This lamp lights in green (yellow-green) during operation. It changes to red if any error occurs.

Touch panel system, which is operated by tapping the LCD screen with a finger, is employed for any operations other than the ① Run/Stop, ② High power and ③ Energy-saving switches.

⑧ Icon display
Each icon is displayed when one of following settings is going on.

When the demand control is effective.

When setting is made from the sub R/C.

When the central control (Option) is running.

When the periodical inspection is necessary.

During the ventilation operation

When "filter sign" is up.

When the Permission/ Prohibition setting is made.

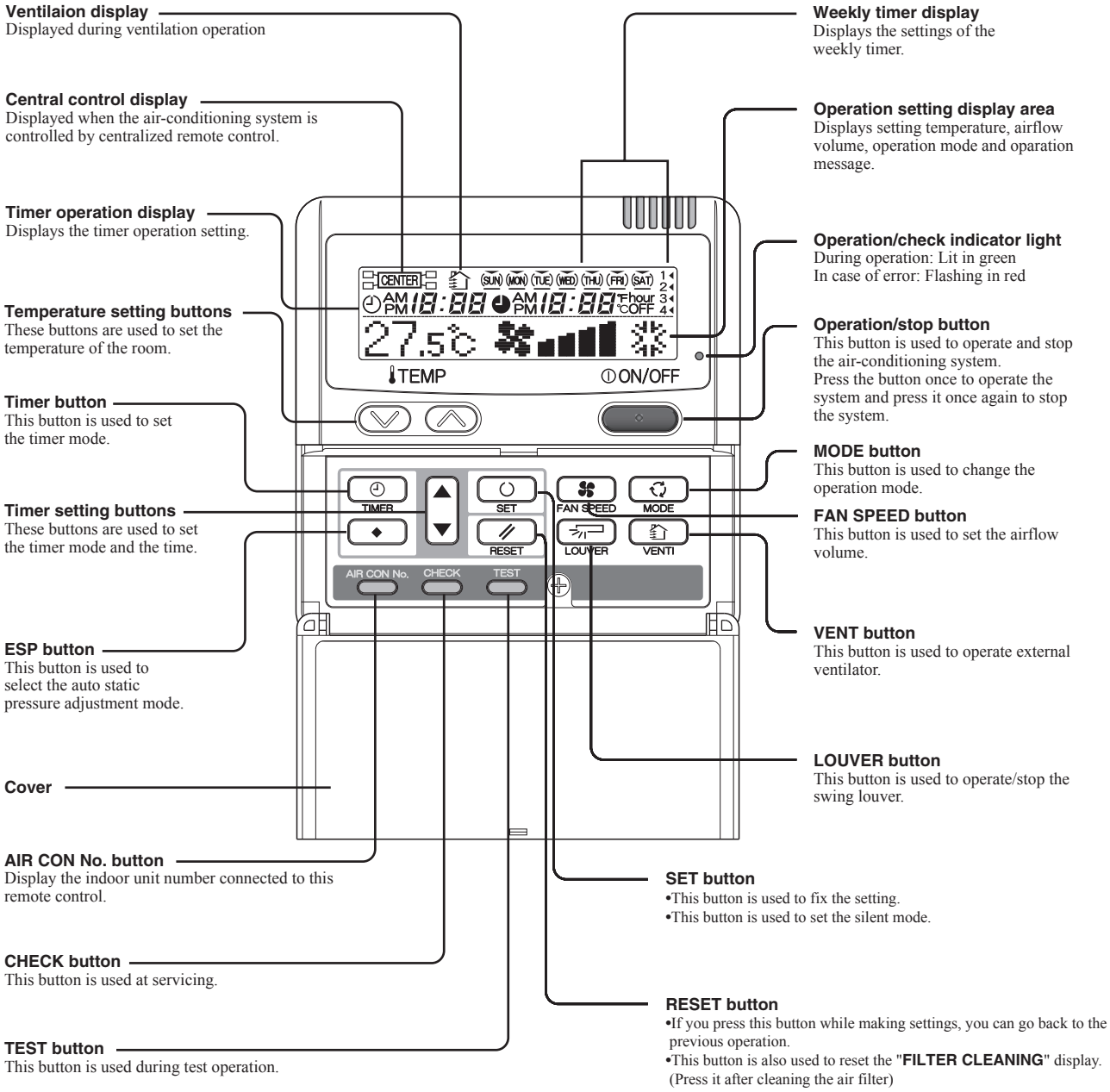
When the weekly timer is set.

When the peak-cut timer is set

Model RC-E5

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

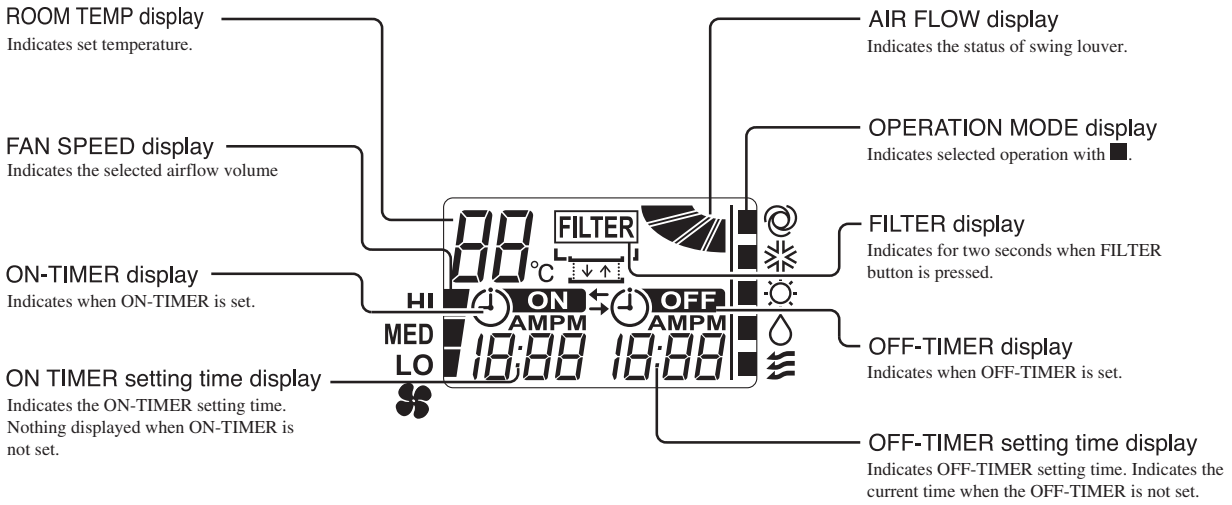
The figure below shows the remote control with the cover opened.



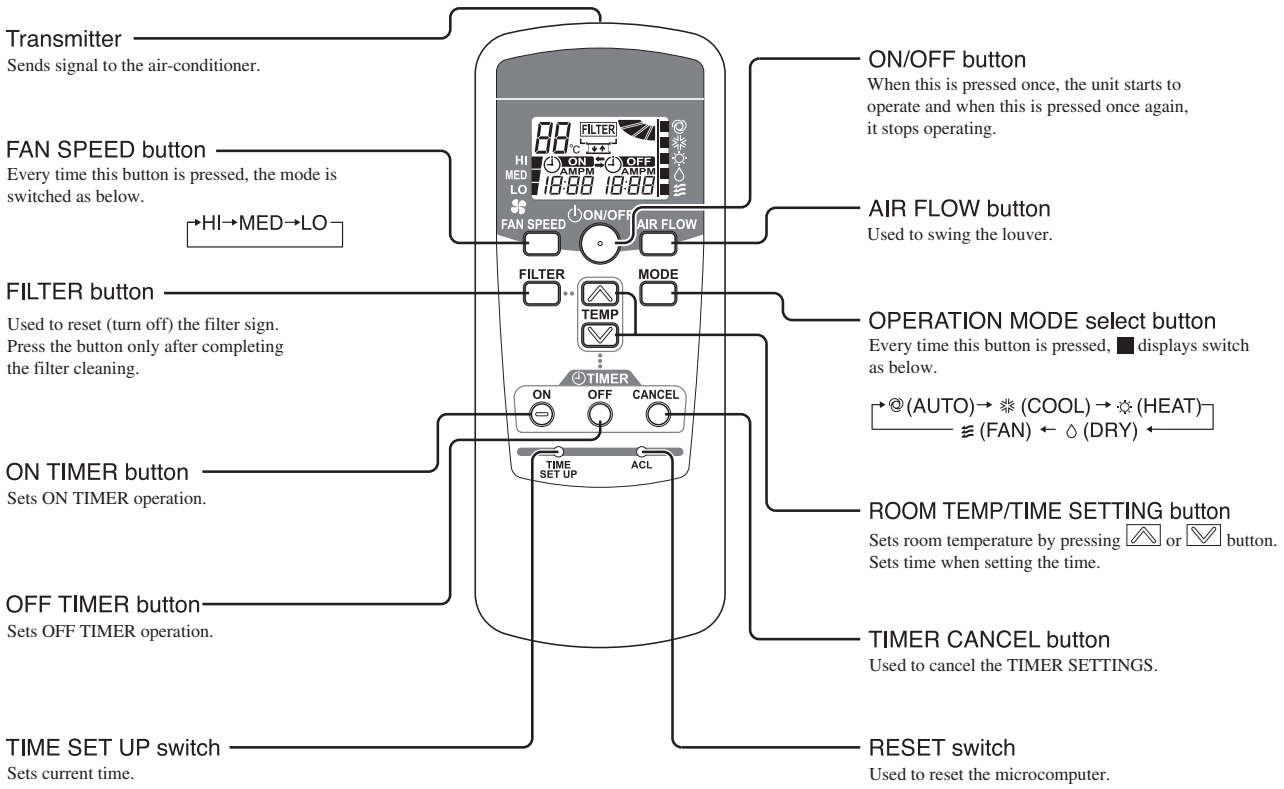
∗ All displays are described in the liquid crystal display for explanation.

(2) Wireless remote control

Indication section



Operation section



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

1.10.2 Operation control function by the wired remote control

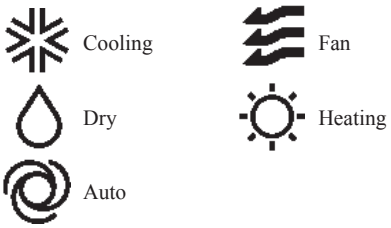
●Model RC-EX1A

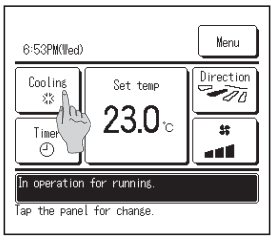
(1) Switching sequence of the operation mode switches of remote control

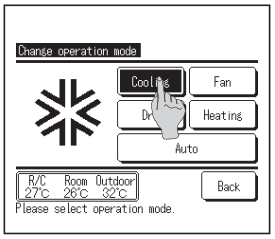
(a) Tap the change operation mode button on the TOP screen.

(b) When the change operation mode screen is displayed, tap the button of desired mode.

(c) When the operation mode is selected, the display returns to the TOP screen.
Icons displayed have the following meanings.





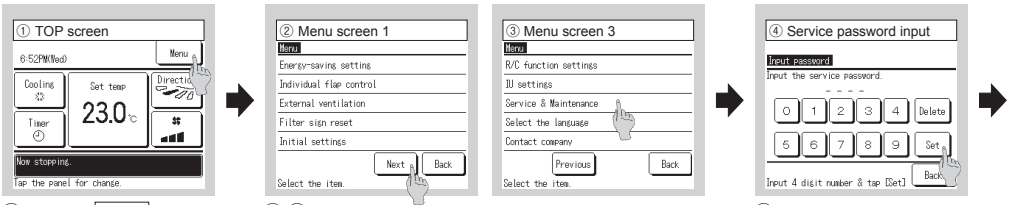


Notes(1) Operation modes which cannot be selected depending on combinations of IU and OU are not displayed.

(2) When the Auto is selected, the cooling and heating switching operation is performed automatically according to indoor and outdoor temperatures.

(2) CPU reset

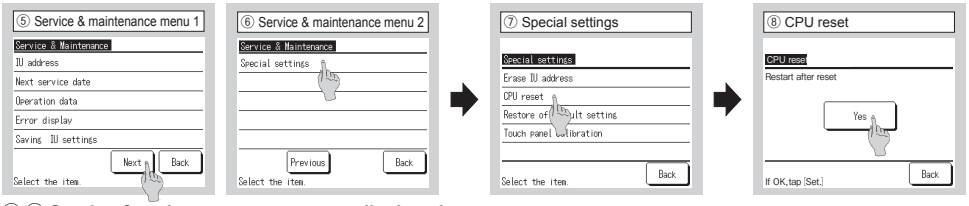
Reset CPU from the remote control as follows.



①**Tap the Menu button** on the TOP screen.

②,③ **Main menu screen is displayed.**
Tap the "Service & Maintenance" on the menu screen.

④**Display the service password input screen.**
Enter the service password (4-digit number).



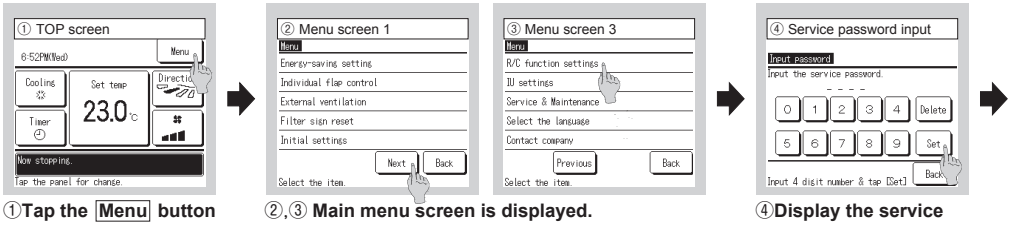
⑤,⑥ **Service & maintenance menus are displayed.**

⑦ **Special settings**
CPU reset : Microcomputers of IU and OU connected are reset (State of restoration after power failure).

⑧ **CPU reset**
All microcomputers on the R/C operated, other R/Cs, IUs and OUs are reset (State of restoration after power failure).
Tap [Yes] to reset CPU

(3) Power failure compensation function (Electric power source failure)

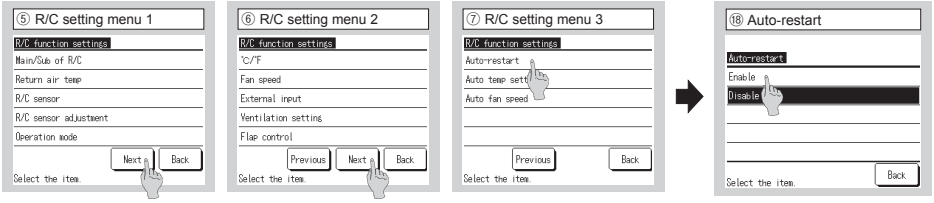
Enable the Auto-restart function from the remote control as follows.



①**Tap the Menu button** on the TOP screen.

②,③ **Main menu screen is displayed.**
Tap the "Service & Maintenance" on the menu screen.

④**Display the service password input screen.**
Enter the service password (4-digit number).



Enable : It returns to the state be fore the power source failure as soon as the power is restored (After the end of the primary control at the power on).

Disable : It stops after the restoration of power source, regardless the state of operation before the power failure.

⑤,⑥,⑦ **Display the R/C setting menu screens.**

⑱ **Auto-restart**
Set the state of operation to be started when the power source is restored after a power failure.

- Since it memorizes always the condition of remote control, it starts operation according to the contents of memory no sooner than normal state is recovered after the power failure. Although the auto swing stop position and the timer mode are cancelled, the weekly timer setting is restored with the holiday setting for all weekdays.
  After recovering from the power failure, it readjusts the clock and resets the holiday setting for each weekday so that the setting of weekly timer becomes effective.
- Content memorized with the power failure compensation are as follows.

Note (1) Items (f), (g) and (h) are memorized regardless whether the power failure compensation is effective or not while the setting of silent mode is cancelled regardless whether the power failure compensation is effective or not.

(a) At power failure – Operating/stopped
If it had been operating under the off timer mode, sleep timer mode, the state of stop is memorized. (Although the timer mode is cancelled at the recovery from power failure, the setting of weekly timer is changed to the holiday setting for all weekdays.)

(b) Operation mode

(c) Airflow volume mode

(d) Room temperature setting

(e) Louver auto swing/stop
However, the stop position (4-position) is cancelled so that it returns to Position (1).

(f) “Remote control function items” which have been set with the remote control function setting (“Indoor function items” are saved in the memory of indoor unit.)

(g) Upper limit value and lower limit value which have been set with the temperature setting control

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

● **Model RC-E5**

(1) Switching sequence of the operation mode switches of remote control

(2) CPU reset

This functions when "CHECK" and "ESP" buttons on the remote control are pressed simultaneously. Operation is same as that of the power source reset.

(3) Power failure compensation function (Electric power source failure)

- This becomes effective if "Power failure compensation effective" is selected with the setting of remote control function.
- Since it memorizes always the condition of remote control, it starts operation according to the contents of memory no sooner than normal state is recovered after the power failure. Although the auto swing stop position and the timer mode are cancelled, the weekly timer setting is restored with the holiday setting for all weekdays.
  After recovering from the power failure, it readjusts the clock and resets the holiday setting for each weekday so that the setting of weekly timer becomes effective.
- Content memorized with the power failure compensation are as follows.

Note (1) Items (f), (g) and (h) are memorized regardless whether the power failure compensation is effective or not while the setting of silent mode is cancelled regardless whether the power failure compensation is effective or not.

(a) At power failure – Operating/stopped
If it had been operating under the off timer mode, sleep timer mode, the state of stop is memorized. (Although the timer mode is cancelled at the recovery from power failure, the setting of weekly timer is changed to the holiday setting for all weekdays.)

(b) Operation mode

(c) Airflow volume mode

(d) Room temperature setting

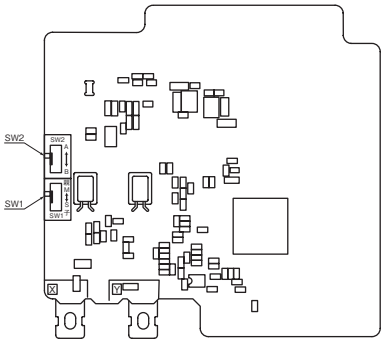
(e) Louver auto swing/stop
However, the stop position (4-position) is cancelled so that it returns to Position (1).

(f) "Remote control function items" which have been set with the remote control function setting ("Indoor function items" are saved in the memory of indoor unit.)

(g) Upper limit value and lower limit value which have been set with the temperature setting control

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

[Parts layout on remote control PCB]

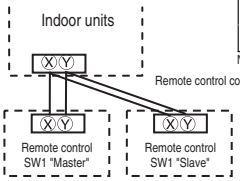


Master/ slave setting when more than one remote controls are used

A maximum of two remote controls can be connected to one indoor unit (or one group of indoor units.)

Switch	Setting	Contents
SW1	M	Master remote control
	S	Slave remote control

Note (1) Don't change SW2 because it is not used normally.



Caution

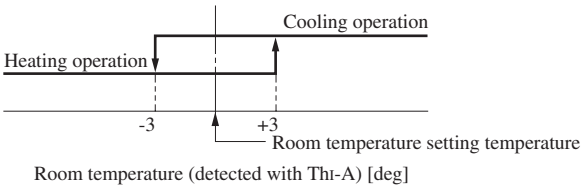
When using multiple remote controls, the following dispiays or settings cannot be done with the slave remote control. It is available only with the master remote control.

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

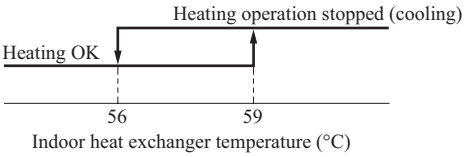
1.10.3 Operation control function by the indoor control

(1) Auto operation

(a) If "Auto" mode is selected by the remote control, the heating and the cooling are automatically switched according to the difference between outdoor air temperature and setting temperature and the difference between setting temperature and return air temperature. (When the switching of cooling mode ↔ heating mode takes place within 3 minutes, the compressor does not operate for 3 minutes by the control of 3-minute timer.) This will facilitate the cooling/heating switching operation in intermediate seasons and the adaptation to unmanned operation at stores, etc (ATM corner of bank).



Notes (1) Temperature range of switching cooling/heating mode can be changed by RC-EX1A from ±1.0 - ±4.0.
(2) Room temperature control during auto cooling/auto heating is performed according to the room temperature setting temperature. (DIFF: ±1 deg)
(3) If the indoor heat exchanger temperature rises to 59°C or higher during heating operation, it is switched automatically to cooling operation. In addition, for 1 hour after this switching, the heating operation is not performed, regardless of the temperature shown at right.



(b) The following automatic controls are performed other than (a) above.

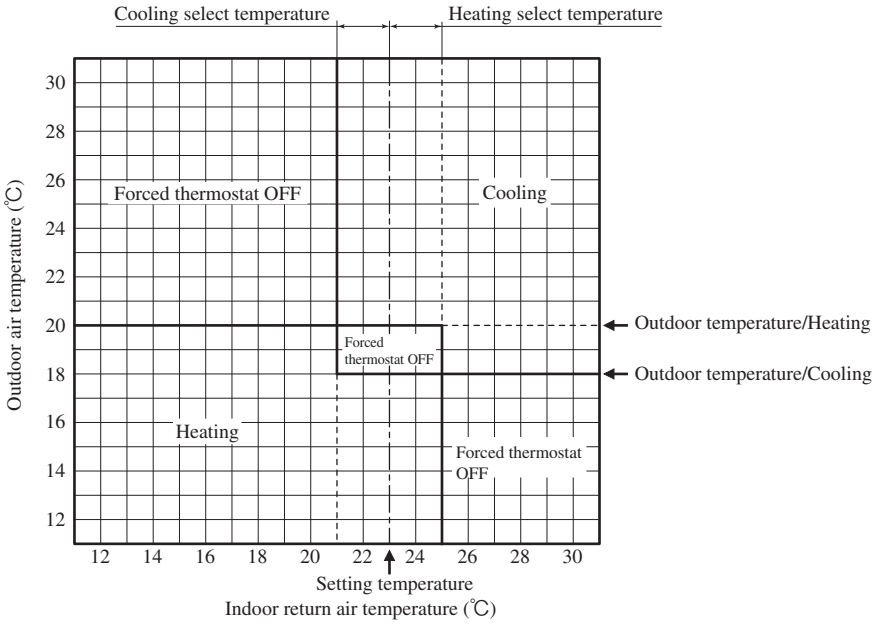
(i) Cooling or heating operation mode is judged according to the conditions of the "Judgment based on Setting temperature + Cooling select temperature and Indoor return air temperature" and the "Judgment based on Outdoor temperature".

1) In "Setting temperature - Cooling select temperature < Indoor return air temperature" and "Outdoor temperature/Cooling < Outdoor return air temperature" ⇒ Operation mode: Cooling

2) "Setting temperature + Heating select temperature > Indoor return air temperature" and "Outdoor temperature/Heating > Outdoor air temperature" ⇒ Operation mode: Heating

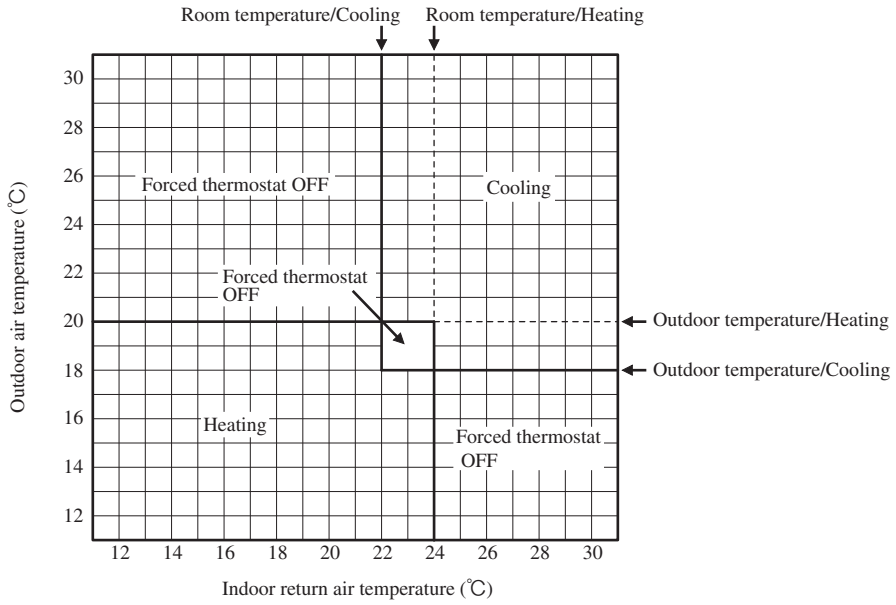
3) The outdoor air temperature of the above judgment conditions is sampled at every 10 minutes.

4) In the range where the above cooling and heating zones are overlapped ⇒ Forced thermostat OFF



(ii) Regardless of the setting temperature, the cooling or heating operation mode is judged according to the "Judgment based on Room temperature/Cooling or Heating and Outdoor temperature/Cooling or Heating".

1) In case of "Room temperature/Cooling < Indoor return air temperature" and "Outdoor temperature/Cooling < Outdoor air temperature" ⇒ Operation mode: Cooling
2) In case of "Room temperature/Heating > Indoor return air temperature" and "Outdoor temperature /Heating > Outdoor air temperature" ⇒ Operation mode: Heating
3) The outdoor air temperature of the above judgment conditions is sampled at every 10 minutes.
4) In the range where the above cooling and heating zones are overlapped ⇒ Forced thermostat OFF



(2) Operations of functional items during cooling/heating

Operation / Functional item	Cooling		Fan	Heating			Dehumidifying
	Thermostat ON	Thermostat OFF		Thermostat ON	Thermostat OFF	Hot start (Defrost)	
Compressor	○	×	×	○	×	○	○/×
4-way valve	×	×	×	○	○	○(×)	×
Outdoor unit fan	○	×	×	○	×	○(×)	○/×
Indoor unit fan	○	○	○	○/×	○/×	○/×	○/×

Note (1) ○: Operation ×: Stop ○/×: Turned ON/OFF by the control other than the room temperature control.

(3) Dehumidifying operation

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

(a) Operation is started in the cooling mode. When the difference between the return air temperature and the setting temperature is 2°C or less, the indoor unit fan tap is brought down by one tap. That tap is retained for 3 minutes after changing the indoor unit fan tap.

(b) If the return air temperature exceeds the setting temperature by 3°C during dehumidifying operation, the indoor unit fan tap is raised. That tap is retained for 3 minutes after changing the indoor unit fan tap.

(c) If the thermostat OFF is established during the above control, the indoor unit fan tap at the thermostat ON is retained so far as the thermostat is turned OFF.

(4) Timer operation

(a) RC-EX1A

(i) Sleep timer

Set the time from the start to stop of operation. The time can be selected in the range from 30 to 240 minutes (in the unit of 10-minute).

Note (1) Enable the "Sleep timer" setting from the remote control. If the setting is enabled, the timer operates at every time.

(ii) Set OFF timer by hour

Set the time to stop the unit after operation, in the range from 1 to 12 hours (in the unit of hour).

(iii) Set ON timer by hour

Set the time to start the unit after the stop of operation, in the range from 1 to 12 hours (in the unit of hour). It is allowed also to set simultaneously the indoor temperature, operation mode, air flow rate and warm-up enabled/disabled.

(iv) Set ON timer by clock

Set the time to start operation. The time can be set in the unit of 5-minute. This setting can be activated only once or at every time. It is allowed also to set simultaneously the indoor temperature, operation mode, air flow rate and warm-up enabled/disabled.

Note (1) It is necessary to set the clock to use this timer.

(v) Set OFF timer by clock

Set the time to stop operation. The time can be set in the unit of 5-minute. This setting can be activated only once or at every time.

Note (1) It is necessary to set the clock to use this timer.

(vi) Weekly timer

Set the ON or OFF timer for a week. Up to 8 patterns can be set for a day. The day-off setting is provided for holidays and non-business days.

Note (1) It is necessary to set the clock to use the weekly timer.

(vii) **Combination of patterns which can be set for the timer operations**

	Sleep time	Set OFF timer by hour	Set ON timer by hour	Set OFF timer by clock	Set ON timer by clock	Weekly timer
Sleep time		×	×	○	○	○
Set OFF timer by hour	×		×	×	×	×
Set ON timer by hour	×	×		×	×	×
Set OFF timer by clock	○	×	×		○	×
Set ON timer by clock	○	×	×	○		×
Weekly timer	○	×	×	×	×	

Note (1) ○: Allowed ×: Not

(b) RC-E5

(i) Sleep timer

Set the duration of time from the present to the time to turn off the air-conditioner.

It can be selected from 10 steps in the range from "OFF 1 hour later" to "OFF 10 hours later". After the sleep timer setting, the remaining time is displayed with progress of time in the unit of hour.

(ii) OFF timer

Time to turn OFF the air-conditioner can be set in the unit of 10 minutes.

(iii) ON timer

Time to turn ON the air-conditioner can be set. Indoor temperature can be set simultaneously.

(iv) Weekly timer

Timer operation (ON timer, OFF timer) can be set up to 4 times a day for each weekday.

(v) Timer operations which can be set in combination

Item \ Item	Timer	OFF timer	ON timer	Weekly timer
Timer		×	○	×
OFF timer	×		○	×
ON timer	○	○		×
Weekly timer	×	×	×	

Note (1) ○: Allowed ×: Not

(2) Since the ON timer, sleep timer and OFF timer are set in parallel, when the times to turn ON and OFF the airconditioner are duplicated, the setting of the OFF timer has priority.

(5) Remote control display during the operation stop

When the operation is stopped (the power source is turned ON), it displays preferentially the "Room temperature", "Center/Remote", "Filter sign", "Inspection" and "Timer operation".

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

(a) Operating conditions

When either one of following conditions is met, the hot start control is performed.

(i) From stop to heating operation
(ii) From cooling to heating operation
(iii) From heating thermostat OFF to ON
(iv) After completing the defrost control (only on units with thermostat ON)

(b) Contents of operation

(i) Indoor fan motor control at hot start

1) Within 7 minutes after starting heating operation, the fan mode is determined depending on the condition of thermostat (fan control with heating thermostat OFF).

a) Thermostat OFF
i) Operates according to the fan control setting at heating thermostat OFF.
ii) Even if it changes from thermostat OFF to ON, the fan continues to operate with the fan control at thermostat OFF till the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher.
iii) When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher, the fan operates with the set airflow volume.

b) Thermostat ON
i) When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 25°C or lower, the fan is turned OFF and does not operate.
ii) When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 25°C or higher, the fan operates with the fan control at heating thermostat OFF.
iii) When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher, the fan operates with the set airflow volume.

c) If the fan control at heating thermostat OFF is set at the "Set airflow volume" (from the remote control), the fan operates with the set airflow volume regardless of the thermostat ON/OFF.

2) Once the fan motor is changed from OFF to ON during the thermostat ON, the indoor fan motor is not turned OFF even if the heat exchanger thermistor detects lower than 25°C.

Note (1) When the defrost control signal is received, it complies with the fan control during defrosting.

3) Once the hot start is completed, it will not restart even if the temperature on the heat exchanger thermistor drops.

(ii) During the hot start, the louver is kept at the horizontal position.

(iii) When the fan motor is turned OFF for 7 minutes continuously after defrosting, the fan motor is turned ON regardless of the temperatures detected with the indoor heat exchanger thermistors (ThI-R1, R2).

(c) Ending condition

(i) If one of following conditions is met during the hot start control, this control is terminated, and the fan is operated with the set airflow volume.

1) Heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher.
2) It has elapsed 7 minutes after starting the hot start control.

(7) Hot keep

Hot keep control is performed at the start of the defrost control.

(a) Control

(i) When the indoor heat exchanger temperature (detected with ThI-R1 or R2) drops to 35°C or lower, the speed of indoor fan is changed to the lower tap at each setting.
(ii) During the hot keep, the louver is kept at the horizontal position.

(b) Ending condition

When the indoor fan is at the lower tap at each setting, it returns to the set airflow volume as the indoor heat exchanger temperature rises to 45°C or higher.

(8) Auto swing control

(a) RC-EX1A

(i) Louver control

1) To operate the swing louver when the air-conditioner is operating, press the “Direction” button on the TOP screen of remote control. The wind direction select screen will be displayed.
2) To swing the louver, touch the “Auto swing” button. The lover will move up and down. To fix the swing louver at a position, touch one of [1] - [4] buttons. The swing lover will stop at the selected position.
3) Louver operation at the power on with a unit having the louver 4-position control function
   The louver swings one time automatically (without operating the remote control) at the power on.
   This allows the microcomputer recognizing and inputting the louver motor (LM) position.

(ii) Automatic louver level setting during heating

At the hot start and the heating thermostat OFF, regardless whether the auto swing switch is operated or not (auto swing or louver stop), the louver takes the level position (in order to prevent blowing of cool wind). The louver position display LCD continues to show the display which has been shown before entering this control.

(iii) Louver free stop control

If you touch the “Menu” → “Next” → “R/C settings” buttons one after another on the TOP screen of remote control, the “Flap control” screen is displayed. If the free stop is selected on this screen, the louver motor stops upon receipt of the stop signal from the remote control. If the auto swing signal is received from the remote control, the auto swing will start from the position before the stop.

(b) RC-E5

(i) Louver control

1) Press the “LOUVER” button to operate the swing louver when the air-conditioner is operating.
   “SWING ” is displayed for 3 seconds and then the swing louver moves up and down continuously.
2) To fix the swing louver at a position, press one time the “LOUVER” button while the swing louver is moving so that four stop positions are displayed one after another per second.
   When a desired stop position is displayed, press the “LOUVER” button again. The display stops, changes to show the “STOP 1 ” for 5 seconds and then the swing louver stops.
3) Louver operation at the power on with a unit having the louver 4-position control function
   The louver swings one time automatically (without operating the remote control) at the power on.
   This allows inputting the louver motor (LM) position, which is necessary for the microcomputer to recognize the louver position.

Note (1) If you press the “LOUVER” button, the swing motion is displayed on the louver position LCD for 10 second. The display changes to the “SWING ” display 3 seconds later.

(ii) Automatic louver level setting during heating

At the hot start with the heating thermostat OFF, regardless whether the auto swing switch is operated or not (auto swing or louver stop), the louver takes the level position (In order to prevent the cold start). The louver position display LCD continues to show the display which has been shown before entering this control.

(iii) Louver-free stop control

When the louver-free stop has been selected with the indoor function of wired remote control “ POSITION”, the louver motor stops when it receives the stop signal from the remote control. If the auto swing signal is received from the remote control, the auto swing will start from the position where it was before the stop.

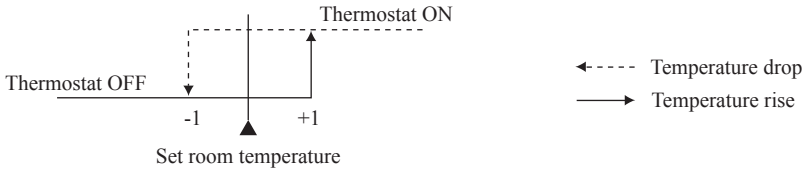
Note (1) When the indoor function of wired remote control “ POSITION” has been switched, switch also the remote control function “ POSITION” in the same way.

(9) Thermostat operation

(a) Cooling

(i) Thermostat is operated with the room temperature control.

(ii) Thermostat is turned ON or OFF relative to the set room temperature as shown below.

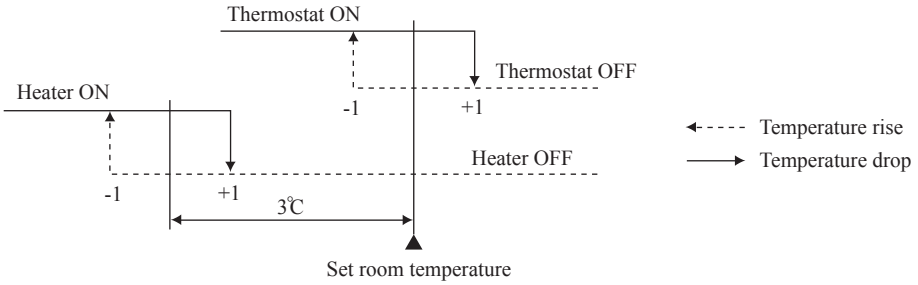


(iii) Thermostat is turned ON when the room temperature is in the range of -1 < Set temperature < +1 at the start of cooling operation (including from heating to cooling).

(b) Heating

(i) Thermostat is operated with the room temperature control.

(ii) Thermostat is turned ON or OFF relative to the set room temperature as shown below.



(iii) Thermostat is turned ON when the room temperature is in the range of -1 < Set point < +1 at the start of cooling operation (including from cooling to heating).

(c) Fan control during heating thermostat OFF

(i) Following fan controls during the heating thermostat OFF can be selected with the indoor function setting of the wired remote control.

① Low fan speed (Factory default), ② Set fan speed, ③ Intermittence, ④ Fan OFF

(ii) When the "Low fan speed (Factory default)" is selected, the following taps are used for the indoor fans.

・ For DC motor : ULo tap

(iii) When the "Set fan speed" is selected, it is operated with the set fan speed also in the thermostat OFF condition.

(iv) If the "Intermittence" is selected, following controls are performed:

1) If the thermostat is turned OFF during the heating operation, the indoor unit fan motor stops.
2) Indoor fan OFF is fixed for 5 minutes. After the 5 minutes, the indoor fan is operated at ULo for 2 minutes. In the meantime the louver is controlled at level.
3) After operating at ULo for 2 minutes, the indoor fan moves to the state of 1) above.
4) If the thermostat is turned ON, it moves to the hot start control.
5) When the heating thermostat is turned OFF, the remote control displays the temperature detected at the fan stop and revises the temperature later when the indoor fan changes from ULo to stop.
   The remote control uses the operation data display function to display temperatures and updates values of temperature even when the indoor fan is turned OFF.
6) When the defrosting starts while the heating thermostat is turned OFF or the thermostat is turned OFF during defrosting, the indoor fan is turned OFF. (Hot keep or hot start control takes priority.) However, the suction temperature is updated at every 7-minute.
7) When the heating thermostat is turned ON or the operation is changed to another mode (including stop), this control is stopped immediately, and the operating condition is restored.

(v) When the "Fan OFF" is selected, the fan on the indoor unit of which the thermostat has been turned OFF, is turned OFF. The same occurs also when the remote control sensor is effective.

(d) Fan control during cooling thermostat OFF

(i) Following fan controls during the cooling thermostat OFF can be selected with the indoor function setting of the wired remote control.

① Low fan speed, ② Set fan speed (Factory default), ③ Intermittence, ④ Fan OFF

(ii) When the "Low fan speed" is selected, the following taps are used for the indoor fans.

・ For DC motor : ULo tap

(iii) When the "Set fan speed" is selected, it is operated with the set fan speed also in the thermostat OFF condition.

(iv) If the "Intermittence" is selected, following controls are performed:

1) If the thermostat is turned OFF during the cooling operation, the indoor unit fan motor stops.

2) Indoor fan OFF is fixed for 5 minutes. After the 5 minutes, the indoor fan is operated at ULo for 2 minutes.

3) After operating at ULo for 2 minutes, the indoor fan moves to the state of 1) above.

4) If the thermostat is turned ON, the fan starts operation at set fan speed.

5) When the cooling thermostat is turned OFF, the remote control displays the temperature detected at the fan stop and revises the temperature later when the indoor fan changes from ULo to stop.

By using operation data display function at wireless remote control, the temperature as displayad and the value is updated including the fan stops.

6) When the cooling thermostat is turned ON or the operation is changed to another mode (including stop), this control is stopped immediately, and the operating condition is restored.

(v) When the "Fan OFF" is selected, the fan on the indoor unit of which the thermostat has been turned OFF, is turned OFF. The same occurs also when the remote control sensor is effective.

(10) Filter sign

As the operation time (Total ON time of ON/OFF switch) accumulates to 180 hours (1), "FILTER CLEANING" is displayed on the remote control. (This is displayed when the unit is in trouble and under the centralized control, regardless of ON/OFF)

Note (1) Time setting for the filter sign can be made as shown below using the indoor function of wired remote control "FILTER SIGN SET". (It is set at TYPE 1 at the shipping from factory.)

Filter sign setting	Function
TYPE 1	Setting time: 180 hrs (Factory default)
TYPE 2	Setting time: 600 hrs
TYPE 3	Setting time: 1,000 hrs
TYPE 4	Setting time: 1,000 hrs (Unit stop) (2)

(2) After the setting time has elapsed, the "FILTER CLEANING" is displayed and, after operating for 24 hours further (counted also during the stop), the unit stops.

(11) Compressor inching prevention control

(a) 3-minute timer

When the compressor has been stopped by the thermostat, remote control operation switch or anomalous condition, its restart will be inhibited for 3 minutes. However, the 3-minute timer is invalidated at the power on the electric power source for the unit.

(b) 3-minute forced operation timer

(i) Compressor will not stop for 3 minutes after the compressor ON. However, it stops immediately when the unit is stopped by means of the ON/OFF switch or by when the thermister turned OFF the change of operation mode.

(ii) If the thermostat is turned OFF during the forced operation control of heating compressor, the louver position (with the auto swing) is returned to the level position.

Note (1) The compressor stops when it has entered the protective control.

(12) Operation check mode

(a) If the power is turned on by the dip switch (SW7-1) on the indoor PCB when electric power source is supplied, it enters the mode of operation check. It is ineffective (prohibited) to change the switch after turning power on.

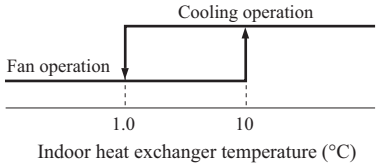
(b) When the communication with the remote control has been established within 60 seconds after turning power on by the dip switch (SW7-1) ON, it enters the operation check mode.

(c) Operation check mode

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

(13) Cooling, dehumidifying frost protection

(a) To prevent frosting during cooling mode or dehumidifying mode operation, the of compressor speed is reduced if the indoor heat exchanger temperature (detected with ThI-R) drops to 1.0 °C or lower at 4 minutes after the start of compressor operation. If the indoor unit heat exchanger temperature is 1.0 °C or lower after 1 minutes, the compressor speed is reduced further. If it becomes 2.5 °C or higher, the control terminates. When the indoor heat exchanger temperature has become as show below after reducing the compressor speed, it is switched to the fan operation. For the selection of indoor fan speed, refer to item 2).



(b) Selection of indoor fan speed

If it enters the frost prevention control during cooling operation (excluding dehumidifying), the indoor unit fan speed is switched.

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

(ii) If the phenomenon of (i) above is detected again after the acceleration of indoor unit fan, indoor unit fan speed is increased further by 20rpm.

Note (1) Indoor unit fan speed can be increased by up to 2 taps.

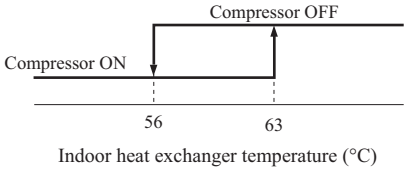
• Compressor frequency drop start temperature

Item \ Symbol	A
Temperature - Low (Factory default)	1.0
Temperature - High	2.5

Note (1) Frost prevention temperature setting can be selected with the indoor unit function setting of the wired remote control.

(14) Heating overload protection

(a) If the indoor heat exchanger temperature (detected with ThI-R) at 63°C or higher is detected for 2 seconds continuously, the compressor stops. When the compressor is restarted after a 3-minute delay, if a temperature at 63°C or higher is detected for 2 seconds continuously within 60 minutes after initial detection and if this is detected 5 times consecutively, the compressor stops with the anomalous stop (E8). Anomalous stop occurs also when the indoor heat exchanger temperature at 63°C or higher is detected for 6 minutes continuously.



(b) Indoor unit fan speed selection

If, after second detection of heating overload protection up to fourth, the indoor fan is set at Me and Lo taps when the compressor is turned ON, the indoor fan speed is increased by 1 tap.

(15) Anomalous fan motor

(a) After starting the fan motor, if the fan motor speed is 200min^{-1} or less is detected for 30 seconds continuously and 4 times within 60 minutes, then fan motor stops with the anomalous stop (E16).

(b) If the fan motor fails to reach at -50 min^{-1} less than the required speed, it stops with the anomalous stop (E20).

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

(a) Function

One remote control switch can control a group of multiple number of unit (Max. 16 indoor units). "Operation mode" which is set by the remote control switch can operate or stop all units in the group one after another in the order of unit No.(1). Thermostat and protective function of each unit function independently.

Note (1) Unit No. is set by SW2 on the indoor unit control PCB. Unit No. setting by SW2 is necessary for the indoor unit only. In cases of the twin and triple specification, it is necessary set for the master and the slave units. This can be selected by SW5. (All are set for the master unit at the shipping from factory.)

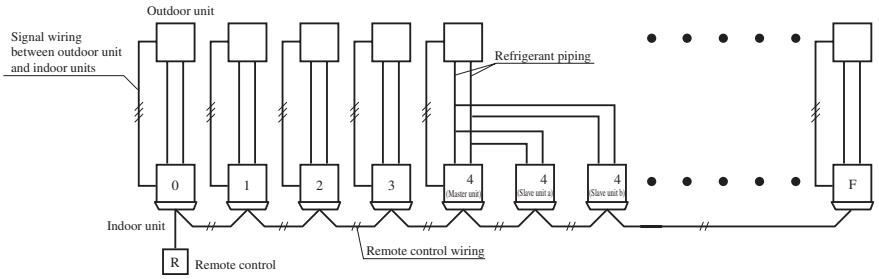
SW2: For setting of 0 – 9, A – F

SW5: For setting of master and slave units

(See table shown at right.)

SW5 setting

Switch / Unit	SW5-1	SW5-2
Master unit	OFF	OFF
Slave unit a	OFF	ON
Slave unit b	ON	OFF



(2) Unit No. may be set at random unless duplicated, it should be better to set orderly like 0, 1, 2…, F to avoid mistake.

(b) Display to the remote control

(i) Central or each remote control basis, heating preparation: the youngest unit No. among the operating units in the remote mode (or the central mode unless the remote mode is available) is displayed.

(ii) Inspection display, filter sign: Any of unit that starts initially is displayed.

(iii) Confirmation of connected units

1) In case of RC-EX1A remote control

If you touch the buttons in the order of "Menu" → "Next" → "Service & Maintenance" → "IU address" on the TOP screen of remote control, the indoor units which are connected are displayed.

2) In case of RC-E5 remote control

Pressing "AIR CON No." button on the remote control displays the indoor unit address. If "▲" "▼" button is pressed at the next, it is displayed orderly starting from the unit of youngest No.

(iv) In case of anomaly

1) If any anomaly occurs on a unit in a group (a protective function operates), that unit stops with the anomalous stop but any other normal units continue to run as they are.

2) Signal wiring procedure

Signal wiring between indoor and outdoor units should be made on each unit same as the normal wiring. For the group control, lay connect with sires wiring between rooms using terminal blocks (X, Y) of remote control.

Connect the remote control communication wire separately from the power source wire or wires of other electric devices (AC220V or higher).

(17) High ceiling control

When sufficient air flow rate cannot be obtained from the indoor unit which is installed at a room with high ceiling, the air flow rate can be increased by changing the fan tap. To change the fan tap, use the indoor unit function "FAN SPEED SET" on the wired remote control.

Fan tap		Indoor unit airflow setting			
		PHi2 - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
FAN SPEED SET	STANDARD	PHi2 - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
	HIGH SPEED1	PHi2 - PHi - Hi - Me	PHi - Hi - Me	PHi - Me	PHi - Hi
	HIGH SPEED2	PHi2 - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me

Notes (1) Factory default is STANDARD.

(2) At the hot-start and heating thermostat OFF, or other, the indoor unit fan is operated at the low speed tap of each setting.

(3) This function is not able to be set with wireless remote controls or simple remote control (RCH-E3)

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

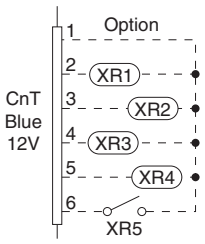
(a) Broken wire detection
When the return air temperature thermistor detects -50°C or lower or the heat exchanger temperature thermistor detect -50°C or lower for 5 seconds continuously, the compressor stops. After a 3-minute delay, the compressor restarts but, if it is detected again within 60 minutes after the initial detection for 6 minutes continuously, stops again (the return air temperature thermistor: E7, the heat exchanger temperature thermistor: E6).

(b) Short-circuit detection
If the heat exchanger temperature thermistor detects 70°C or higher for 5 seconds continuously at 2 minutes and 20 seconds after the compressor ON during cooling operation, the compressor stops (E6).

(19) External input/output control (CnT or CnTA)

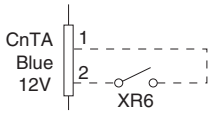
Be sure to connect the wired remote control to the indoor unit. Without wired remote control remote operation by CnT is not possible to perform.

・CnT



①Operation output (CnT-2: XR1)
②Heating output (CnT-3: XR2)
③Thermostat ON output (CnT-4: XR3)
④Error output (CnT-5: XR4)
⑤Remote operation input (CnT-6: Volt-free contact)

・CnTA



Note (1) CnTA function can be changed by RC-EX1A.

■ Priority order for combinations of CnT and CnTA input.

		CnTA					
		① Operation stop level	② Operation stop pulse	③ Operation permission/prohibition	④ Operation permission/prohibition pulse	⑤ Cooling/heating selection level	⑥ Cooling/heating selection pulse
CnT	① Operation stop level	CnT ①	CnT ①	CnT ① +CnTA ②	CnT ①	CnT ① /CnTA ⑤	CnT ① /CnTA ⑥
	② Operation stop pulse	CnT ②	CnT ②	CnT ② +CnTA ③	CnT ②	CnT ② /CnTA ⑤	CnT ② /CnTA ⑥
	③ Operation permission/prohibition level	CnT ③ >CnTA ①	CnT ③ >CnTA ②	CnT ③ +CnTA ③	CnT ③	CnT ③ /CnTA ⑤	CnT ③ /CnTA ⑥
	④ Operation permission/prohibition pulse	CnT ④	CnT ④	CnT ④ +CnTA ③※	CnT ④	CnT ④ /CnTA ⑤	CnT ④ /CnTA ⑥
	⑤ Cooling/heating selection level	CnT ⑤ /CnTA ①	CnT ⑤ /CnTA ②	CnT ⑤ /CnTA ③※	CnT ⑤ /CnTA ④	CnT ⑤	CnT ⑤
	⑥ Cooling/heating selection pulse	CnT ⑥ /CnTA ①	CnT ⑥ /CnTA ②	CnT ⑥ /CnTA ③	CnT ⑥ /CnTA ④	CnT ⑥	CnT ⑥

Note (1) Following operation commands are accepted when the operation prohibition is set with CnTA as indicated with *.
Individual operation command from remote control, test run command from outdoor unit and operation command from optional device, CnT input.

Reference: Explanation on the codes and the combinations of codes in the table above
1. In case of CnT "Number", the CnT "Number" is adopted and CnTA is invalidated.
2. In case of CnTA "Number", the CnTA "Number" is adopted and CnT is invalidated.
3. In case of CnT "Number"/CnTA "Number", the CnT "Number" and the CnTA "Number" become independent functions each other.
4. In case of CnT "Number" + CnTA "Number", the CnT "Number" and the CnTA "Number" become competing functions each other.
5. In case of CnT "Number" > CnTA "Number", the function of CnT "Number" supersedes that of CnTA "Number".
6. In case of CnT "Number" < CnTA "Number", the function of CnTA "Number" supersedes that of CnT "Number".

(The "Number" above means ① - ⑥ in the table.)

(a) Output for external control (remote display)

Following output connectors (CnT) are provided on the indoor control PCB for monitoring operation status.

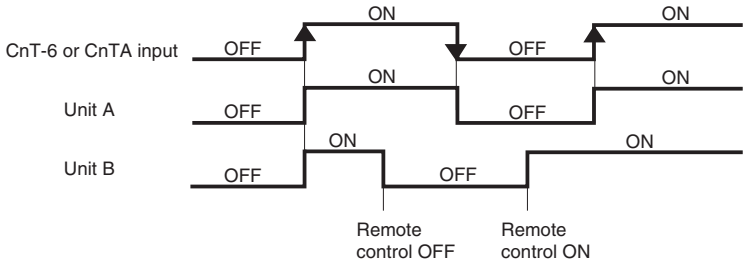
① **Operation output:** Outputs DC12V signal for driving relay during operation
② **Heating output:** Outputs DC12V signal for driving relay during heating operation
③ **Thermostat ON output:** Outputs DC12V signal for driving relay when compressor is operating.
④ **Error output:** Outputs DC12V signal for driving relay when anomalous condition occurs.

(b) Remote operation input

Remote operation input connector (CnT-6 or CnTA) is provided on the indoor control PCB.
However remote operation by CnT-6 or CnTA is not effective, when "Center mode" is selected by central control.
In case of plural unit (twin, triple, double twin), remote operation input to CnT-6 or CnTA on the slave indoor unit is invalid.
Only the "LEVEL INPUT" is acceptable for external input, however when the indoor function setting of "Level input (Factory default)" or "Pulse input" is selected by the function for "External input" of the wired remote control, operation status will be changed as follows.

(i) In case of "Level input" setting (Factory default)

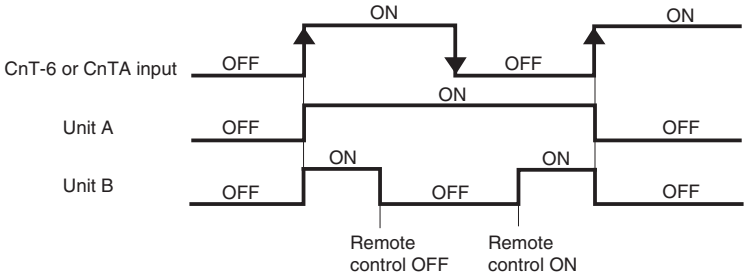
Input signal to CnT-6 or CnTA is OFF→ON …… unit ON
Input signal to CnT-6 or CnTA is ON→OFF …… unit OFF
Operation is not inverted.



Note: The latest operation has priority
It is available to operate/stop by remote control or central control

(ii) In case of "Pulse input" setting (Local setting)

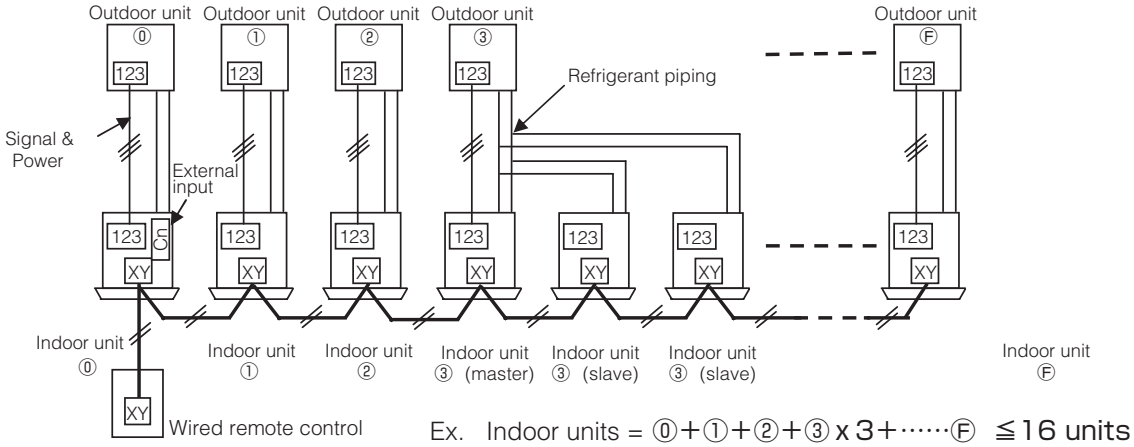
It is effective only when the input signal to CnT-6 or CnTA is changed OFF→ON, and at that time unit operation [ON/OFF] is inverted.



(c) Remote operation

(i) In case of multiple units (Max. 16 indoor units group) are connected to one wired remote control

When the indoor function setting of wired remote control for "External control set" is changed from "Individual (Factory default)" to " For all units", all units connected in one wired remote control system can be controlled by external operation input.



	Individual operation (Factory default)		All units operation (Local setting)	
CnT-6 or CnTA	ON	OFF	ON	OFF
	Only the unit directly connected to the remote control can be operated.	Only the unit directly connected to the remote control can be stopped opeartion.	All units in one remote control system can be operated.	All units in one remote control system can be stopped operation.
	Unit ① only	Unit ① only	Units ①－Ⓕ	Units ①－Ⓕ

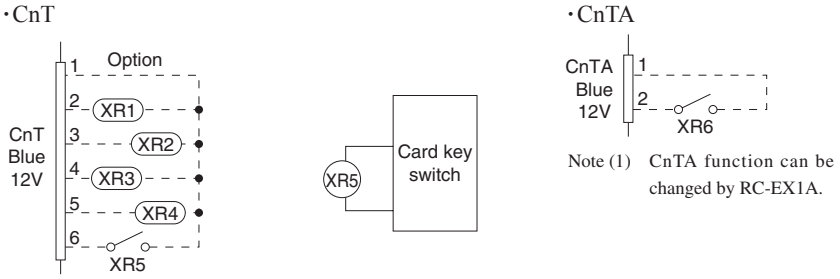
When more than one indoor unit (Max. 16 indoor units) are connected in one wired remote control system:

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

(20) Operation permission/prohibition

(In case of adopting card key switches or commercially available timers)

When the indoor function setting of wired remote control for "Operation permission/prohibition" is changed from "Invalid (Factory default)" to " Valid", following control becomes effective.



	Normal operation (Factory default)		Operation permission/prohibition mode "Valid" (Local setting)	
CnT-6 or CnTA	ON	OFF	ON	OFF
	Operation	Stop	Operation permission*1	Operation prohibition (Unit stops)

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

In case of "Level input" setting	In case of "Pulse input" setting
Unit operation from the wired remote control becomes available*(1)	Unit starts operation *(2)

*(1) In case that "Operation permission/prohibition mode" setting is "Valid" and "External input" setting is "Level input (Factory default)";

① When card key switch is ON (CnT-6 or CnTA ON: Operation permission), start/stop operation of the unit from the wired remote control becomes available.

② When card key switch is OFF (CnT-6 or CnTA OFF: Operation prohibition), the unit stops operation in conjunction with OFF signal, and start/stop operation of the unit from the wired remote control becomes not available.

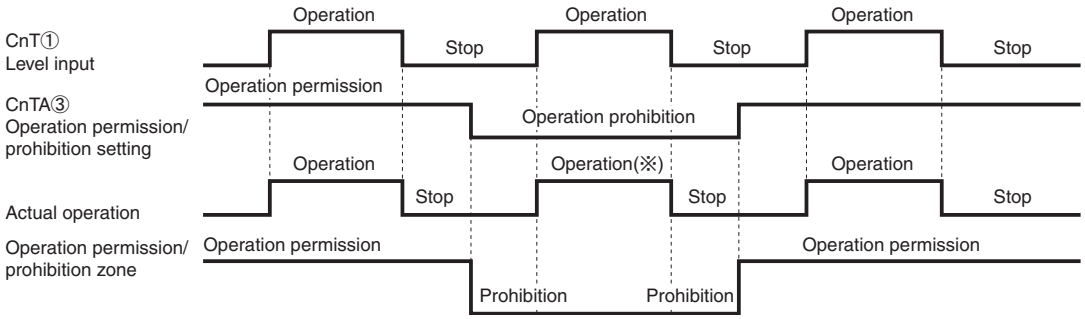
*(2) In case that "Operation permission/prohibition mode" setting is "Valid" and "External input" setting is "Pulse input (Local setting)";

① When card key switch is ON (Operation permission), the unit starts operation in conjunction with ON signal. and also start/stop operation of the unit from the wired remote control becomes available.

② When card key switch is OFF (Operation prohibition), the unit stops operation in conjunction with OFF signal, and start/stop operation of the unit from the wired remote control becomes not available.

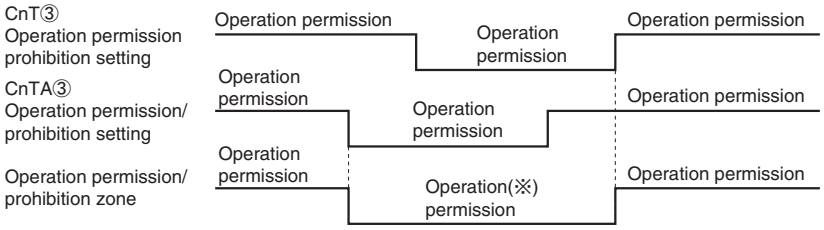
(3) This function is invalid only at "Center mode" setting done by central control.

(a) In case of CnT ① Operation stop level > CnTA ③ Operation permission/prohibition level



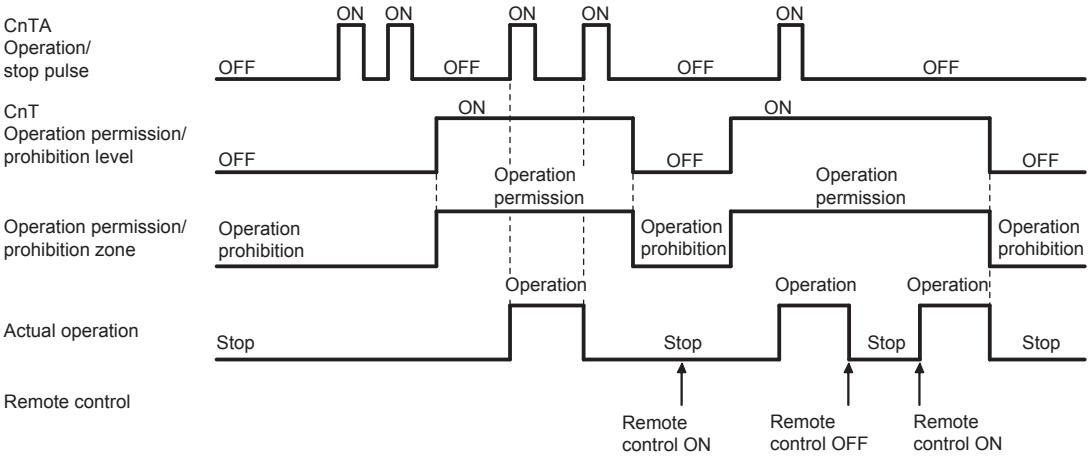
(※) CnT level input supersedes CnTA operation prohibition.

(b) In case of CnT ③ Operation permission/prohibition level + CnTA ③ Operation permission/prohibition level



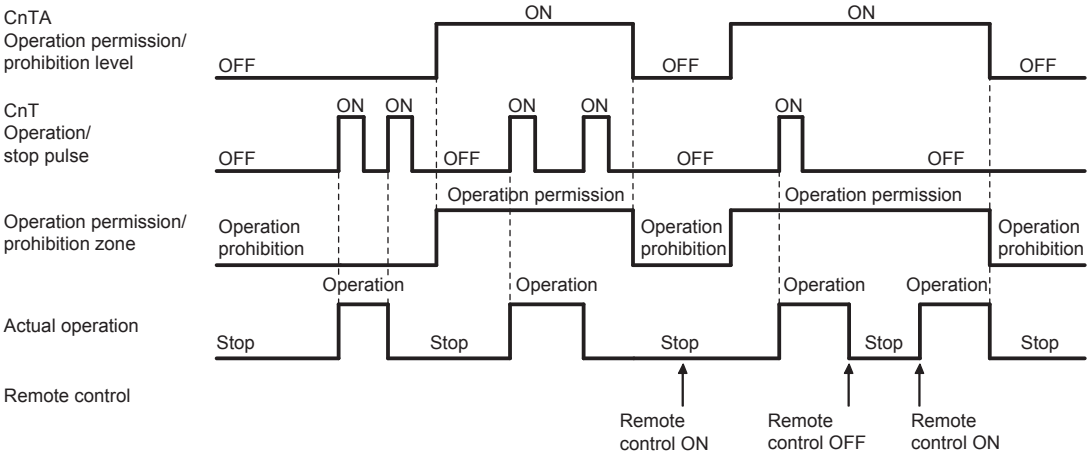
(※) Operation prohibition zone is determined by the OR judgment between CnT Operation prohibition zone and CnTA Operation prohibition zone.

(c) In case of CnT ③ Operation permission/prohibition level > CnTA ② Operation/stop pulse



Note (1) If it is prohibited by CnT, all "Operation" and "Stop" commands are not accepted.

(d) In case of CnT ② Operation/stop pulse + CnTA ③ Operation permission/prohibition level



(21) Selection of cooling/heating external input function

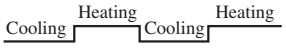
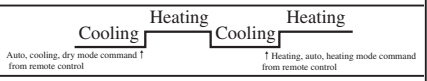
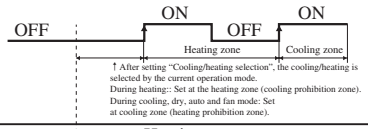
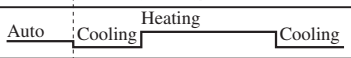
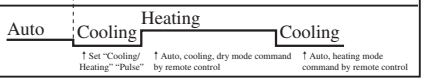
(a) When "External input 1 setting: Cooling/heating" is set for the indoor unit function from remote control, the cooling or heating is selected with CnT-6 or CnTA.

(b) When the External input 1 method selection: Level input is set for the indoor unit function:
- CnT-6 or CnTA: OPEN → Cooling operation mode
- CnT-6 or CnTA: CLOSE → Heating operation mode

(c) When the External input 1 method selection: Pulse input is set for the indoor unit function:
If the external input is changed OPEN → CLOSE, operation modes are inverted (Cooling → Heating or Heating → Cooling).

(d) If the cooling/heating selection signal is given by the external input, the operation mode is transmitted to the remote control.

■ Selection of cooling/heating external input function

External input selection	External input method	Operation	
External input selection Cooling/heating selection	⑤ Level	External terminal input (CnT or CnTA)	
		Cooling/heating	
		Cooling/heating (Competitive)	
	⑥ Pulse	External terminal input (CnT or CnTA)	
		Cooling/heating	
		Cooling/heating (Competitive)	

Notes (1) Regarding the priority order for combinations of CnT and CnTA, refer to Page 131.

(22) Fan control at heating startup

(a) Starting condition

At the start of heating operation, if the difference of setting temperature and return air temperature is 5°C or higher after the end of hot start control, this control is performed.

(b) Contents of control

(i) Sampling is made at each minute and, when the indoor unit heat exchanger temperature (detected with ThI-R) is 37°C or higher, present number of revolutions of indoor unit fan speed is increased by $10min^{-1}$.

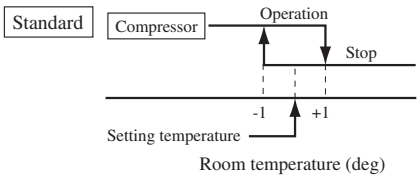
(ii) If the indoor unit heat exchanger temperature drops below 37°C at next sampling, present number of revolutions of indoor unit fan speed is reduced by $10min^{-1}$.

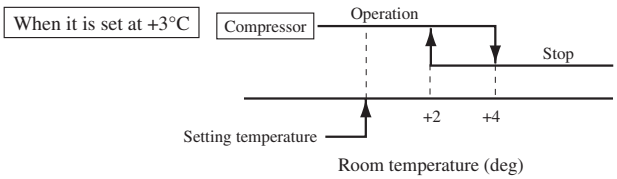
(c) Ending condition

Indoor fan speed is reduced to the setting airflow volume when the compressor OFF is established and at 30 minutes after the start of heating operation.

(23) Room temperature detection temperature compensation during heating

With the standard specification, the compressor is turned ON/OFF with the thermostat setting temperature. When the thermostat is likely to turn OFF earlier because the unit is installed at the ceiling where warm air tends to accumulate, the setting can be changed with the wired remote control indoor unit function "☼SP OFFSET". The compressor and the heater are turned ON/OFF at one of the setting temperature +3, +2 or +1°C in order to improve the feeling of heating. The setting temperature, however, has the upper limit of 30°C.





(24) Return air temperature compensation

This is the function to compensate the deviation between the detection temperature by the return air temperature thermistor and the measured temperature after installing the unit.

(a) It is adjustable in the unit of 0.5°C with the wired remote control indoor unit function "RETURN AIR TEMP".

• +1.0°C, +1.5°C, +2.0°C • -1.0°C, -1.5°C, -2.0°C

(b) Compensated temperature is transmitted to the remote control and the compressor to control them.

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

(25) High power operation (RC-EX1A only)

It operates at with the set temp. fixed at 16°C for cooling, 30°C for heating and maximum indoor fan speed for 15 minutes maximum.

(26) Energy-saving operation (RC-EX1A only)

It operates with the setting temperature fixed at 28°C for cooling, 22°C for heating or 25°C for auto. (Maximum capacity is restricted at 80%.)

(27) Warm-up control (RC-EX1A only)

Operation will be started 5 to 60 minutes before use according to the forecast made by the microcomputer which calculates when the operation should be started in order to warm up the indoor temperature near the setting temperature at the setting time of operation start.

(28) Home leave mode (RC-EX1A only)

When the unit is not used for a long period of time, the room temperature is maintained at a moderate leval, avoiding extremely hot or cool temperature.

(a) Cooling or heating is operated according to the outdoor temperature (factory setting 35°C for cooling, 0°C for heating) and the set temp. (factory setting 33°C for cooling, 10°C for heating)

(b) Set temp and indoor fan speed can be set by RC-EX1A.

(29) Auto temp. setting (RC-EX1A only)

Setting temperature is adjusted automatically at the adequate temperature the center set temp. is 24°C by correcting the outdoor air temperature.

(30) Fan circulator operation (RC-EX1A only)

When the fan is used for circulation, the unit is operated as follows depending on the setting with the remote control.

(a) If the invalid is selected with the remote control, the fan is operated continuously during the fan operation. (mormal fan mode)

(b) If the valid is selected with the remote control, the fan is operated or stopped when on the difference of the remote control temperature sensor and the indoor unit return air temperature sensor becomes bigger than 3°C.

(31) The operation judgment is executed every 5 minutes (RC-EX1A only)

Setting temperature Ts is changed according to outdoor temperature

This control is valid with cooling and heating mode. (NOT auto mode)

(a) Operate 5 minutes forcedly.

(b) Setting temperature is adjusted every 10 minutes.

(i) Cooling mode.
Ts = outdoor temperature − offset value

(ii) Heating mode.
Ts = outdoor temperature − offset value

(c) If the return air temperature lower than 18°C or return air temperature becomes lower than 25°C, unit goes thermo OFF.

(32) Auto fan speed control (RC-EX1A only)

In order to reach the room temperature to the set temperature as quickly as possible, the airflow rate is increased when the set temperature of thermostat differs largely from the return air temperature. According to temperature difference be tureen set temperature and return air temperature, indoor fan tap are controlled automalically.

・ Auto 1: Changes the indoor unit fan tap within the range of Hi ↔ Me ↔ Lo.
・ Auto 2: Changes the indoor unit fan tap within the range of PHi ↔ Hi ↔ Me ↔ Lo.

(33) IU overload alarm (RC-EX1A only)

If the following condition is satisfied at 30 minutes after starting operation, RC-EX1A shows maintenance code "M07" and the signal is transmitted to the external output (CnT-5).

(a) Receipt of the signal by the external output is indicated by lighting an LED or other prepared on site.

・ Cooling, Dry, Auto(Cooling) : Indoor air temperature = Set room temperature by remote control + Alarm temperature difference
・ Heating, Auto(Heating) : Indoor air temperature = Set room temperature by remote control - Alarm temperature difference

Alarm temperature difference is selectable between 5 to 10°C.

(b) If the following condition is satisfied or unit is stopped, the signal is disappeared.

・ Cooling, Dry, Auto(Cooling) : Indoor air temperature = Set room temperature + Alarm temperature difference -2°C
・ Heating, Auto(Heating) : Indoor air temperature = Set room temperature - Alarm temperature difference +2°C

(34) Peak-cut time (RC-EX1A only)

Power consumption can be reduced by restricting the maximum capacity.
Set the [Start time], the [End time] and the capacity limit % (Peak-cut %).

- 4-operation patterns per day can be set at maximum.
- The setting time can be changed by 5-minutes interval.
- The selectable range of capacity limit % (Peak-cut %) is from 0% to 40-80% (20% interval).
- Holiday setting is available.

1.10.4 Operation control function by the outdoor control

(I) Models SRC40-60

(1) Defrost operation

(a) Starting conditions (Defrost operation can be started only when all of the following conditions are satisfied.)

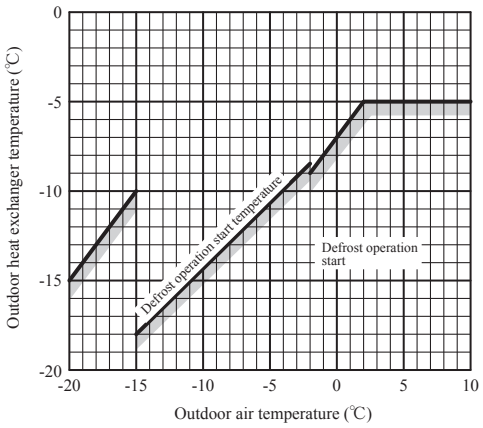
(i) After start of heating operation
When it elapsed 35 minutes. (Accumulated compressor operation time)

(ii) After end of defrost operation
When it elapsed 35 minutes. (Accumulated compressor operation time)

(iii) Outdoor heat exchanger sensor (TH1) temperature
When the temperature has been below −5ºC for 3 minutes continuously.

(iv) The difference between the outdoor air sensor temperature and the outdoor heat exchanger sensor temperature

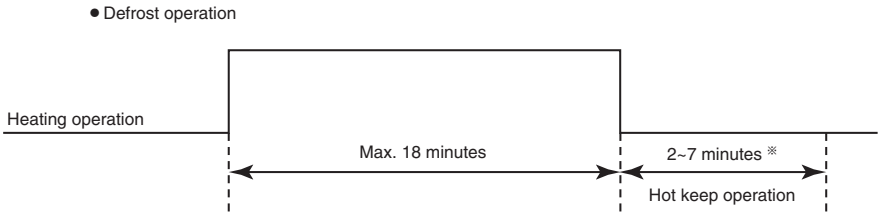
- The outdoor air temperature ≧ −2ºC : 7ºC or higher
- −15ºC ≦ The outdoor air temperature ＜ −2ºC : 4/15 × The outdoor air temperature + 7ºC or higher
- The outdoor air temperature ＜ −15ºC : −5ºC or higher



(b) Ending conditions (Operation returns to the heating cycle when either one of the following is satisfied.)

(i) Outdoor heat exchanger sensor (TH1) temperature: 10ºC or higher

(ii) Continued operation time of defrost operation → For more than 18 minutes.

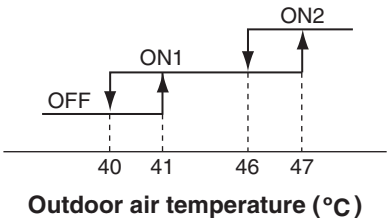


※Depends on an operation condition, the time can be longer than 7 minutes.

(2) Cooling overload protective control

(a) Operating conditions: When the outdoor air temperature (TH2) has become continuously for 30 seconds at 41ºC or more with the compressor running, the lower limit speed of compressor is brought up.

Outdoor air temperature	41°C or more	47°C or more
Lower limit speed	30 rps	40 rps



(b) Detail of operation

The lower limit of compressor command speed is set to 30 or 40 rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30 or 40 rps. However, when the thermo OFF, the speed is reduced to 0 rps.

(c) Reset conditions: When either of the following condition is satisfied.

(i) The outdoor air temperature is lower than 40ºC.

(ii) The compressor command speed is 0 rps.

(3) Cooling high pressure control

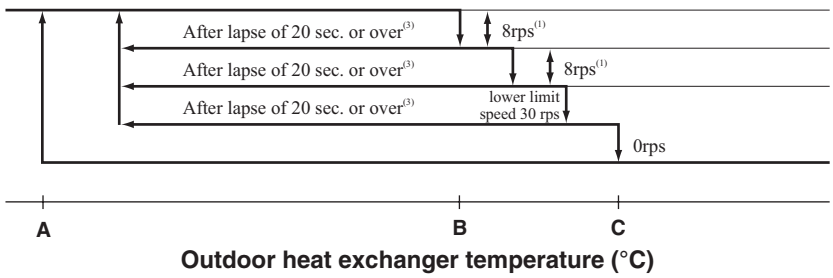
(a) Purpose: Prevents anomalous high pressure operation during cooling.

(b) Detector: Outdoor heat exchanger sensor (TH1)

(c) Detail of operation:

Outdoor air temperature(TH2)	A	B	C
TH2 ≧ 32ºC	53	58	63
TH2 < 32ºC	51	53	56

(Example) Fuzzy



Notes (1) When the outdoor heat exchanger temperature is in the range of A-CºC, the speed is reduced by 8 rps at each 20 seconds.
(2) When the temperature is 63ºC or higher, the compressor is stopped.
(3) When the outdoor heat exchanger temperature is in the range of A-CºC, if the compressor command speed is been maintained and the operation has continued for more than 20 seconds at the same speed, it returns to the normal cooling operation.

(4) Cooling low outdoor temperature protective control

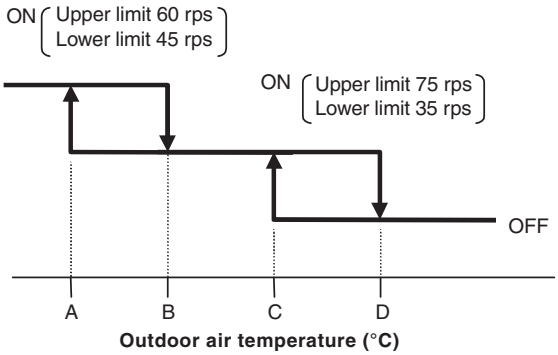
(a) Operating conditions: When the outdoor air temperature (TH2) is CºC or lower continues for 20 seconds while the compressor command speed is other than 0 rps.

(b) Detail of operation:

(i) The lower limit of the compressor command speed is set to 45 (35) rps and even if the speed becomes lower than 45 (35) rps, the speed is kept to 45 (35) rps. However, when the thermo OFF, the speed is reduced to 0 rps.

(ii) The upper limit of the compressor command speed is set to 60 (75) rps and even if the calculated result becomes higher than that after fuzzy calculation, the speed is kept to 60 (75) rps.

Note (1) Values in ( ) are for outdoor air temperature is CºC



● Values of A, B, C, D

	Outdoor air temp. (˚C)			
	A	B	C	D
First time	9	11	22	25
After the seconds times	16	19	25	28

(c) Reset conditions: When either of the following condition is satisfied.

(i) The outdoor air temperature (TH2) is D ºC or higher.

(ii) The compressor command speed is 0 rps.

(5) Heating high pressure control

(a) Starting condition : When the indoor heart exchanger temperature (ThI-R) has risen to a specified temperature while the compressor is turned on.

(b) Compressor command speed is controlled according to the zones of indoor heat exchanger temperature as shown by the following table.

	ThI-R<P1	P1≦ThI-R<P2	P2≦ThI-R<P3	P3≦ThI-R
Protection control speed (NP)	Normal	Retention	NP-4rps	NP-8rps
Sampling time (s)	Normal	10	10	10

Unit:°C

NP \ ThI-R	P1	P2	P3
NP<50	45	52	54.5
50≦NP<115	45	52	57
115≦NP<120	45-43	52-50	57-55
120≦NP	43	50	55

(6) Heating overload protective control

(a) Operating condition : When the outdoor air temperature (TH2) is 13ºC or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

(b) Detail of operation

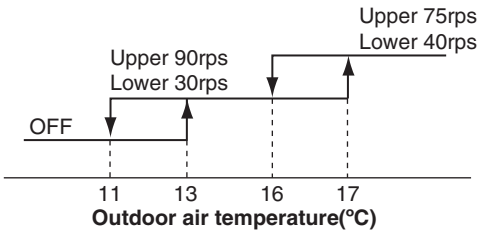
(i) Taking the upper limit of compressor command speed range at 90(75)rps, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

(ii) The lower limit of compressor command speed is set to 30(40)rps and even if the calculated result becomes lower than that after fuzzy calulation, the speed is kept to 30(40)rps. However, when the thermo becomes OFF, the speed is reduced to 0 prs

(iii) Inching prevention control is activated and inching prevention control is carried out with the minimum speed set at 30(40)rps.

Note (1) Values in ( ) are for outdoor air temperature at 17ºC.

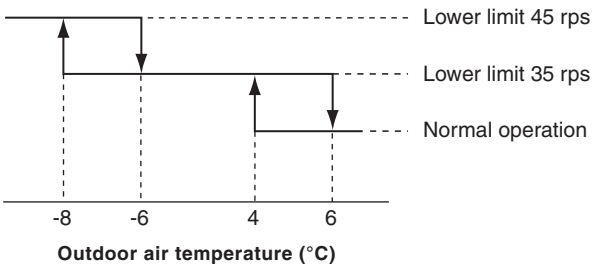
(c) Reset condition: The outdoor air temperature (TH2) is lower than 11ºC



(7) Heating low outdoor temperature protective control

(a) Operating condition: When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

(b) Detail of operation: The lower limit compressor command speed is change as shown in the figure below.



(c) Reset conditions: When either of the following condition is satisfied.

(i) The outdoor air temperature (TH2) is higher than 6ºC.

(ii) The compressor command speed is 0 rps.

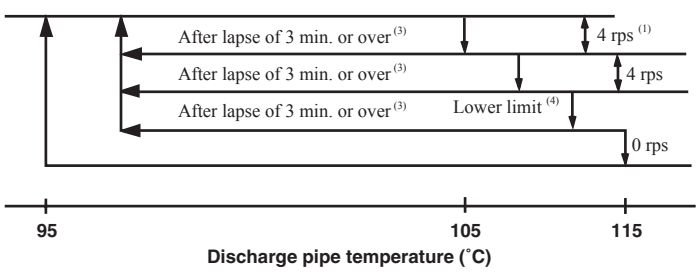
(8) Compressor overheat protection

(a) Purpose: It is designed to prevent deterioration of oil, burnout of motor coil and other trouble resulting from the compressor overheat.

(b) Detail of operation

(i) Speeds are controlled with temperature detected by the sensor mounted on the discharge pipe.

(Example) Fuzzy



Notes (1) When the discharge pipe temperature is in the range of 105-115ºC, the speed is reduced by 4 rps.

(2) When the discharge pipe temperature is raised and continues operation for 20 seconds without changing, then the speed is reduced again by 4 rps.

(3) If the discharge pipe temperature is in the range of 95-105 even when the compressor command speed is maintained for 3 minutes when the temperature is in the range of 95-105ºC, the speed is raised by 1 rps and kept at that speed for 3 minutes. This process is repeated until the command speed is reached.

(4) Lower limit speed

Item / Model	Cooling	Heating
Lower Limit Speed	25 rps	32 rps

(ii) If the temperature of 115ºC is detected by the sensor on the discharge pipe, then the compressor will stop immediately. When the discharge pipe temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

(9) Current safe

(a) Purpose: Current is controlled not to exceed the upper limit of the setting operation current.

(b) Detail of operation: Input current to the converter is monitored with the current sensor fixed on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the compressor command speed is reduced.

If the mechanism is actuated when the compressor command speed is less than 30 rps, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(10) Current cut

(a) Purpose: Inverter is protected from overcurrent.

(b) Detail of operation: Output current from the inverter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(11) Outdoor unit failure

This is a function for determining when there is trouble with the outdoor unit during air-conditioning.

The compressor is stopped if any one of the following in item (a), (b) is satisfied. Once the unit is stopped by this function, it is not restarted.

(a) When the input current is measured at 1 A or less for 3 continuous minutes or more.

(b) If the outdoor unit sends a 0 rps signal to the indoor unit 3 times or more within 20 minutes of the power being turned on.

(12) Serial signal transmission error protection

(a) Purpose: Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

(b) Detail of operation: If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continues for 7 minute and 35 seconds, the compressor is stopped.

After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

(13) Rotor lock

If the motor for the compressor does not turn after it has been started, it is determined that a compressor lock has occurred and the compressor is stopped.

(14) Outdoor fan motor protection

If the outdoor fan motor has operated at 75 min^{-1} or under for more than 30 seconds, the compressor and fan motor are stopped.

(15) Outdoor fan control at low outdoor temperature

(a) Cooling

(i) Operating condition: When the outdoor air temperature (TH2) is 22ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

(ii) Detail of operation: After the outdoor fan operates at A speed for 60 seconds; the corresponding outdoor heat exchanger

● Value of A

	Outdoor fan
Outdoor temperature > 10˚C	2nd speed
Outdoor temperature ≦ 10˚C	1st speed

1) Outdoor heat exchanger temperature ≦ 21ºC
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 21ºC, gradually reduce the outdoor fan speed by 1 speed. (Lower limit 1st speed)

2) 21ºC < Outdoor heat exchanger temperature ≦ 38ºC
After the outdoor fan speed maintains at A speed for 20 seconds; if the outdoor heat exchanger temperature is 21ºC-38ºC, maintain outdoor fan speed.

3) Outdoor heat exchanger tempeature > 38ºC
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 38ºC, gradually increase outdoor fan speed by 1 speed. (Upper limit 3rd speed)

(iii) Reset conditions: When either of the following conditions is satisfied

1) The outdoor air temperature (TH2) is 25ºC or higher.
2) The compressor command speed is 0 rps.

(b) Heating

(i) Operating condition: When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

(ii) Detail of operation: The outdoor fan is stepped up by 2 speed step at each 20 seconds. (Upper limit 8th speed)

(iii) Reset conditions: When either of the following conditions is satisfied

1) The outdoor air temperature (TH2) is 6ºC or higher.
2) The compressor command speed is 0 rps.

(16) Refrigeration cycle system protection

(a) Starting conditions

(i) When 5 minutes (Heating : 9 minutes) have elapsed after the compressor ON or the completion of the defrost control

(ii) Other than the defrost control

(iii) When, after satisfying the conditions of (i) and (ii) above, the compressor speed, indoor air temperature (ThI-A) and indoor heat exchanger temperature (ThI-R) have satisfied the conditions in the following table for 5 minutes:

Operation mode	Compressor speed (N)	Indoor air temperature (ThI-A)	Indoor air temperature (ThI-A)/ Indoor heat exchanger temperature (ThI-R)
Cooling	40≦N	10≦ThI-A≦40	ThI-A−4<ThI-R
Heating(1)	40≦N	0≦ThI-A≦40	ThI-R<ThI-A+4

Notes (1) Except that the fan speed is HI in heating operation and silent mode control.

(b) Contents of control

(i) When the conditions of (a) above are satisfied, the compressor stops.

(ii) Error stop occurs when the compressor has stopped 3 times within 60 minutes.

(c) Reset condition

When the compressor has been turned OFF

(Ⅱ) Models FDC71-140

(1) Determination of compressor speed (Frequency)

Required frequency

(a) Cooling/dehumidifying operation

Unit: rps

Model		FDC71	FDC100	FDC125	FDC140
Max. required frequency	Usual operation	88	75	95(92)	95(92)
	Silent mode, outdoor temperature ≦ 15°C	80	50	60	70
Min. required frequency		20	20	20	20

Note (1) Value in ( ) are for the 3 phase models.

(b) Heating operation

Unit: rps

Model		FDC71	FDC100	FDC125	FDC140
Max. required frequency	Usual operation	112	100	120	120
	Silent mode	90	60	70	70
Min. required frequency		20	20	20	20

(c) If the indoor unit fan speed becomes “Me” or “Lo”, Max required frequency goes down accordingly depending on indoor unit model.

(d) Max. required frequency under high outdoor air temperature in cooling mode
Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

Unit: rps

Model		FDC71	FDC100	FDC125	FDC140
Max. required frequency	Outdoor air temperature is 40°C or higher	76	75	75	75
	Outdoor air temperature is 46°C or higher	62	70	70	70

(e) Max. required frequency under outdoor air temperature in heating mode
Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

Unit: rps

Model		FDC71	FDC100	FDC125	FDC140
Max. required frequency	Outdoor air temperature is 18°C or higher	76	75	80	85

(f) Selection of max. required frequency by heat exchanger temperature

(i) Maximum required frequency is selected according to the outdoor unit heat exchanger temperature (Tho-R) during cooling/dehumidifying or according to the indoor unit heat exchanger temperature (ThI-R) during heating mode.

(ii) When there are 3 indoor unit heat exchanger temperatures (ThI-R), whichever the highest applies,

Unit: rps

Model			FDC71	FDC100	FDC125	FDC140
Max. required frequency	Cooling/ dehumidifying	Outdoor unit heat exchanger temperature is 56(61)°C or higher	60	75	95〔92〕	95〔92〕
	Heating	Indoor unit heat exchanger temperature is 56(61)°C or higher	60	100	100	100

Note (1) Value in ( ) are for the FDC71 model.
(2) Value in 〔 〕 are for the 3 phase models.

(g) When any of the controls from (a) to (f) above may duplicate, whichever the smallest value among duplicated controls is taken as the maximum required frequency.

(h) During heating, it is operated with the maximum required frequency until the indoor unit heat exchanger temperature becomes 40°C or higher.

(2) Compressor start control

(a) Compressor starts upon receipt of the thermostat ON signal from the indoor unit.

(b) However, at initial start after turning the power source breaker, it may enter the standby state for maximum 30 minutes (“ PREPARATION” is displayed on the remote control) in order to prevent the oil loss in the compressor.
If the cooling/dehumidifying/heating operation is selected from the remote control when the outdoor unit is in the standby state, “ PREPARATION” is displayed for 3 seconds on the remote control.

(3) Compressor soft start control

(a) Compressor protection start I

[Control condition] Normally, the compressor operation frequency is raised in this start pattern.

[Control contents] (i) Starts with the compressor's target frequency at **A** rps.
However, when the ambient air temperature (Tho-A) is 35°C or higher during cooling/dehumidifying or the indoor return air temperature (ThI-A) is 25°C or higher during heating, it starts at **C** rps.

(ii) At 30 seconds after the start of compressor, its target frequency changes to **B** rps and the compressor is operated for 2 - 4 minutes with its operation frequency fixed at **B** rps.

Model	Operation mode	**A** rps	**B** rps	**C** rps
FDC71	Cooling/Dehumidifying	42	42	40
	Heating	62	62	40
FDC100	Cooling/Dehumidifying	45	45	25
	Heating	45	45	25
FDC125, 140	Cooling/Dehumidifying	45	45	25
	Heating	45	45	25

(b) Compressor protection start III

[Control condition] Number of compressor starts is only 1 counted after the power source breaker ON.

[Control contents] Operates by selecting one of following start patterns according to the operation mode and the outdoor air temperature (Tho-A).

(i) Low frequency operation control during cooling/dehumidifying

[Control condition] Upon establishing the conditions of compressor protection start III, the low frequency operation control is performed during cooling/dehumidifying.

[Control contents] a) Starts with the compressor's target frequency at **A** rps. When the outdoor air temperature (Tho-A) is 35°C or higher, it starts at **C** rps.

b) At 30 seconds after the compressor start, the compressor's target frequency is changed to **B** rps and the compressor's operation frequency is fixed for 10 minutes.

Model	Operation mode	**A** rps	**B** rps	**C** rps
FDC71	Cooling/Dehumidifying	42	42	40
FDC100	Cooling/Dehumidifying	45	45	25
FDC125, 140	Cooling/Dehumidifying	45	45	25

(ii) Low frequency operation control during heating

[Control condition] When the conditions of compressor protection start III are established and one of following conditions a) is satisfied, the low number of revolutions operation control is performed during heating.

a) At 30 minutes or more after turning the power source breaker on

[Control contents] a) Starts the compressor with its target frequency at **A** rps. However, when the indoor unit return air temperature (ThI-A) is 25°C or higher, it start at **C** rps.

b) At 30 seconds after the start of compressor, the compressor's target frequency is changed to **B** rps and the compressor's operation frequency is fixed for 10 minutes.

Model	Operation mode	**A** rps	**B** rps	**C** rps
FDC71	Heating	42	42	40
FDC100	Heating	45	45	25
FDC125, 140	Heating	45	45	25

(4) Outdoor unit fan control

(a) Outdoor unit fan tap and fan motor speed

Unit: min^{-1}

Model	Mode	Fan motor tap						
FDC71		① speed	② speed	③ speed	④ speed	⑤ speed	⑥ speed	⑦ speed
	Cooling/Dehumidifying	200	400	600	710	810	850	950
	Heating	200	400	600	710	810	850	950
FDC100		① speed	② speed	③ speed	④ speed	⑤ speed	⑥ speed	⑦ speed
	Cooling/Dehumidifying	200	370	560	640	745	870	910
	Heating	200	370	560	650	830	870	910
FDC125, 140		① speed	② speed	③ speed	④ speed	⑤ speed	⑥ speed	⑦ speed
	Cooling/Dehumidifying	200	370	560	640	745	870	910
	Heating	200	370	560	650	830	870	910

(b) Fan tap control during Cooling/Defumidifying operation

Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A).

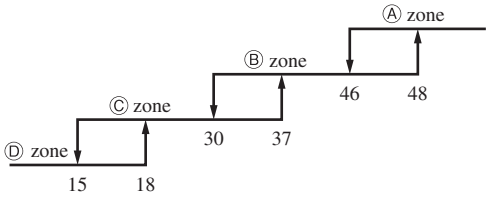
Note (1) It is detected by Tho-R1 or R2, whichever the higher.

	Ⓐ zone	Ⓑ zone	Ⓒ zone	Ⓓ zone
ⓐ zone	Tap 5(6)	Tap 5(6)	Tap 5(6)	Tap 4
ⓑ zone	Tap 5(6)	Tap 5(6)	Tap 4(6)	Tap 3
ⓒ zone	Tap 4	Tap 4	Tap 3	Tap 2
ⓓ zone	Tap 3	Tap 3	Tap 2	Tap 1

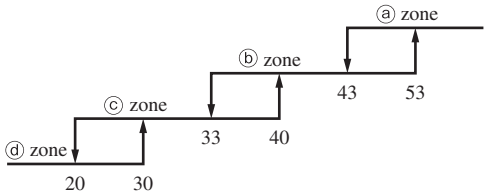
Note (1) Value in ( ) are for the model FDC71.

• Silent mode only

	Ⓐ zone	Ⓑ zone	Ⓒ zone	Ⓓ zone
ⓐ zone	Tap 5	Tap 5	Tap 5	Tap 4
ⓑ zone	Tap 5	Tap 5	Tap 3	Tap 3
ⓒ zone	Tap 4	Tap 3	Tap 3	Tap 2
ⓓ zone	Tap 3	Tap 3	Tap 2	Tap 1



Outdoor air temp. (˚C)



Outdoor unit heat exchanger temp. (˚C)

(c) Fan tap control during heating operation

Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A).

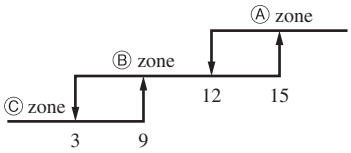
Note (1) It is detected by Tho-R1 or R2, whichever the lower.

	Ⓐ zone	Ⓑ zone	Ⓒ zone
ⓐ zone	Tap 3	Tap 3	Tap 4
ⓑ zone	Tap 3	Tap 4(5)	Tap 5
ⓒ zone	Tap 4	Tap 5	Tap 6

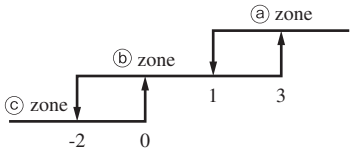
Note (1) Value in ( ) is for the model FDC71.

• Silent mode only

	Ⓐ zone	Ⓑ zone	Ⓒ zone
ⓐ zone	Tap 3	Tap 3	Tap 3
ⓑ zone	Tap 3	Tap 3	Tap 5
ⓒ zone	Tap 4	Tap 5	Tap 6



Outdoor air temp. (˚C)

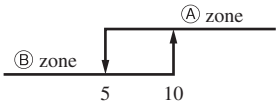


Outdoor unit heat exchanger temp. (˚C)

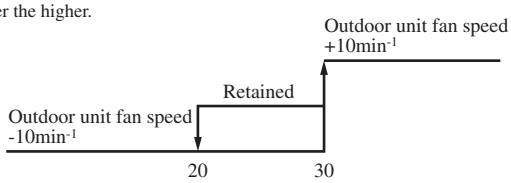
(d) Outdoor unit fan control at cooling low outdoor air

(i) When all the following conditions are established after the start of compressor, the following control is implemented. If the outdoor air temperature (Tho-A) is in the zone Ⓑ in the cooling/dehumidifying mode, it has elapsed 20 seconds from the start of outdoor unit fan and the outdoor unit fan is at the tap 1 speed, the outdoor unit fan speed is controlled according to the outdoor unit heat exchanger temperature (Tho-R1, R2).

Note (1) It is detected with Tho-R1 or R2, whichever the higher.



Outdoor air temp. (˚C)



Outdoor unit heat exchanger temp. (˚C)

(ii) The outdoor unit heat exchanger temperature is detected always and, when the number of revolutions of the outdoor fan speed has been increased or decreased, there is no change of fan speed for 20 seconds.

(iii) Rage of the outdoor unit fan speed under this control is as follows.

1) Lower limit: 130min^{-1}

2) Upper limit: 500min^{-1}

(iv) As any of the following conditions is established, this control terminates.

1) When the outdoor air temperature is in the zone Ⓐ and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.

2) When the outdoor fan speed is 500min^{-1} and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.

3) When the outdoor unit heat changer temperature at 45°C or higher is established for 40 seconds or more.

(e) Outdoor unit fan control by the power transistor radiator fin temperature

When all the following conditions are established later than 3 minutes after the start of compressor, the following control is implemented.

(i) Cooling/dehumidifying

1) Outdoor air temperature Tho-A ≧ 33°C

2) Compressor's actual frequency ≧ **A** rps

3) Power transistor radiator fin temperature ≧ **C** °C

(ii) Heating

1) Outdoor air temperature Tho-A ≧ 16°C

2) Compressor's actual frequency ≧ **B** rps

3) Power transistor radiator fin temperature ≧ **C** °C

(iii) Control contents

1) Raises the outdoor unit fan tap by 1 tap.

2) When the sampling is for 60 minutes and the value of power transistor radiator fin temperature (Tho-P) is as follows.

a) When the power transistor radiator fin temperature (Tho-P) ≧ **C** °C, the outdoor unit fan tap is raised by 1 speed further.

b) When **C** °C > power transistor radiator fin temperature (Tho-P) ≧ **D** °C, present outdoor unit fan tap is maintained.

c) When the power transistor radiator fin temperature (Tho-P) ≧ **D** °C, the outdoor unit fan tap is dropped by 1 speed.

(iv) Ending conditions

When the operation under the condition of item 2), c) above and with the outdoor unit fan tap, which is determined by the item (b) is detected 2 times consecutively.

• Compressor's frequency and power transistor radiator fin temperature

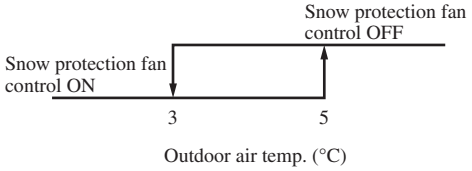
Model \ Item	A	B	C	D
FDC71	60	70	80	75
FDC100	65	65	72	68
FDC125, 140	65	65	72	68

(f) Caution at the outdoor unit fan start control (3 phase model only)

When the outdoor unit fan is running at 400min^{-1} before operating the compressor, it may operate with the compressor only, without starting up the outdoor fan This is normal.

(g) Snow protection fan control

If the dip switch (SW3-2) on the outdoor unit control PCB is turned ON, the outdoor unit fan is operated for 30 seconds at 4 tap speed once in every 10 minutes depending on the outdoor air temperature (detected with Tho-A) in the stop mode or anomalous stop mode.



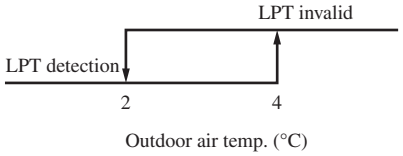
(5) Defrost operation

(a) Starting conditions

If all of the following defrost conditions A or conditions B are satisfied, the defrost operation starts.

(i) Defrost conditions A

1) Cumulative compressor operation time after the end of defrost operation has elapsed 37 [45] minutes, and the cumulative compressor operation time after the start of heating operation (remote control ON) has elapsed 30 minutes.
2) After 5 minutes from the compressor ON
3) After 5 minutes from the start of outdoor unit fan
4) After satisfying all above conditions, if temperatures of the outdoor unit heat exchanger temperature thermistor (Tho-R1, R2) and the outdoor air temperature thermistor (Tho-A) become lower than the defrost operation starting temperature as shown by the right figure for 15 seconds continuously, or the suction gas saturation temperature (SST) and the outdoor air temperature (Tho-A), which are obtained from the value detected by the low pressure sensor (LPT) stay for 3 minutes within the range below the defrost operation start temperature as shown by the right figure.However, it excludes for 10 minutes after the startof compressor and the outdoor air temperature is as shown by the lower figure.

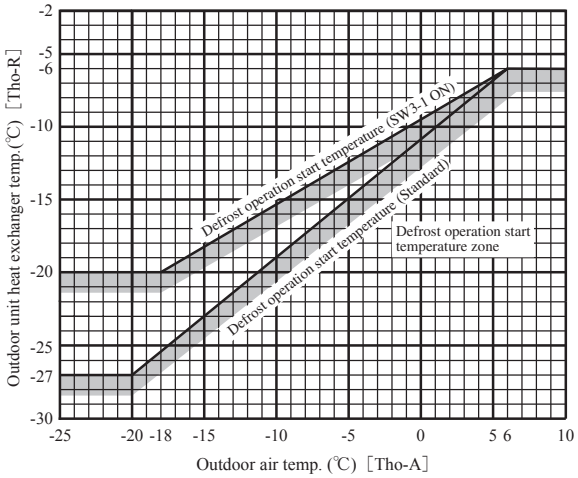


Note (1) Figures in [ ] is for model FDC71.

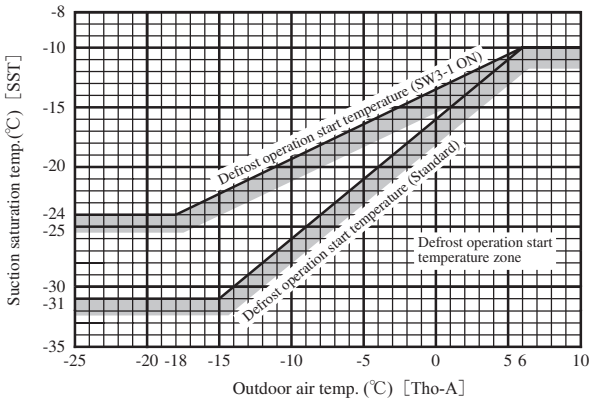
(ii) Defrost conditions B

1) When previous defrost ending condition is the time out of defrost operation and it is in the heating operation after the cumulative compressor operation time after the end of defrost operation has become 30 minutes.
2) After 5 minutes from the start of compressor
3) After 5 minutes from the start of outdoor unit fan

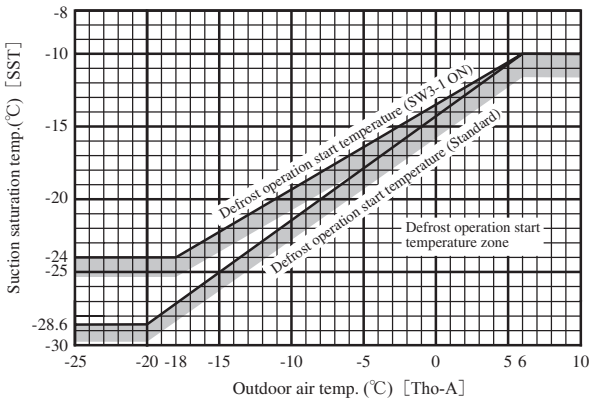
Model FDC71-140



Model FDC71



Model FDC100-140



(b) Ending conditions

When any of the following conditions is satisfied, the defrost end operation starts.

(i) When it has elapsed 8 minutes and 20 seconds after the start of defrost operation. (After 10 minutes and 20 seconds for model FDC71)

(ii) When the outdoor unit heat exchanger temperatures (Tho-R1, R2), whichever the lower, becomes 12°C (model FDC71: 16°C) or higher for 10 seconds continuously.

(c) Switching of defrost control with SW3-1

(i) If SW3-1 on the outdoor unit control PCB is turned to ON, it becomes easier to enter the defrost operation. Use this when installing a unit at snowing regions.

(ii) Control contents

1) It allows entering the defrost operation under the defrost condition A when the cumulative heating operation time becomes 30 minutes. It is 37 [45] minutes at SW3-1 OFF (Factory default).

2) It allows entering the defrost operation under the defrost condition B when the cumulative heating operation time becomes 25 minutes. It is 30 minutes at SW3-1 OFF (Factory default).

3) It allows the defrost operation with the outdoor unit heat exchanger temperature (Tho-R) and suction pressure saturation temperature (SST) being higher than normal.

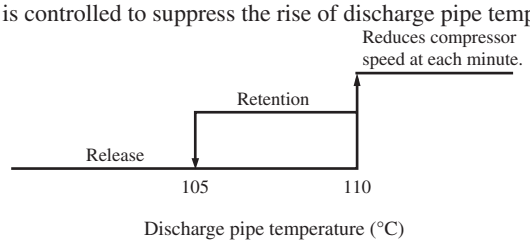
Note (1) Figures in [ ] is for model FDC71.

(6) Protective control/anomalous stop control by compressor's number of revolutions

(a) Compressor discharge pipe temperature protection

(i) Protective control

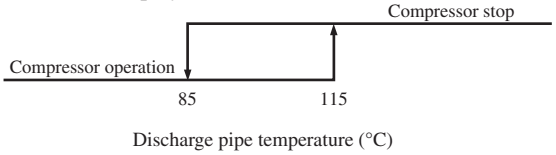
As the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of discharge pipe temperature.



(ii) Anomalous stop control

1) If the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor stops.

2) When it is detected 2 times within 60 minutes or after continuous 60 minutes, including the stop of compressor, E36 is displayed on the remote control and it enters the anomalous stop mode.



(iii) Reset of anomalous stop mode

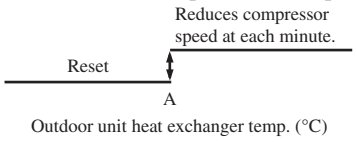
As it drops to the reset value of 85°C or lower for 45 minutes continuously, it becomes possible to restart from the remote control.

(b) Cooling high pressure protection

(i) Protective control

1) When the outdoor air temperature (Tho-A) is 40°C or higher and the outdoor unit heat exchanger temperature (Tho-R) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of high pressure.

2) Control value A is updated to an optimum value automatically according to the operating conditions.

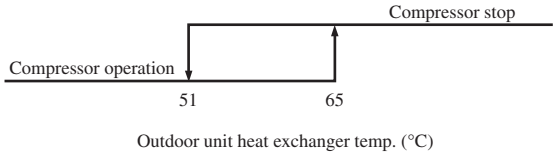


Control value A
54-60°C

(ii) Anomalous stop control

1) As the outdoor unit heat exchanger temperature (Tho-R) exceeds the setting value, the compressor stops.

2) If it is detected 5 times within 60 minutes or 65°C or higher continues for 60 minutes, including the stop of compressor, E35 is displayed on the remote control and it enters the anomalous stop mode.



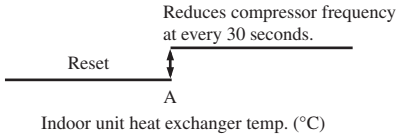
(iii) Reset of anomalous stop mode

As it reaches the reset value of 51°C or lower, it becomes possible to restart from the remote control.

(c) Heating high pressure protection

(i) Protective control

1) As the indoor unit heat exchanger temperature (ThI-R) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of high pressure.
2) Control value A is updated to an optimum value automatically according to the operating conditions.

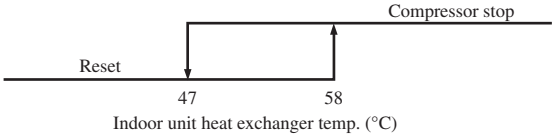


Model	Existing piping adaptation switch: SW5-1 (SW8-1: model FDC71)	
	OFF (Shipping)	ON
	Control value A (°C)	
FDC71	52-58	46-52
FDC100-140	48-54	

Note (1) Adaptation to existing piping is at ON.

(ii) Anomalous stop control
Operation control function by the indoor unit control - See the heating overload protection, page 129.

(iii) Adaptation to existing piping, stop control
If the existing piping adaptation switch, SW5-1 (model FDC71: SW8-1), is turned ON, the compressor stops to protect existing piping when the indoor unit heat exchanger temperature (ThI-R) exceeds the setting value.

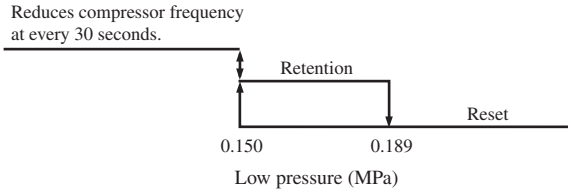


(d) Anomaly detection control by the high pressure switch (63H1)

(i) If the pressure rises and operates the high pressure switch (opens at 4.15MPa/closes at 3.15MPa), the compressor stops.
(ii) Under any of the following conditions, E40 is displayed and it enters the anomalous stop mode.
1) When it occurs 5 times within 60 minutes that pressure rises and the compressor is stopped by 63H1.
2) When 63H1 has been in the open state for 60 minutes continuously, including the stop of compressor.

(e) Low pressure control

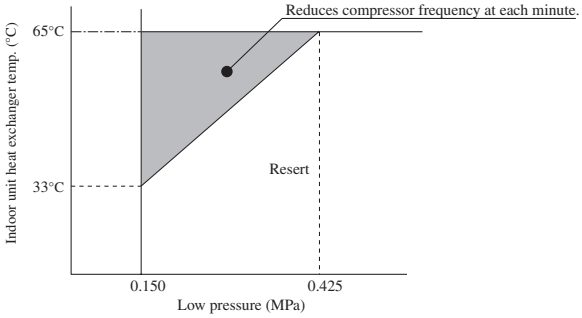
(i) Protective control
If the value detected by the low pressure sensor (LPT) exceeds the setting value, the compressor speed (frequency) is controlled to restrain the drop of pressure.



(ii) Anomalous stop control
1) When a value detected by the low pressure sensor (LPT) satisfies any of the following conditions, the compressor stops to run for its protection.
a) When the low pressure drops to 0.079MPa or under for 15 seconds continuously.
b) At 10 minutes after the start of compressor, the suction overheat becomes 30°C and the low pressure becomes 0.15MPa or under for 60 seconds continuously.
2) E49 is displayed under any of the following conditions and it enters the anomalous stop mode.
a) When the low pressure drops 3 times within 60 minutes and the compressor stops under any of the above conditions.
b) When a value detected with the low pressure sensor becomes 0.079MPa or under for 5 minutes, including the stop of compressor.
3) However, when the control condition 1). a) is established during the compressor protection start III, E49 is displayed at initial stop and it enters the anomalous stop mode.

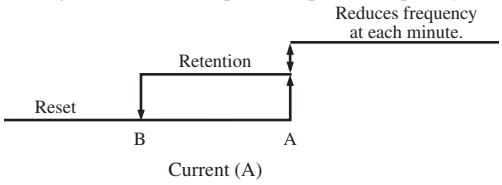
(f) Compressor pressure ratio protection control (Model FDC100 − 140 only)

(i) During heating operation, if the indoor unit heat exchanger temperature (ThI-R) and low pressure sensor (LPT) exceed the setting values at 10 minutes after the start of compressor, the compressor speed (frequency) is controlled to protect the compressor.
(ii) This control is not performed during the outdoor fan ON and for 10 minutes from the start of outdoor unit fan.
(iii) This control is not performed during defrost operation and at 10 minutes after the reset of defrost operation.
(iv) When there are 2 indoor unit heat exchanger temperatures (ThI-R), the highest temperature is detected.

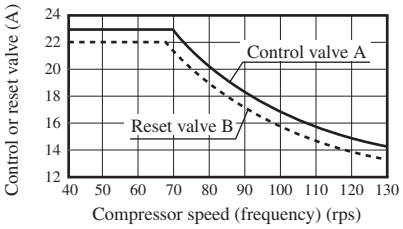


(g) Over-current protection current safe controls I, II

Detecting the outdoor unit inverter input (primary) current and the output (secondary) current, if the current values exceed setting values, the compressor speed (frequency) is controlled to protect the inverter.



(Fig. C) The control value "A" and the reset value vary depending on the compressor speed.



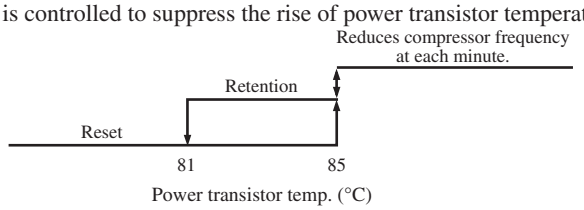
Model		Cooling		Heating	
		Control value A	Reset value B	Control value A	Reset value B
Primary current side	FDC71	15.0	14.0	16.0	15.0
	FDC100	11.0 (23.0)	10.0 (22.0)	11.0 (23.0)	10.0 (22.0)
	FDC125, 140	11.0 (23.0)	10.0 (22.0)	11.0 (25.0)	10.0 (24.0)
Secandary current side	FDC71	13.0	12.0	13.0	12.0
	FDC100	11.5 (Fig.C)	10.5 (Fig.C)	11.5 (Fig.C)	10.5 (Fig.C)
	FDC125, 140	11.5 (Fig.C)	10.5 (Fig.C)	11.5 (Fig.C)	10.5 (Fig.C)

Note (1) Value in ( ) are for the single phase models.

(h) Power transistor temperature protection

(i) Protective control

If the power transistor temperature (detected with TIP) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of power transistor temperature.



(i) Anomalous power transistor current

(i) Prevents over-current on the inverter. If the current value in the power transistor exceeds the setting value, the compressor stops.

(ii) If the current value in the power transistor exceeds the specified value and the compressor stops 4 times within 30 minutes, E42 is displayed on the remote control and it enters the anomalous stop mode.

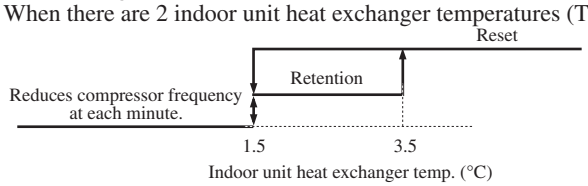
(j) Anomalous inverter PCB

If the power transistor detects any anomaly for 15 minutes, including the stop of compressor, E51 is displayed on the remote control and it enters the anomalous stop mode.

(k) Anti-frost control by the compressor frequency control

(i) If the indoor unit heat exchanger temperature (detected with ThI-R) exceeds the setting value at 4 minutes after the start of compressor, the compressor speed (frequency) is controlled to initiate the anti-frost control of indoor unit heat exchanger.

(ii) When there are 2 indoor unit heat exchanger temperatures (ThI-R), the lowest temperature is detected.



(iii) Regarding the anti-frost control by the operation stop, refer to the operation control function by the indoor unit control and the cooling, dehumidifying frost prevention of page 129.

(l) Dewing prevention control

[Control condition] During cooling and dehumidifying operation, if all the following conditions are established, the compressor speed (frequency) is reduced to prevent dewing and water splash.

(i) Cooling electronic expansion valve aperture (EEVC) is 500 pulses.

(ii) Suction overheat is 10°C or higher.

(iii) Compressor speed (frequency) is **A** rps or higher.

[Control contents] (i) When the suction overheat is 10°C or higher, the compressor speed (frequency) is reduced at each 1 minute.

(ii) Compressor speed (frequency) does not rise till the cooling expansion valve becomes 460 pulses.

(iii) This control takes **A** rps as its lower limit so that compressor speed is not controlled when it is less than **A** rps.

Model	**A** rps
FDC71	42
FDC100-140	60

(m) Refrigerant quantity shortage protection

Under the compressor protection start III control during cooling and dehumidifying operations, the following control is performed by detecting the indoor unit heat exchanger temperature (ThI-R) and the indoor unit return air temperature (ThI-A).

[Control condition] When the state that the indoor unit heat exchanger temperature (ThI-R) does not become lower than the indoor unit return air temperature (ThI-A) by 4°C or more continues for 1 minute.

[Control contents] It judges that the flowing of refrigerant in to the indoor unit is insufficient so that the compressor is stopped and E57 is displayed on the remote control.

(n) Broken wire detection on temperature thermistor and low pressure sensor

(i) Outdoor unit heat exchanger thermistor, outdoor air thermistor and low pressure sensor

If the following is detected for 5 second continuously within 2 minutes to 2 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop.

Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.

- Outdoor unit heat exchanger thermistor: -50°C or lower
- Outdoor air temperature thermistor: -45°C or lower
- Low pressure sensor: 0V or under or 4.0V or over

(ii) Discharge pipe temperature thermistor, suction pipe temperature thermistor

If the following is detected for 5 second continuously within 10 minutes to 10 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop.

Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.

- Discharge pipe temperature thermistor: -10°C or lower
- Suction pipe temperature thermistor: -50°C or lower

(o) Fan motor error

(i) If the fan speed of $100min^{-1}$ or under is detected for 30 second continuously under the outdoor unit fan control (with the operation command of fan tap at ① speed or higher), the compressor stops.

(ii) When the fan motor speed drops to $100min^{-1}$ or under 5 times within 60 minutes and the compressor stops, it enters the anomalous stop mode with E48 displayed on the remote control.

(p) Anomalous stop by the compressor start stop

(i) When it fails to shift to the compressor DC motor's rotor position defection operation at 5 seconds after establishing the compressor start condition, the compressor stops temporarily and restarts 3 minutes later.

(ii) If it fails to shift to the position detection operation again at second time, it judges the anomalous compressor start and stops the compressor by the anomalous stop (E59).

(7) Silent mode

(a) As "Silent mode start" signal is received from the remote control, it operates by dropping the outdoor unit fan tap and the compressor speed (frequency).

(b) For details, refer to items (1) and (4) above.

(8) Test run

(a) It is possible to operate from the outdoor unit using the dip switch on the outdoor unit control PCB.

SW3-3 (SW5-3)	ON	SW3-4 (SW5-4)	OFF	Cooling test run
			ON	Heating test run
	OFF	Normal and end of test run		

Make sure to turn SW3-3 (SW5-3) to OFF after the end of operation.

Note (1) Value in ( ) are for the model FDC71.

(b) Test run control

(i) Operation is performed at the maximum compressor speed (frequency), which is determined for each model.

(ii) Each protective control and error detection control are effective.

(iii) If SW3-4 (SW5-4) is switched during test run, the compressor is stoped for once by the stop control and the cooling/heating operation is switched.

Note (1) Value in ( ) is for the model FDC71.

(iv) Setting and display of remote control during test run

Mode \ Item	Contents of remote control setting/display
Cooling test run	Setting temperature of cooling is 5°C.
Heating test run	Setting temperature of heating (preparation) is 30°C.

(9) Pump-down control

Turning ON the pump-down switch SW1 (SW9) for 2 seconds during the operation stop or anomalous stop (excluding the thermostat OFF), the pump-down operation is performed. (This is invalid when the indoor unit is operating. This is effective even when the indoor unit is stopped by the anomalous stop or the power source is turned OFF.)

Note (1) Value in ( ) is for the model FDC71.

(a) Control contents

(i) Close the service valve at the liquid side. (It is left open at the gas side.)

(ii) Compressor is started with the target speed (frequency) at FDC71:62, FDC100. 125, 140:45 rps in the cooling mode.

(iii) Red and green lamps (LED) flash continuously on the outdoor unit control PCB.

(iv) Each of protection and error detection controls, excluding the low pressure control, anti-frost control and dewing prevention control, is effective.

(v) Outdoor unit fan is controlled as usual.

(vi) Electronic expansion valve is fully opened.

(b) Control ending conditions

Stop control is initiated depending on any of the following conditions.

(i) Low pressure of 0.087MPa or lower is detected for 5 seconds continuously.
  1) Red LED: Light, Green LED: Flashing, Remote control: Displays stop.
  2) It is possible to restart when the low pressure is 0.087MPa or higher.
  3) Electronic expansion valve (cooling/heating) is kept fully open.

(ii) Stop by the error detection control
  1) Red LED: Keeps flashing, Green LED: Flashing
  2) Restart is prohibited. To return to normal operation, reset the power source.
  3) Electronic expansion valve (cooling/heating) is left fully open.

(iii) When the cumulative operation time of compressor under the pump-down control becomes 5 minutes.
  1) Red LED: Stays OFF, Green LED: Flashing, Remote control: Stop
  2) It is possible to pump-down again.
  3) Electronic expansion valve (cooling/heating) is left fully open.

Note (1) After the stop of compressor, close the service valve at the gas side.

Caution: Since pressing the pump-down switch cancels communications with the indoor unit, the indoor unit and the remote control display "Transmission error – E5". This is normal.

(10) Base heater ON/OFF output control (Option)

(i) Base heater ON conditions

When all of following conditions are met, the base heater is turned ON.

· Outdoor air temperature (detected with Tho-A) is 3ºC or lower.

· In the heating mode

· When the compressor is turned ON

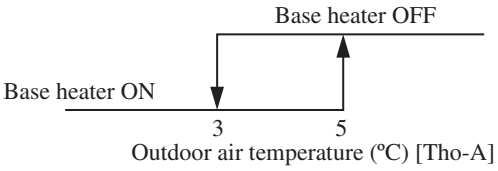
(ii) Base heater OFF conditions

When either one of following conditions is met, the base heater is turned OFF.

· Outdoor air temperature (detected with Tho-A) is 5ºC or higher.

· When the compressor stop has been detected for 30 minutes continuously

· In the cooling or dehumidifying mode



1.11 MAINTENANCE DATA

1.11 Diagnosing of microcomputer circuit

(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 control error code, indoor/outdoor unit green LED (power pilot lamp and microcomputer normality pilot lamp) or red LED (check pilot lamp).

(i) Indoor unit

Remote control		Indoor control PCB		Outdoor control PCB		Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED (1)	Red LED	Green LED (1)				
No-indication	Stays OFF	Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	—	**• Normal operation**	—	—
		Stays OFF	Stays OFF	2-time flash	Stays OFF	Indoor unit power source	• Power OFF, broken wire/blown fuse, broken transformer wire	Repair	206
		* 3-time flash	Keeps flashing	Stays OFF	Keeps flashing	Remote control wires	• Poor connection, breakage of remote control wire * For wire breaking at power ON, the LED is OFF.	Repair	207
						Remote control	• Defective remote control PCB	Replacement of remote control	
WAIT or INSPECT I/U		Stays OFF	Keeps flashing	2-time flash	Keeps flashing	Indoor-outdoor units connection wire	• Poor connection, breakage of indoor-outdoor units connection wire	Repair	208-220
						Remote control	• Improper setting of master and slave by remote control		
E 1	Keeps flashing	Stays OFF	* Keeps flashing	Stays OFF	Keeps flashing	Remote control wires (Noise)	**• Poor connection of remote control signal wire (White)** * For wire breaking at power ON, the LED is OFF **• Intrusion of noise in remote control wire**	Repair	222
						Remote control indoor control PCB	*• Defective remote control or indoor control PCB (defective communication circuit)?	Replacement of remote control or PCB	
E5		2-time flash	Keeps flashing	2-time flash	Keeps flashing	Indoor-outdoor units connection wire	**• Poor connection of wire between indoor-outdoor units during operation (disconnection, loose connection)** **• Anomalous communication between indoor-outdoor units by noise, etc.**	Repair	223
		2-time flash	Keeps flashing	Stays OFF	Keeps flashing	(Noise)	**• CPU-runaway on outdoor control PCB**	Power reset or Repair	
						Outdoor control PCB	*• Occurrence of defective outdoor control PCB on the way of power source (defective communication circuit)?	Replacement of PCB	
		2-time flash	Keeps flashing	Stays OFF	Keeps flashing	Outdoor control PCB	**• Defective outdoor control PCB on the way of power source**	Replacement	
						Fuse	**• Blown fuse**		
E6		1-time flash	Keeps flashing	Stays OFF	Keeps flashing	Indoor heat exchanger temperature thermistor	**• Defective indoor heat exchanger temperature thermistor** (defective element, broken wire, short-circuit) • Poor contact of temperature thermistor connector	Replacement, repair of temperature thermistor	224
						Indoor control PCB	***• Defective indoor control PCB (Defective temperature thermistor input circuit)?**	Replacement of PCB	
E7		1-time flash	Keeps flashing	Stays OFF	Keeps flashing	Indoor return air temperature thermistor	**• Defective indoor return air temperature thermistor** (defective element, broken wire, short-circuit) • Poor contact of temperature thermistor connector	Replacement, repair of temperature thermistor	225
						Indoor control PCB	***• Defective indoor control PCB (Defective temperature thermistor input circuit)?**	Replacement of PCB	
E8		1-time flash	Keeps flashing	Stays OFF	Keeps flashing	Installation or operating condition	**• Heating over-load** (Anomalously high indoor heat exchanger temperature)	Repair	226
						Indoor heat exchanger temperature thermistor	**• Defective indoor heat exchanger temperature thermistor (short-circuit)**	Replacement of temperature thermistor	
						Indoor control PCB	***• Defective indoor control PCB** (Defective temperature thermistor input circuit)?	Replacement of PCB	
E 10		Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	Number of connected indoor units	**• When multi-unit control by remote control is performed, the number of units is over**	Repair	227
E 11		Keeps flshing	Keeps flshing	Stays OFF	Keeps flshing	Address setting error	• Address setting error of indoor units	Repair	228
E 14		3-time flash	Keeps flashing	Stays OFF	Keeps flashing	Indoor unit No. setting	•No master is assigned to slaves.	Repair	229
						Rcmote control wires	•Anomalous remote control wire connection, broken wire between master and slave units		
E 16		1(2)-time flash	Keeps flashing	Stays OFF	Keeps flashing	Fan motor	**• Defective DC fan motor**	Replacement, repair	230
						Indoor power PCB	**• Defective indoor power PCB**	Replacement	
E 18		1-time flash	Keeps flashing	Stays OFF	Keeps flashing	Address setting error	• Address setting error of master and slave indoor units	Repair	231
E 19		1-time flash	Keeps flashing	Stays OFF	Keeps flashing	Indoor control PCB	**• Indoor unit operation check error**	Repair	232
E20		1(2)-time flash	Keeps flashing	Stays OFF	Keeps flashing	Fan motor	• Indoor DC fan motor rotation speed anomaly	Replacement, repair	233
						Indoor power PCB	• Defective indoor power PCB	Replacement	
E28		Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	Remote control temperature thermistor	• Broken wire of remote control temperature thermistor	Repair	234

Note (1) **Normal indicator lamp (Indoor, outdoor units: Green) extinguishes (or lights continuously) only when CPU is anomalous. It keeps flashing in any trouble other than anomalous CPU.**

(2) * mark in the description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

(ii) Outdoor unit

1) SRC40-60ZMX-S, FDC71, 90VNP

Remote control		Indoor control PCB		Outdoor control PCB	Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED	Red LED				
E35	Keeps flashing	Stays OFF	Keeps flashing	2-time flash	Installation, operation status	• Higher outdoor heat exchanger temperature	Repair	235
					Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor	Replacement, repair of temperature sensor	
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E36		Stays OFF	Keeps flashing	5-time flash	Installation, operation status	• Higher discharge temperature	Repair	237
					Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor	Replacement, repair of temperature sensor	
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E37		Stays OFF	Keeps flashing	8-time flash	Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	238
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E38		Stays OFF	Keeps flashing	8-time flash	Outdoor air temperature sensor	• Defective outdoor air temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	239
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E39		Stays OFF	Keeps flashing	8-time flash	Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	240
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E40		Stays OFF	Keeps flashing	4-time flash	Installation, operation status	• Service valve (gas side) closing operation	Replacement	241
E42		Stays OFF	Keeps flashing	1-time flash	Outdoor control PCB, compressor	• Current cut (Anomalous compressor over-current)	Replacement of PCB	245•246
					Installation, operation status	• Service valve closing operation	Repair	
E47		Stays OFF	Keeps flashing	2-time flash	Outdoor control PCB	• Defective active filter	Repair PCB replacement	248
E48		Stays OFF	Keeps flashing	ON	Fan motor	• Defective fan motor	Replacement	250
					Outdoor control PCB	• Defective outdoor control PCB		
E51		Stays OFF	Keeps flashing	1-time flash	Power transistor error (outdoor control PCB)	• Power transistor error	Replacement of PCB	254
E57		Stays OFF	Keeps flashing	2-time flash	Operation status	• Shortage in refrigerant quantity	Repair	260
					Installation status	• Service valve closing operation	Service valve opening check	
E58		Stays OFF	Keeps flashing	3-time flash	• Overload operation • Overcharge • Compressor locking	• Current safe stop	Replacement	262
E59		Stays OFF	Keeps flashing	2-time flash	Compressor, outdoor control PCB	• Anomalous compressor startup	Replacement	263
E60		Stays OFF	Keeps flashing	7-time flash	Compressor	• Anomalous compressor rotor lock	Replacement	268
WAIT or INSPECT I/U		Stays OFF	Keep flashing	6-time flash	Indoor-outdoor connection wire	• Poor connection, breakage of indoor-outdoor unit connection wire	Repair	—

Note (1) * mark in the description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

2) FDC71-140VNX, 100-140VSX
FDC100-140VN, 100-140VS

Remote control		Indoor control PCB		Outdoor control PCB		Outdoor inventer PCB				
Error code	Red LED	Red LED	Green LED (1)	Red LED	Green LED (1)	Yellow LED	Location of trouble	Description of trouble	Repair method	Reference page
E35		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	Keeps flashing	Installation or operating condition	• Higher outdoor heat exchanger temperature	Repair	236
							Outdoor heat exchanger temperature thermistor	• Defective outdoor heat exchanger temperature thermistor	Replacement of temperature thermistor	
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E36		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Installation or operating condition	• Higher discharge temperature	Repair	237
							Discharge pipe temperature thermistor	• Defective discharge pipe temperature thermistor	Replacement, repair of temperature thermistor	
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E37		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Outdoor heat exchanger temperature thermistor	• Defective outdoor heat exchanger temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	238
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E38		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Outdoor air temperature thermistor	• Defective Outdoor air temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	239
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E39		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Discharge pipe temperature thermistor	• Defective discharge pipe temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	240
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E40		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Installation or operating condition	• Rising high pressure (Operation of 63H1) • Service valve closing operation	Repair	242
							Outdoor control PCB	*• Defective outdoor control PCB (Defective 63H input circuit)?	Replacement of PCB	
E41		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	6-time flash	Inverter PCB or radiator fin	• Power transistor overheat	Replacement of PCB or Repair	243
E42		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	1-time flash	Outdoor control PCB compressor	• Current cut (Anomalous compressor over-current)	Replacement of PCB	245•246
							Installation or operating condition	• Service valve closing operation	Repair	
E45		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	Keeps flashing	Outdoor control PCB	• Anomalous outdoor control PCB communication	Replacement of PCB	247
							Inverter PCB	• Anomalous inverter PCB communication		
E47		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	7-time flash	Inverter PCB activefilter	• Defective outdoor inverter PCB (Model FDC 71 only) Defective active filter of control.	Replacement	249
E48		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	Keeps flashing	Outdoor fan motor	• Anomalous outdoor fan motor	Replacement, repair	251
							Outdoor control PCB	*• Defective outdoor control PCB (Defective motor input circuit)?	Replacement of PCB	
E49		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Installation or operating condition	• Low pressure error • Service valve closing operation	Repair	252•253
							Low pressure sensor	• Anomalous low pressure, broken wire of low pressure sensor or poor connector connection	Replacement, repair of sensor	
							Outdoor control PCB	*• Defective outdoor control PCB (Defective sensor input circuit)?	Replacement of control PCB	
E51		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	6-time flash	Inverter PCB	• Anomalous inverter PCB	Replacement of PCB	255
E53		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	Keeps flashing	Suction pipe temperature thermistor	• Defective suction pipe temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	257
							Outdoor control PCB	*• Defective outdoor PCB (Defective thermistor input circuit)?	Replacement of control PCB	
E54		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Low pressure sensor	• Defective low pressure sensor	Replacement of sensor	258
							Outdoor control PCB	• Defective outdoor control PCB (Defective sensor input circuit)?	Replacement of control PCB	
E57		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Operation status	• Shortage in refrigerant quantity	Repair	261
							Installation status	• Service valve closing operation	Service valve opening check	
E59		Stays OFF	Keeps flashing	5 time flash	Keeps flashing	Stays OFF	Compressor inverter PCB	• Anomalous compressor startup	Replacement	264•265

Note (1) * mark in the description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

3) FDC200, 250VSA

Remote control		Indoor control PCB		Outdoor control PCB		Outdoor inverter PCB	Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED (1)	Red LED	Green LED (1)	Yellow LED				
E35		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	Keeps flashing	Installation or operating condition	• Higher outdoor heat exchanger temperature	Repair	236
							Outdoor heat exchanger temperature thermistor	• Defective outdoor heat exchanger temperature thermistor	Replacement of temperature thermistor	
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E36		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Installation or operating condition	• Higher discharge temperature	Repair	237
							Discharge pipe temperature thermistor	• Defective discharge pipe temperature thermistor	Replacement, repair of temperature thermistor	
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E37		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Outdoor heat exchanger temperature thermistor	• Defective outdoor heat exchanger temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	238
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E38		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Outdoor air temperature thermistor	• Defective outdoor air temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	239
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E39		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Discharge pipe temperature thermistor	• Defective discharge pipe temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	240
							Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E40		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Installation or operating condition	• Rising high pressure (Operation of 63H1) • Service valve closing operation	Repair	242
							Outdoor control PCB	*• Defective outdoor control PCB (Defective 63H input circuit)?	Replacement of PCB	
E41		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	2-time or 8-time flash	Inverter PCB or radiator fin	• Power transistor overheat	Replacement of PCB or Repair	244
E42		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	1-time or 9-time flash	Outdoor control PCB compressor	• Current cut (Anomalous compressor over-current)	Replacement of PCB	245・246
							Installation or operating condition	• Service valve closing operation	Repair	
E45		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	Keeps flashing	Outdoor control PCB	• Anomalous outdoor control PCB communication	Service valve opening check	247
							Inverter PCB	• Anomalous inverter PCB communication	Replacement of PCB	
E48		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Outdoor fan motor	• Anomalous outdoor fan motor	Replacement, repair	251
							Outdoor control PCB	*• Defective outdoor control PCB (Defective motor input circuit)?	Replacement of PCB	
E49		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Installation or operating condition	• Low pressure error • Service valve closing operation	Repair	252・253
							Low pressure sensor	• Anomalous low pressure, broken wire of low pressure sensor or poor connector connection	Replacement, repair of sensor	
							Outdoor control PCB	*• Defective outdoor control PCB (Defective sensor input circuit)?	Replacement of control PCB	
E51		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	2-time or 8-time flash	Inverter PCB	• Anomalous inverter PCB	Replacement of PCB	256
E53		Stays OFF	Keeps flashing	1-time flash	Keeps flashing	Keeps flashing	Suction pipe temperature thermistor	• Defective suction pipe temperature thermistor, broken wire or poor connector connection	Replacement, repair of temperature thermistor	257
							Outdoor control PCB	*• Defective outdoor PCB (Defective thermistor input circuit)?	Replacement of control PCB	
E54		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Low pressure sensor	• Defective low pressure sensor	Replacement of sensor	258
							Outdoor control PCB	• Defective outdoor control PCB (Defective sensor input circuit)?	Replacement of control PCB	
E55		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Compressor under dome temperature thermistor	• Defective compressor under dome temperature thermistor (Model FDC250 only)	Replacement of temperature thermistor	259
							Outdoor control PCB	• Defective outdoor control PCB (Defective thermistor input circuit)? (Model FDC250 only)	Replacement of control PCB	
E57		Stays OFF	Keeps flashing	1-time flash	Keeps flashing		Operation status	• Shortage in refrigerant quantity	Repair	261
							Installation status	• Service valve closing operation	Service valve opening check	
E59		Stays OFF	Keeps flashing	5-time flash	Keeps flashing	4-time flash	Compressor inverter PCB	• Anomalous compressor startup	Replacement	266・267

Note (1) * mark in the description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

(iii) Option control in-use

		Indoor unit control PCB		Outdoor unit control PCB		Description of trouble	Repair method
Error code	Red LED	Red LED	Green LED	Red LED	Green LED		
E75	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Keeps flashing	• Communication error (Defective communication circuit on the main unit of SC-SL2N-E or SC-SL4-E) ete.	Replacement

(iv) Display sequence of error codes or inspection indicator lamps

■ **Occurrence of one kind of error**

Displays are shown respectively according to errors.

■ **Occurrence of plural kinds of error**

Section	Category of display
Error code on remote control	• Displays the error of higher priority (When plural errors are persisting)
Red LED on indoor control PCB	E1 > E5 > ····· > E10 > E32 > ····· E60
Red LED on outdoor control PCB	• Displays the present errors. (When a new error has occurred after the former error was reset.)

■ **Error detecting timing**

Section	Error description	Error code	Error detecting timing
Indoor	Communication error at initial operation	"WAIT"	No communication between indoor and outdoor units is established at initial operation.
	Remote control communication circuit error	E1	Communication between indoor unit and remote control is interrupted for mote than 2 minutes continuously after initial communication was established.
	Communication error during operation	E5	Communication between indoor and outdoor units is interrupted for mote than 2 minutes continuously after initial communication was established.
	Excessive number of connected indoor units by controlling with one remote control	E10	Whenever excessively connected indoor units is detected after power ON.
	Return air temperature thermistor anomaly	E7	-50°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature.
	Indoor heat exchanger temperature thermistor anomaly	E6	-50°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature. Or 70°C or higher is detected for 5 seconds continuously
Outdoor	Outdoor air temperature thermistor anomaly	E38	-45(-55)°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or -45(-55)°C or lower is detected for 5 seconds continuously within 20 seconds after compressor ON.
	Outdoor heat exchanger temperature thermistor anomaly	E37	-50(-55)°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or -50(-55)°C or lower is detected for 5 seconds continuously within 20 seconds after compressor ON.
	Discharge pipe temperature thermistor anomaly	E39	-10(-25)°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.
	Suction pipe temperature thermistor anomaly	E53	-50°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.
	Low pressure sensor anomaly	E54	0V or lower or 4.0V or higher is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous pressure.

Note (1) Value in ( ) are for the models SRC40-60, FDC71, 90VNP.

■ **Error log and reset**

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

■ **Resetting the error log**

- Resetting the memorized error log in the remote control
  Holding down "CHECK" button, press "TIMER" button to reset the error log memorized in the remote control.
- Resetting the memorized error log in the indoor unit
  The remote control transmits error log erase command to the indoor unit when "VENTI" button is pressed while holding down "CHECK" button.
  Receiving the command, the indoor unit erase the log and answer the status of no error.

(2) Troubleshooting procedure

When any trouble has occurred, inspect as follows. Details of respective inspection method will be described on later pages.

Trouble → Confirmation of power source (Indoor/ outdoor unit) → Confirmation of remote control and LEDs on the PCB of indoor unit and outdoor unit (Indoor/ outdoor unit, remote control) → Check of the anomalous operation data on the remote control → Inspection of the unit/ control → Replacement/ repair of faulty part, test run, adjustment

(3) Troubleshooting at the indoor unit

With the troubleshooting, find out any defective part by checking the voltage (AC, DC), resistance, etc. at respective connectors at around the indoor PCB, according to the inspection display or operation status of unit (the compressor does not run, fan does not run, the 4-way valve does not switch, etc.), and replace or repair in the unit of following part.

(i) Replacement part related to indoor PCB's

Control PCB, power source PCB, temperature thermistor (return air, indoor heat exchanger), remote control switch, transformer and fuse

Note (1) With regard to parts of high voltage circuits and refrigeration cycle, judge it according to ordinary inspection methods.

(ii) Instruction of how to replace indoor control PCB

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the replacement in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, WARNING and CAUTION.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.

⚠ WARNING	Wrong installation would cause serious consequences such as injuries or death.
⚠ CAUTION	Wrong installation might cause serious consequences depending on circumstances.

- After completing the replacement, do commissioning to confirm there are no anomaly.

⚠ WARNING

- Replacement should be performed by the specialist.
  If you replace the PCB by yourself, it may lead to serious trouble such as electric shock or fire.
- Replace the PCB correctly according to these instructions.
  Improper replacement may cause electric shock or fire.
- Shut off the power before electrical wiring work.
  Replacement during the applying the current would cause the electric shock, unit failure or improper running.
  It would cause the damage of connected equipment such as fan motor,etc.
- Fasten the wiring to the terminal securely, and hold the cable securely so as not to apply unexpected stress on the terminal.
  Loose connections or hold could result in abnormal heat generation or fire.
- Check the connection of wiring to PCB correctly before turning on the power, after replacement.
  Defectiveness of replacement may cause electric shock or fire.

⚠ CAUTION

- In connecting connector onto the PCB, connect not to deform the PCB. It may cause breakage or malfunction.
- Insert connecter securely, and hook stopper. It may cause fire or improper running.
- Bundle the cables together so as not to be pinched or be tensioned. It may cause malfunction or electric shock for disconnection or deformation.

PSB012D990B

1) Control PCB

Replace and set up the PCB according to this instruction.

a) Set to an appropriate address and function using switch on PCB.

Select the same setting with the removed PCB.

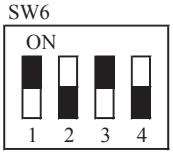
item	switch	Content of control			
Address	SW2	Plural indoor units control by 1 remote control			
Master /Slave setting		Master	Slave1	Slave2	Slave3
	SW5-1	OFF	OFF	ON	ON
	SW5-2	OFF	ON	OFF	ON
Test run	SW7-1	OFF	Normal		
		ON	Operation check/drain motor test run		

b) Set to an appropriate capacity using the model selector switch(SW6).

Select the same capacity with the PCB removed from the unit.

SW6	-1	-2	-3	-4
40V	ON	ON	OFF	OFF
50V	ON	OFF	ON	OFF
60V	ON	ON	ON	OFF
71V	ON	OFF	OFF	ON

SW6	-1	-2	-3	-4
100V	ON	ON	OFF	ON
125V	OFF	OFF	ON	ON
140V	ON	OFF	ON	ON



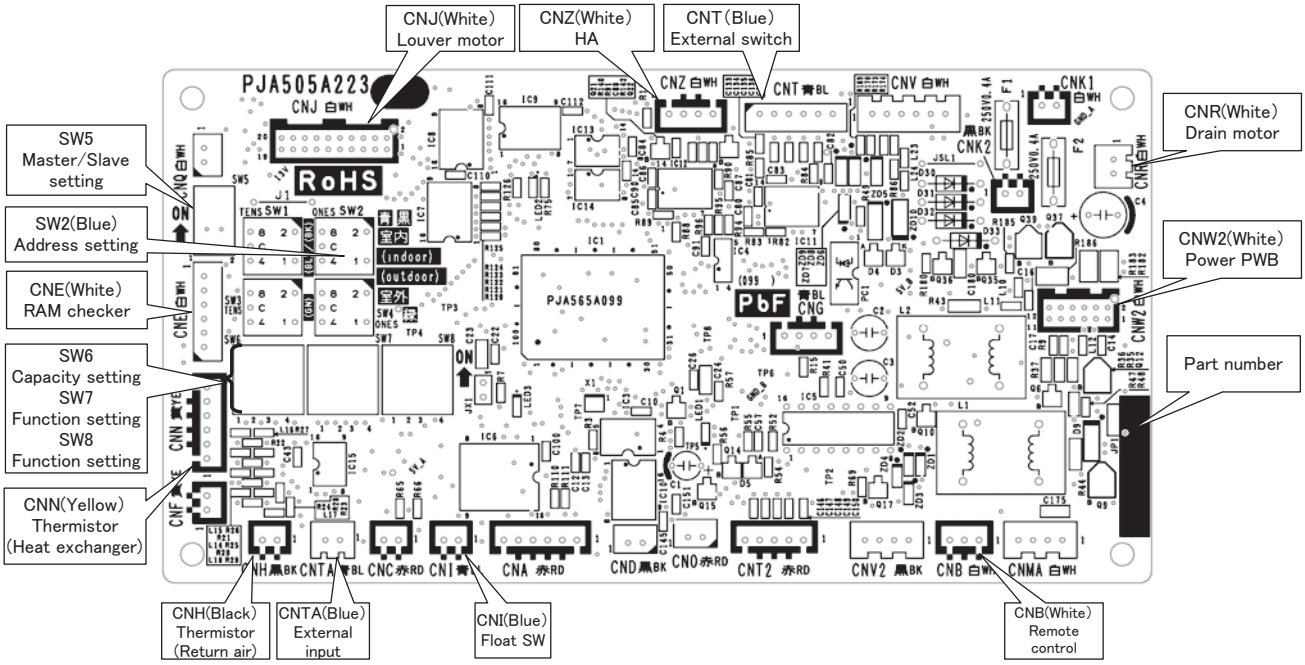
Example setting fro 50V

c) Replace the PCB

1. Exchange PCB after detaching all connectors connected with the PCB.
2. Fix the PCB so as not to pitch the wiring.
3. Connect connectors to the PCB. Match the wiring connector to the connector color on the PCB and connect it.

d) Control PCB

Parts mounting are different by the kind of PCB.



2) Power PCB

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

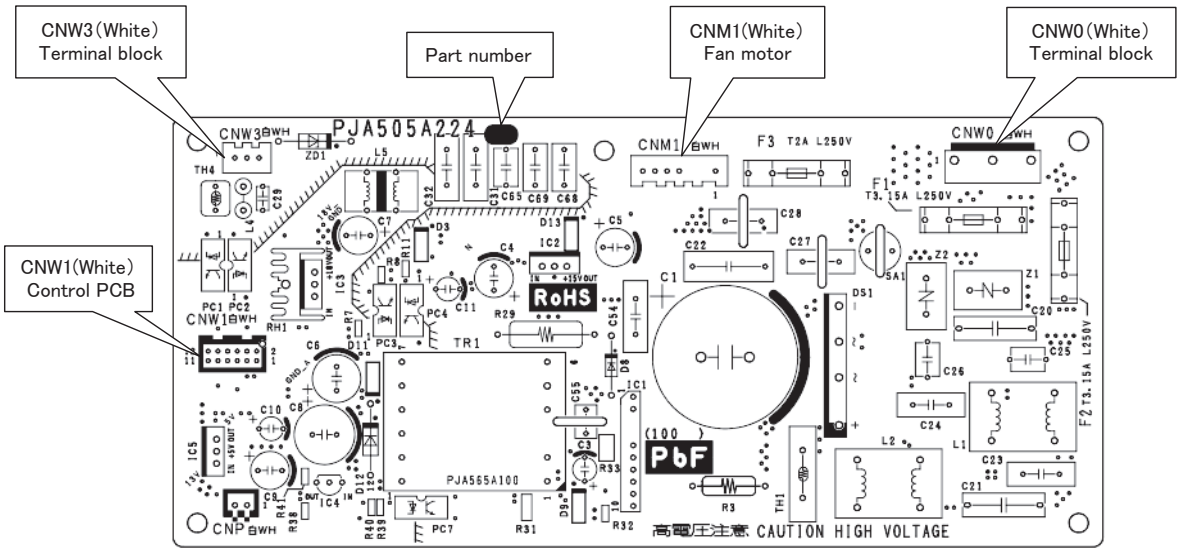
a) Replace the PCB

1. Unscrew terminal of the wiring(yellow/green) connected to terminal block (CNWO) from the box.
2. Replace the PCB only after all the wirings connected to the connector are removed.
3. Fix the board such that it will not pinch any of the wires.
4. Reconnect the wirings to the PCB. Wiring connector color should match with the color of connector of the PCB.
5. Screw back the terminal of wiring, that was removed in 1.

b) Power PCB

Parts mounting are different by the kind of PCB.

PSB012D992



●DIP switch setting list

Switches	Description		Default setting		Remarks
SW2	Address No. setting at plural indoor units control by 1 R/C		0		0-F
SW5-1	Master/Slave setting	Master*/Slave	OFF		See table 2
SW5-2			OFF		
SW6-1	Model selection		As per model		See table 1
SW6-2					
SW6-3					
SW6-4					
SW7-1	Test run	Normal*/Test run	OFF	Normal	
SW7-2	Reserved		OFF		Keep OFF
SW7-3	Powerful mode	Valid*/Invalid	ON	Valid	
SW7-4	Reserved		OFF		Keep OFF
SW8-1	Reserved		OFF		Keep OFF
SW8-2	Reserved		OFF		Keep OFF
SW8-3	Reserved		OFF		Keep OFF
SW8-4	Reserved		OFF		Keep OFF
JSL1	Superlink terminal spare	Normal*/switch to spare	With		

* Default setting

Table 1: Indoor unit model selection with SW6-1-SW6-4

	40V	50V	60V	71V	100V	125V	140V
SW6-1	ON	ON	ON	ON	ON	OFF	ON
SW6-2	ON	OFF	ON	OFF	ON	OFF	OFF
SW6-3	OFF	ON	ON	OFF	OFF	ON	ON
SW6-4	OFF	OFF	OFF	ON	ON	ON	ON

Table 2: Indoor unit Master/Slave setting with SW5-1,SW5-2

	SW5-1	SW5-2
Master	OFF	OFF
Slave1	OFF	ON
Slave2	ON	OFF
Slave3	ON	ON

(4) Troubleshooting at the outdoor unit

When troubleshooting the outdoor unit, firstly assess the overview of malfunction and try to presume the cause and the faulty part by checking the error code dispalyed on the remote control and flashing pattern of indicator lamps (Red LED and Green LED), and then proceed further inspection and remedy it.

Self-diagnosis system by microcomputor on indoor and outdoor PCB can assist to find the cause of malfunction smoothly by making a diagnosis of not only the anomaly of microcomutor, but also the anomaly in power source system, installation space, overload resulting from improper charging amount of refrigerant and etc.

Unless the power is reset, the error log is saved in memory and the inspection indicator lamps on outdoor PCB keep flashing after automatical recovering from malfunction.

After automatical recovering from malfunction, if any another error mode which has a higher priority than the previous error saved in memory occurs, it is overwritten in memory and is displayed.

[Reset of power source]

Be sure to avoid electrical shock, when replacing or checking the outdoor control PCB, because some voltage is still retained in the electrolytic capacitor on the PCB even after shutting down the power source to the outdoor unit.

Be sure to start repairing work, after confirming that the Red LED or Green LED on the PCB has been extiguished for more than 10 seconds after more than 3 minutes had been passed since power shut down, and reconfirming that voltage has been discharged sufficiently by measuring the voltage (DC) between both terminals of electrolytic capacitor (C58) (Measurment of voltage may be disturbed by the moisture-proof coating. In such case, remove the coating and measure it by taking care of avoiding electrical shock)

(a) Module of part to be replaced for outdoor unit control

Outdoor control PCB, Inverter PCB, Temperature thermistor (of outdoor heat exchanger, discharge pipe, outdoor air, IPM and suction pipe), Fuses (for power source and control PCB), Noise filter, Capacitor, Reactor and Transformer

(b) Replacement procedure of outdoor control PCB

Precautions for Safety

- Since the following precaution is the important contents for safety, be sure to observe them.
  WARNING and CAUTION are described as follows:

⚠WARNING	Indicates an imminently hazardous situation which will result in death or serious injury if proper safety procedures and instructions are not adhered to.
⚠CAUTION	Indicates a potentially hazardous situation which may result in minor or moderate injury if proper safety procedures and instructions are not adhered to.

⚠ WARNING

- Securely replace the PCB according to this procedure.
  If the PCB is incorrectly replaced, it will cause an electric shock or fire.
- Be sure to check that the power source for the outdoor unit is turned OFF before replacing the PCB. The PCB replacement under current-carrying will cause an electric shock or fire.
- After finishing the PCB replacement, check that wiring is correctly connected with the PCB before power distribution. If the PCB is incorrectly replaced, it will cause an electric shock or fire.

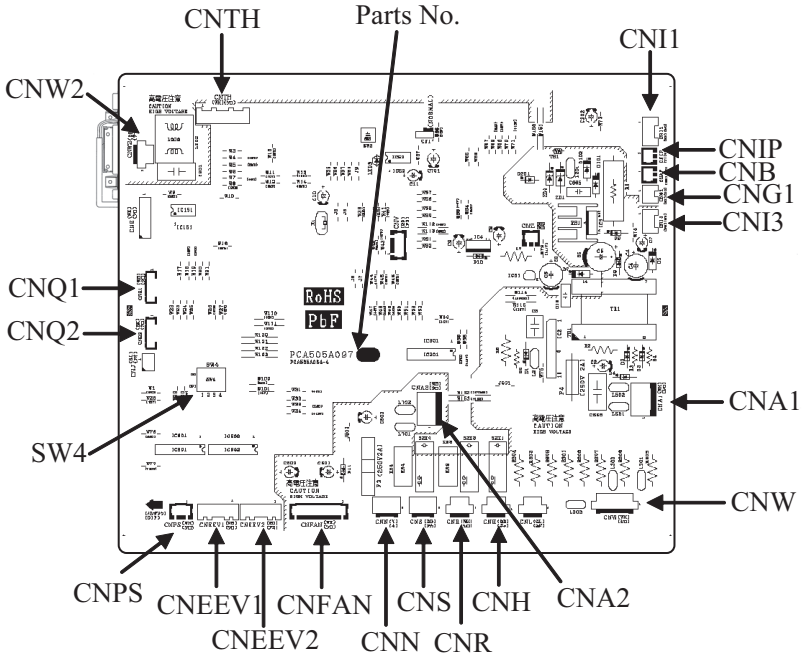
⚠ CAUTION

- Band the wiring so as not to tense because it will cause an electric shock.

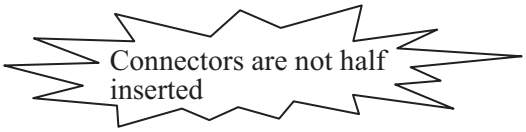
(i) Model FDC71VNX

PCA012D021D

1) Replace the PCB **after elapsing 3 minutes from power OFF.**
(Be sure to measure voltage (DC) between T26 and T27 on inverter PCB, and **check that the voltage is discharged sufficiently(10V or less)**.(Refer to Fig.1))
2) Disconnect the connectors from the control PCB.
3) Match the switches setting (SW4) with the former PCB.
4) Connect the connectors to the control PCB.(Confirm the **connectors are not half inserted**.)



Parts arrangement view



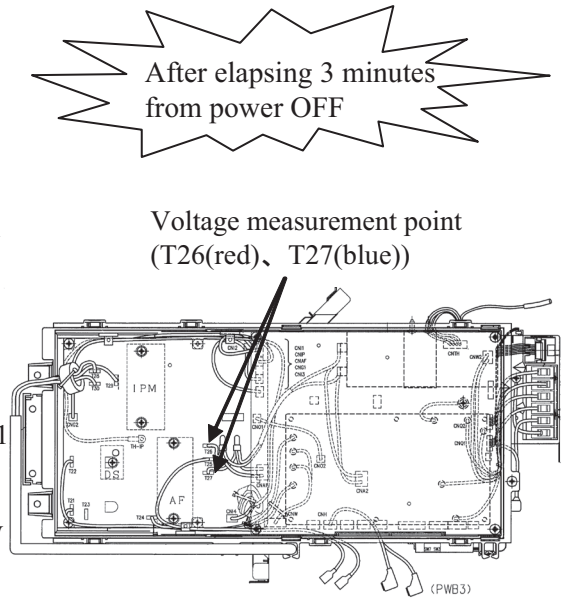


Fig.1 Position of terminal

(ii) Models FDC71VNP, 90VNP

PSC012D029

Exchange the PCB(Main) according to the following procedures.

1) Exchange the PCB (Main) after checking that the red LED (LED1) on the PCB (Main) goes out for 10 seconds or more after elapsing 3 minutes or more from power OFF. (Refer to Fig.1)
2) Open the lid, and measure DC voltage on both edges of electrolytic capacitor C58 and check that the voltage is discharged sufficiently. (Refer to Fig.2) (Since the capacitor is coated with prevention-of-moisture coating, the voltage may be hard to be measured. Remove the coating before measuring if required, taking care of an electric shock.)
3) Remove the PCB (Main) (Refer to Step.1 and Step.2), and disconnect the harness connected to the reactor, terminal block, etc., and disconnect the connectors connected to the PCB (Main) before exchanging the PCB. (Refer to Step.3) (Harness to be able to band together after PCB exchange with tie wrap bands.)
4) Connect the harness and connectors with the PCB (Main) and the PCB (Sub). (Confirm the **connectors are not half inserted**.)

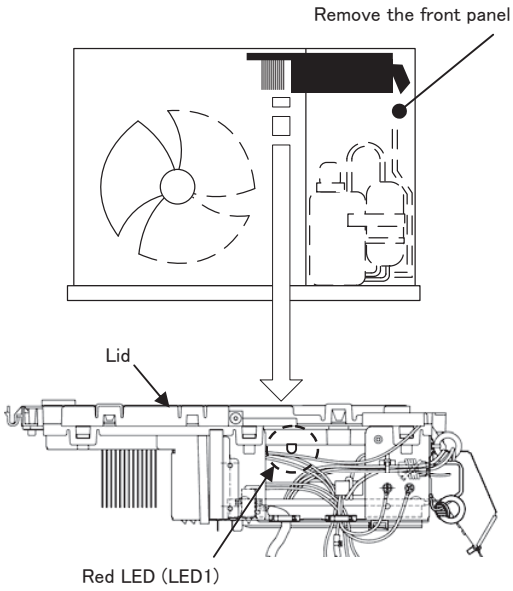


Fig.1 Location of LED

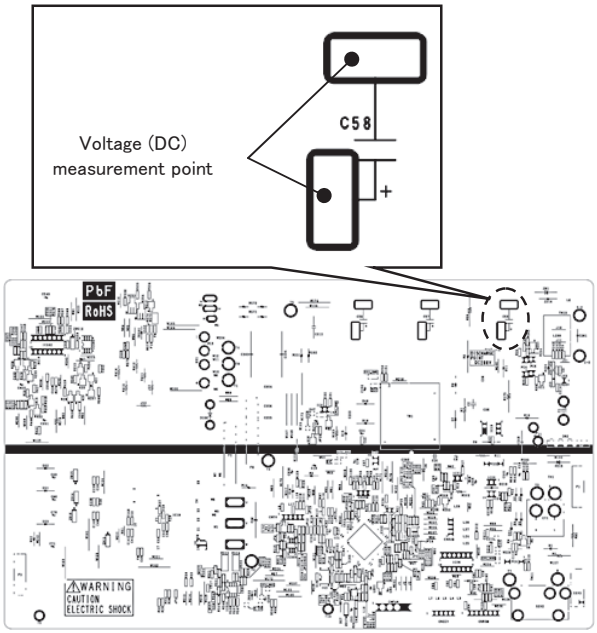


Fig.2 Voltage measurement point
(Solder face of PCB (Main))

Step.1 After removing the screws,raises the PCB (Main) as shown in the Fig.3.

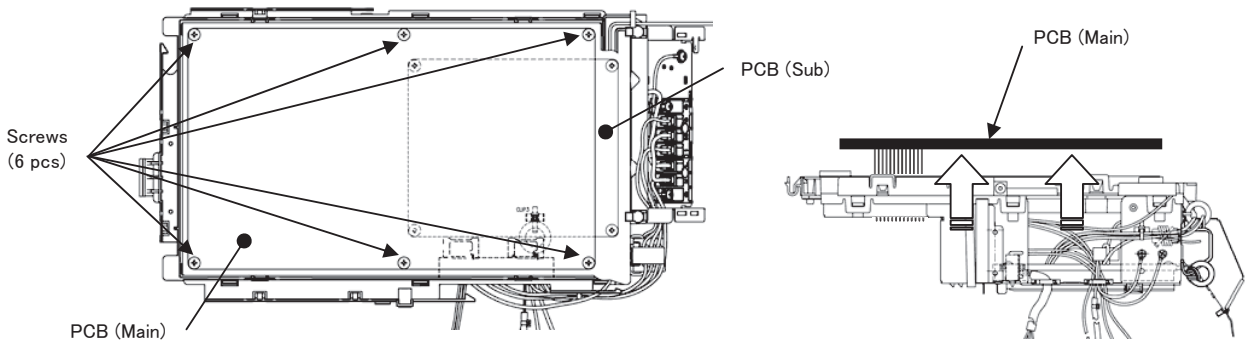


Fig.3 Upside view and removal method of PCB(Main)

Step.2 Disconnect the connectors and remove the band (when there is a band) as shown in the Fig.4-1 and Fig.4-2.

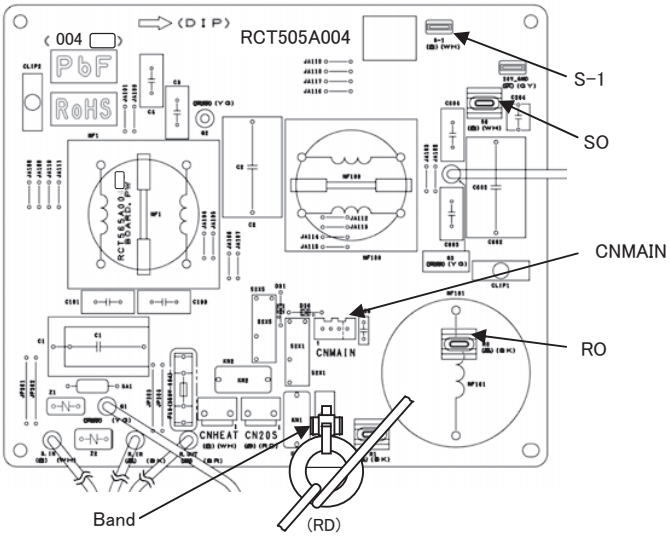


Fig.4-1 Parts arrangement view (PCB (Sub))

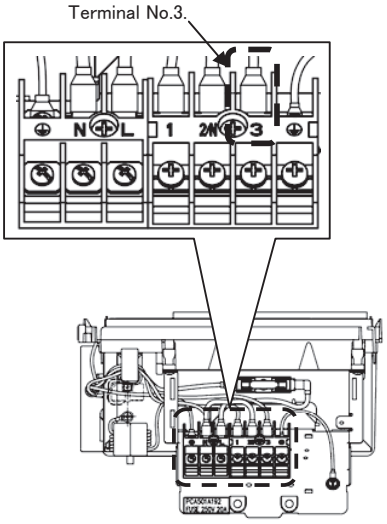


Fig.4-2 Terminal block side view

Step.3 Disconnect the connectors from PCB (Main).

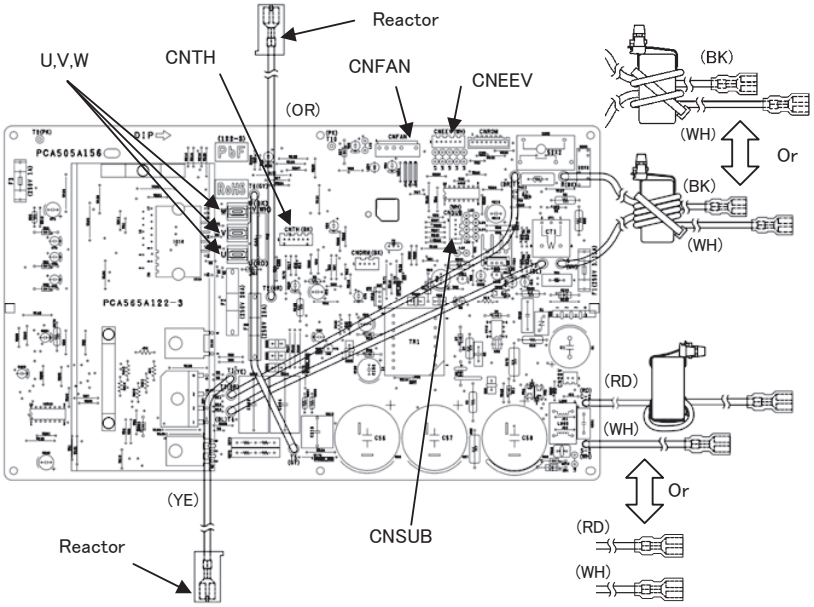


Fig.5 Parts arrangement view (Parts face of PCB (Main))

(iii) Models FDC100VNX, 125VNX, 140VNX,100VN, 125VN, 140VN
FDC100VSX, 125VSX, 140VSX, 100VS, 125VS, 140VS

PCA012D043 C

1) Replace the PCB **after elapsing 3 minutes from power OFF**.
(**Be sure to measure voltage (DC)** on both capacitor terminals located in control back, and **check that the voltage is discharged sufficiently**.)
2) Disconnect the connectors from the control PCB.
3) Disconnect the white wiring passing through CT1 on the PCB before replacing the PCB.
4) Match the setting switches (SW3-5, JSW) with the former PCB.
5) Tighten up a screw after passing white wiring through CT1 of the changed.
6) Connect the connectors with the control PCB referring to the parts arrangement of Fig.1.
(Confirm the **connectors are not half inserted**.)

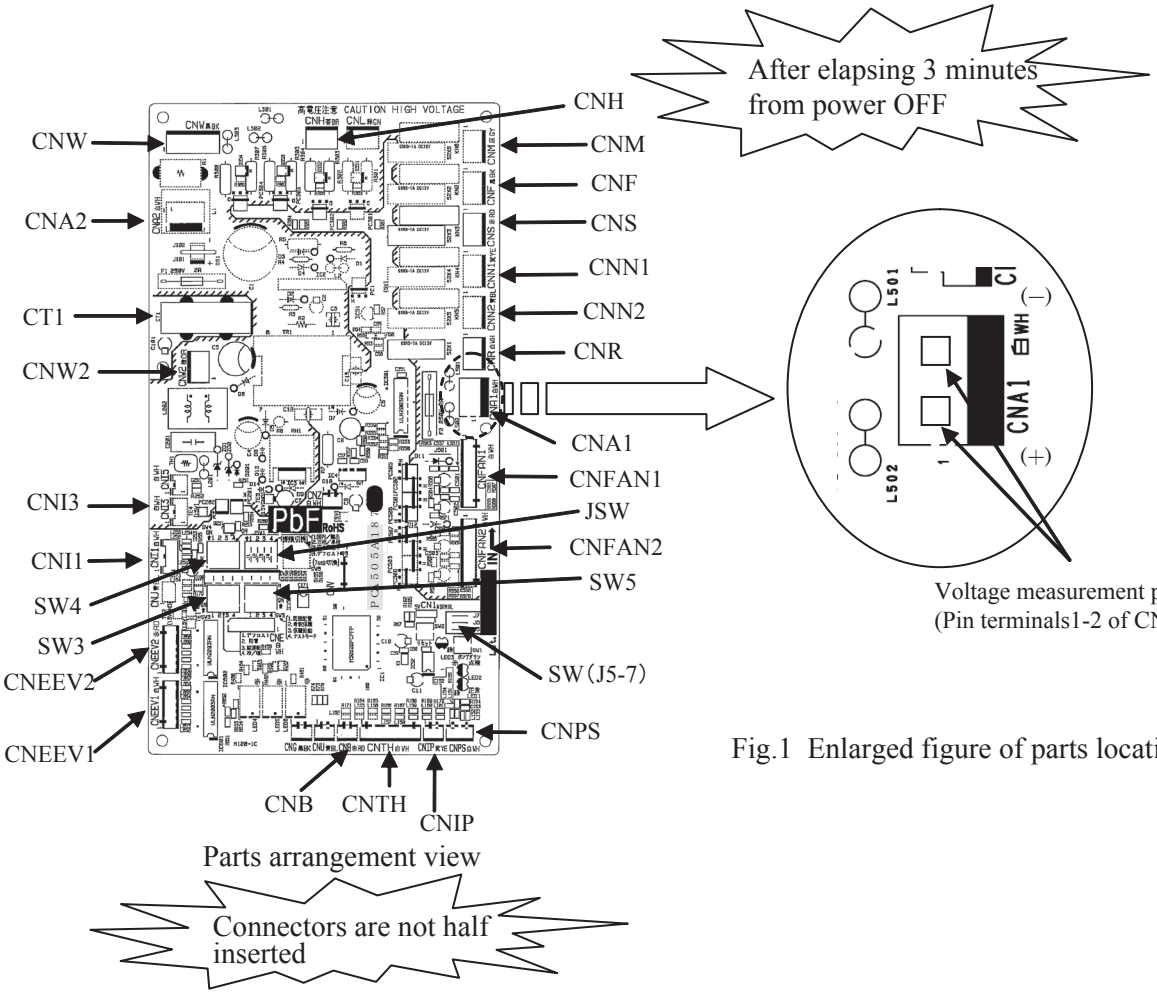


Fig.1 Enlarged figure of parts location

(iV) Models FDC200VSA, 250VSA

PCA012D050

Replace the control PCB according to the following procedure.

(i) Replace the PCB after elapsing 3 minutes from power OFF.

(ii) Measurement was done on both ends of connector (CNA1) during measurement, the voltage(DC) might charged the electrolytic capacitor, be sure that the voltage is discharged sufficiently. (Refer to Fig.2)

(iii) Disconnect the connectors from the control PCB.

(iv) Disconnect the white or blue wiring passing through CT1 on the PCB before replacing the PCB.

(v) Match the setting switches (SW3-5,7, JSW1) with the former PCB.

(vi) Tighten up a screw after passing white or blue wiring through CT1 of the changed.

(vii) Please connect the connectors with the same place. (Confirm the connectors are not half inserted.)

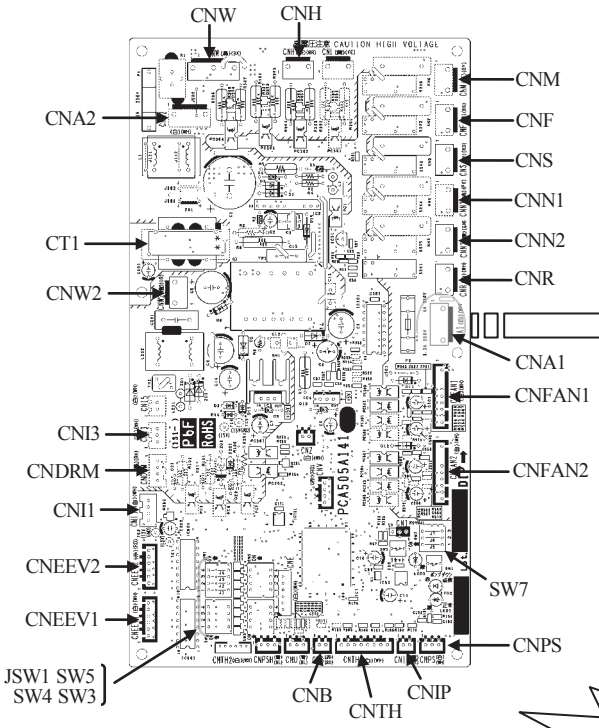


Fig.1 Parts arrangement view

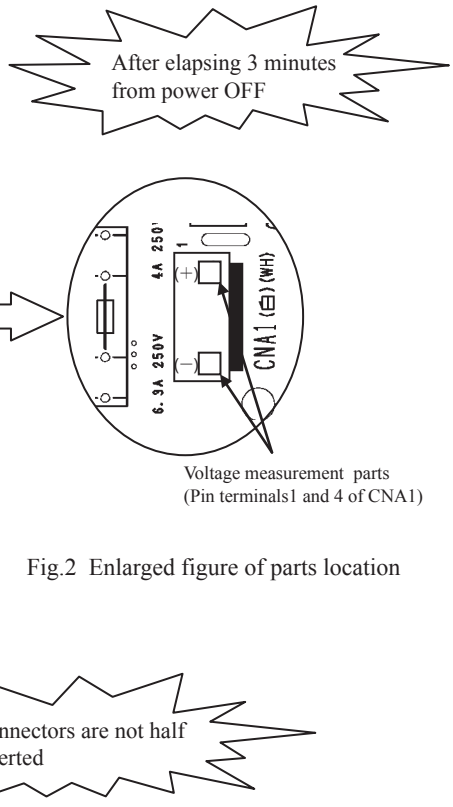


Fig.2 Enlarged figure of parts location

(c) Outdoor inverter PCB replacement procedure

Precautions for Safety

- Since the following precaution is the important contents for safety, be sure to observe them. WARNING and CAUTION are described as follows:

⚠ WARNING Indicates an imminently hazardous situation which will result in death or serious injury if proper safety procedures and instructions are not adhered to.

⚠ CAUTION Indicates a potentially hazardous situation which may result in minor or moderate injury if proper safety procedures and instructions are not adhered to.

⚠ WARNING

- Securely replace the PCB according to this procedure. If the PCB is incorrectly replaced, it will cause an electric shock or fire.
- Be sure to check that the power source for the outdoor unit is turned OFF before replacing the PCB. The PCB replacement under current-carrying will cause an electric shock or fire.
- After finishing the PCB replacement, check that wiring is correctly connected with the PCB before power distribution. If the PCB is incorrectly replaced, it will cause an electric shock or fire.

⚠ CAUTION

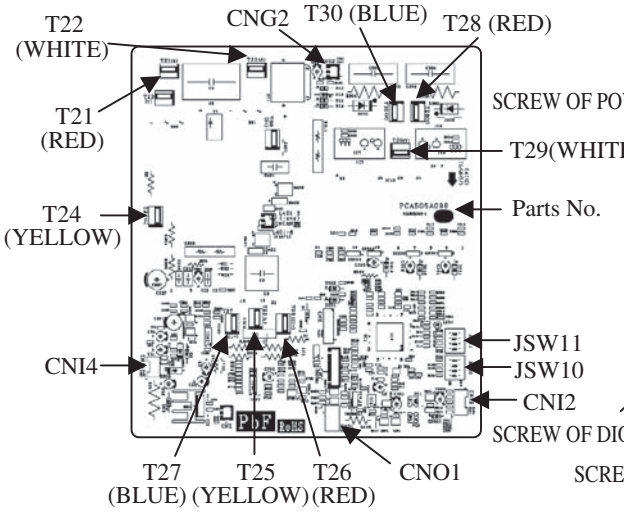
- Band the wiring so as not to tense because it will cause an electric shock.

Replace the inverter PCB according to the following procedure.

(i) Model FDC71VNX

PCA012D022G B

1) Replace the PCB **after elapsing 3 minutes from power OFF.** (**Be sure to measure voltage (DC)** between T26 and T27 on inverter PCB, and **check that the voltage is discharged sufficiently (10V or less)**. (Refer to Fig.1))
2) Take off the connection of inverter PCB terminal and connector, and remove the screw of power transistor (IC10), active filter (IC2), and diode stack (DS1) then remove the PCB. Wipe off the silicon grease neatly on the control's radiation heat fins. (Refer to Fig.1 and Parts arrangement view)
3) Refer to table1 for the setting of switch (JSW10, 11) of new PCB.
4) Before installing the power transistor (IC10), active filter (IC2), and diode stack (DS1) on the new PCB, apply silicon grease equally to the their surface. (Make full use of the silicon grease.) **They may be damaged unless they apply it**.
5) Tighten the screw of power transistor (IC10), active filter (IC2), and diode stack (DS1) on inverter PCB and connect terminal and connector. Confirm the connection and there is not the half insertion. **Tighten properly power transistor, (IC10) active filter (IC2), and diode stack (DS1) with a screw and make sure there is no slack. They can be damage if not properly tighten.** (Recommended tightening torque: power transistor (IC10)1.2±0.1 and active filter (IC2)0.98±0.1, diode stack(DS1) 0.5±0.1 Unit N·m



Parts arrangement view

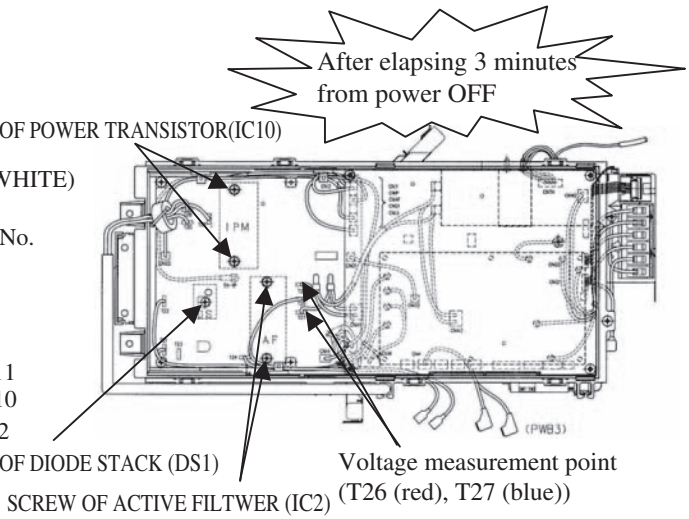


Fig. 1 Position of fastontab and terminal

Connectors are not half inserted

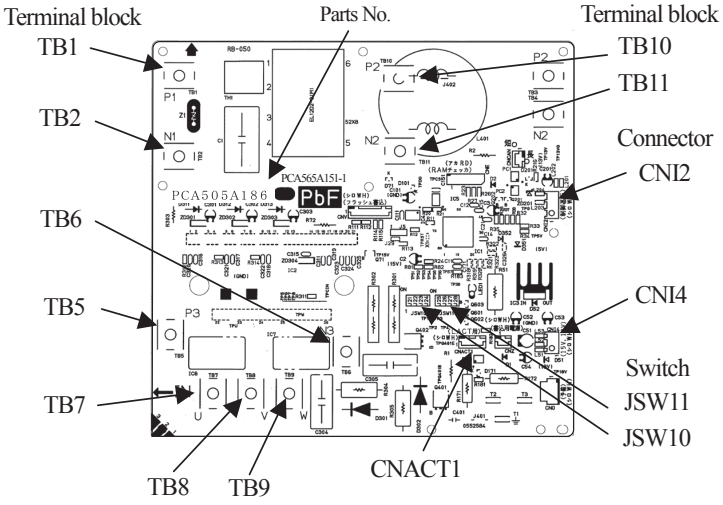
Table. 1 Switch setting

JSW10	-1	OFF	JSW11	-1	ON
	-2	OFF		-2	ON
	-3	OFF		-3	ON
	-4	OFF		-4	ON

(ii) Models FDC100VNX, 125VNX, 140VNX
100VN, 125VN, 140VN

PCA012D025D ⚠

1) Replace the PCB **after elapsing 3 minutes from power OFF**.
(**Be sure to measure voltage (DC)** on both capacitor terminals located in control back, and **check that the voltage is discharged sufficiently**.(Refer to Fig.1))
2) Take off the connection of inverter PCB terminal block connector and remove the screw of power transistor then remove the PCB. Wipe off the silicon grease neatly on the control's radiation heat fins.
3) Match the setting switches (JSW10,11) of new PCB with the former PCB.
4) Before installing the power transistor on the new PCB,Apply uniformly a bundled of silicon grease first on the surface of power transistor.Make sure it is applied to prevent damage on power transistor.
5) Tighten the screw of power transistor on inverter PCB and connect the terminal block.Confirm the connection and don't use soldering in the connection.Tighten properly the power transistor with a screw and make sure there is no slack.Power transistor can be damage if not properly tighten.(Recommended power transistor tightening torque:0.98~1.47N·m)



Parts arrangement view

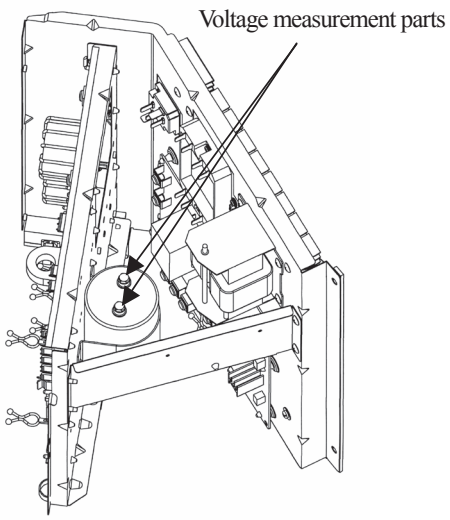


Fig.1 Position of capacitor

Table. 1 Switch setting

Models FDC100VNX, 125VNX, 140VNX

JSW10	-1	OFF	JSW11	-1	OFF
	-2	OFF		-2	OFF
	-3	OFF		-3	ON
	-4	OFF		-4	ON

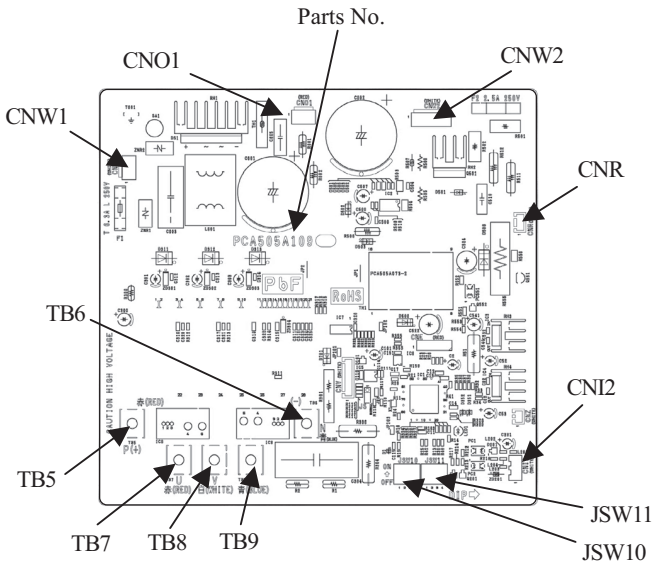
Models FDC100VN, 125VN, 140VN

JSW10	-1	OFF	JSW11	-1	ON
	-2	ON		-2	OFF
	-3	OFF		-3	OFF
	-4	OFF		-4	OFF

(iii) Models FDC100VSX, 125VSX, 140VSX
100VS, 125VS, 140VS

PCA012D025F

1) Replace the PCB **after elapsing 3 minutes from power OFF**.
(**Be sure to measure voltage (DC)** on both capacitor terminals located in control back, and **check that the voltage is discharged sufficiently**.(Refer to Fig.1))
2) Take off the connection of inverter PCB terminal block connector and remove the screw of power transistor then remove the PCB. Wipe off the silicon grease neatly on the control's radiation heat fins.
3) Match the setting switches (JSW10,11) of new PCB with the former PCB.
4) Before installing the power transistor on the new PCB, Apply uniformly a bundled of silicon grease first on the surface of power transistor.Make sure it is applied to prevent damage on power transistor.
5) Tighten the screw of power transistor on inverter PCB and connect the terminal block.Confirm the connection and don't use soldering in the connection.Tighten properly the power transistor with a screw and make sure there is no slack.Power transistor can be damage if not properly tighten.(Recommended power transistor tightening torque:0.98~1.47N·m)



Parts arrangement view

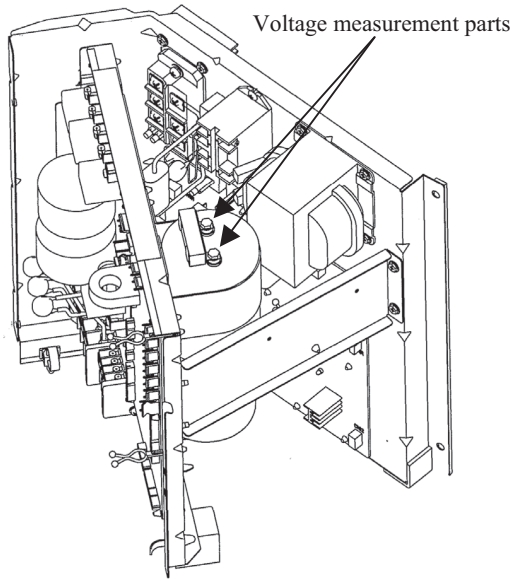


Fig.1 Position of capacitor

Table. 1 Switch setting

Models FDC100VSX, 125VSX, 140VSX

JSW10	-1	OFF	JSW11	-1	ON
	-2	OFF		-2	OFF
	-3	OFF		-3	ON
	-4	OFF		-4	ON

Models FDC100VS, 125VS, 140VS

JSW10	-1	OFF	JSW11	-1	OFF
	-2	ON		-2	OFF
	-3	OFF		-3	ON
	-4	OFF		-4	OFF

(iv) Model FDC200VSA

Replace the inverter PCB (Fig.1) according to the following procedure. PCA012D063

1) Replace the inverter PCB **after elapsing 3 minutes from power OFF**.
(Be sure to measure **voltage (DC) of two places ((A) power source for fan motor (DC), (B) power source for inverter)**, and check that **the voltage is discharged sufficiently**.(Refer to Fig.2))
2) Take off the wirings and connectors of inverter PCB, the screws of power transistor. Then remove the PCB from the control. Wipe off the silicon grease neatly on the control′s radiation fins.
3) Match the setting of switches (JSW10, 11) of new PCB with the former PCB.
4) Before installing the new PCB to the control, **apply the bundled silicon grease uniformly** on the surface of power transistor, and all use it up at that time. **The power transistor can be damaged**, if the silicon grease is not applied.
5) Tighten the screws of power transistor on inverter PCB and reconnect the wirings and connectors to inverter PCB. After connection, confirm **the screws are tightened and connectors are not half inserted**.
However, tighten the power transistor with the screws according to recommended tightening torque after tightening the screws temporarily once.
Power transistor can be damage if not tightened according to this procedure.
(Temporary tightening torque:0.20～0.44N･m, Recommended tightening torque:0.98～1.47 N･m)

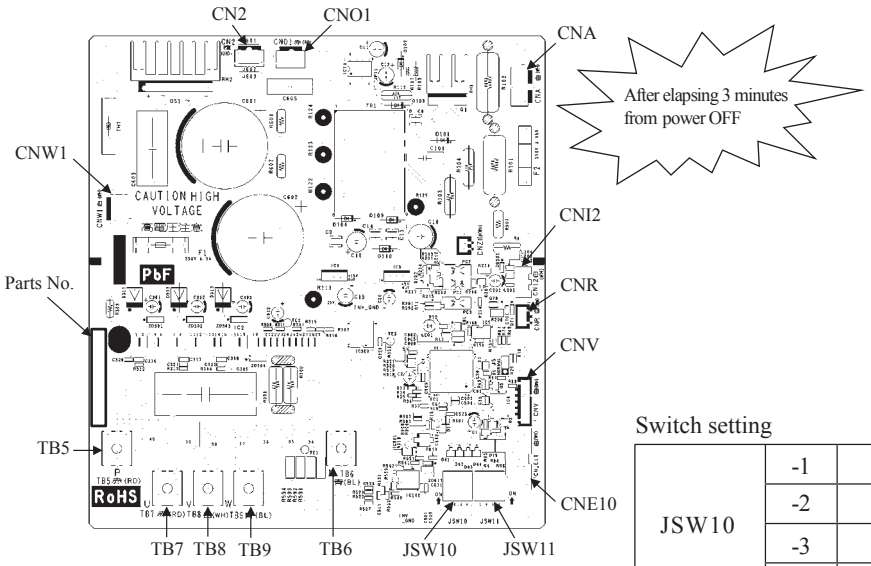


Fig.1 Parts arrangement view of inverter PCB

Switch setting

JSW10	-1	OFF	JSW11	-1	OFF
	-2	OFF		-2	OFF
	-3	OFF		-3	OFF
	-4	OFF		-4	OFF

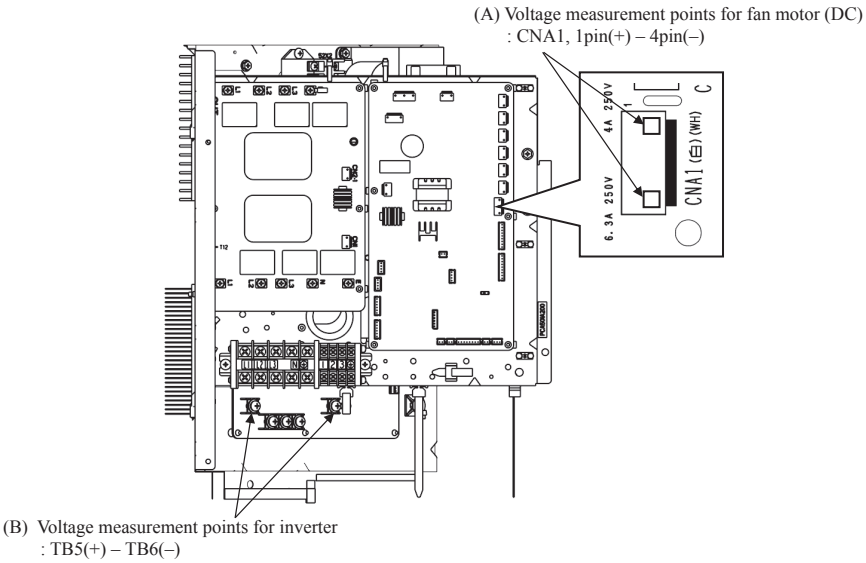


Fig.2 Voltage measurement points

(V) Model FDC250VSA

PCB012D057A

Replace the inverter PCB (Fig.1) according to the following procedure.

1) Replace the PCB **after elapsing 3 minutes from power OFF**.
2) In the situation that harnesses are connected to control PCB, **be sure to measure voltage (DC) of two places ((A), (B))** and check that **the voltage is discharged sufficiently**. (Refer to Fig.2)
3) Disconnect connectors from the control PCB. (Refer to Fig.3)
4) Remove the harnesses from bands (2 places) and clips (3 places), and remove screws (4 places) of a control. (Refer to Fig.3)
5) Open main layer and **measure voltage (DC) of a place (C)** and check that **the voltage is discharged sufficiently**. (Refer to Fig.4)
6) Disconnect connectors from the inverter PCB (Refer to Fig.1), remove a snubber capacitor (Refer to Fig.4) and harnesses (”P”,”N”,”U”,”V” and ”W”), and exchange the inverter PCB then. In the situation of being opening main layer, do not press the control from above. It will cause the product deformation or injury.
7) Match the setting of switches (JSW10, 11) of new PCB with former PCB.
8) After replacing the inverter PCB, install the snubber capacitor to power transistor (Refer to Fig.5), and reconnect the connectors and the harnesses as before. (Confirm the **connectors are not half inserted**.)
   Be careful not to pinch the wiring at the time of closing main layer. The wiring is damaged, and it will cause a short circuit or fire.

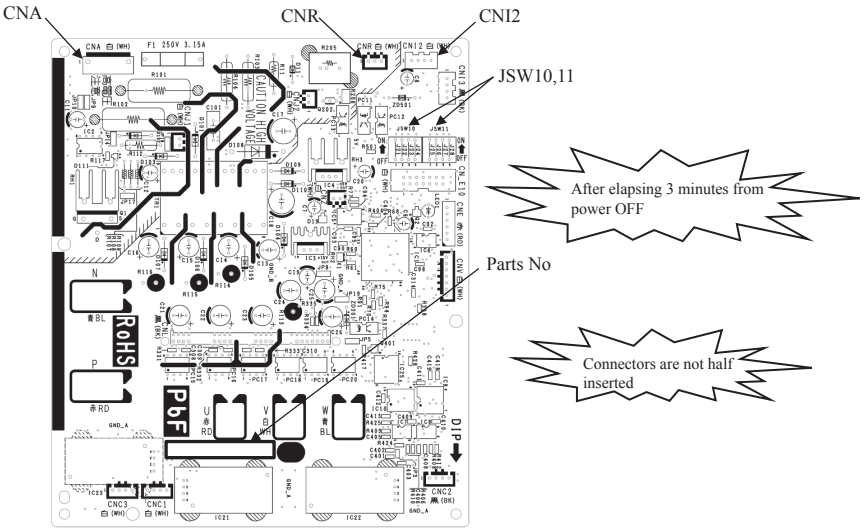


Fig.1 Parts arrangement view of inverter PCB

Switch setting

JSW10	-1	OFF	JSW11	-1	OFF
	-2	ON		-2	OFF
	-3	OFF		-3	OFF
	-4	OFF		-4	OFF

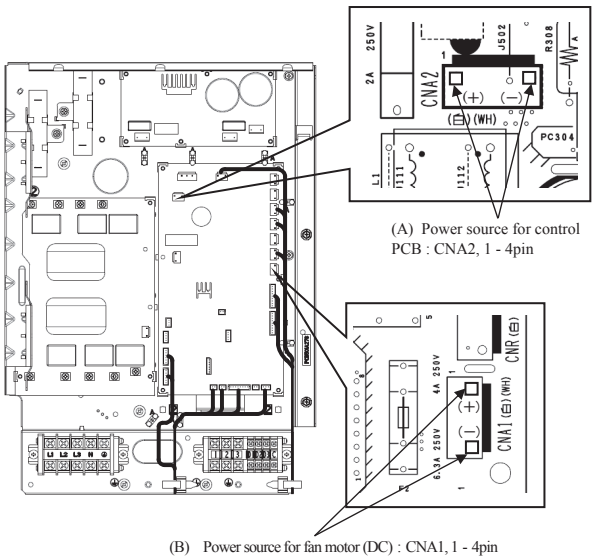


Fig.2 Voltage measurement points

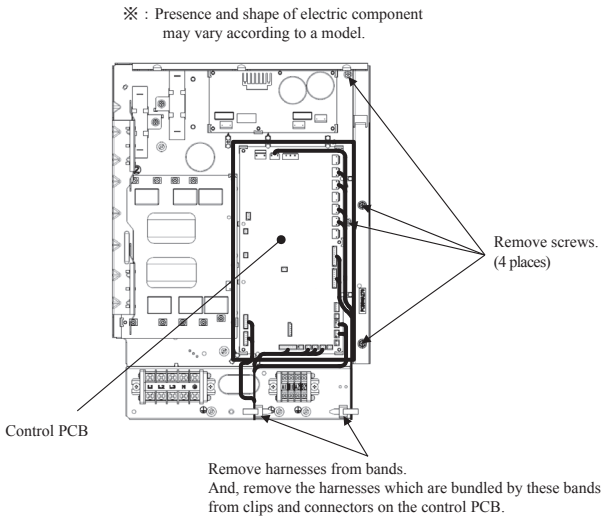


Fig.3 Target places which are removed harnesses and screws

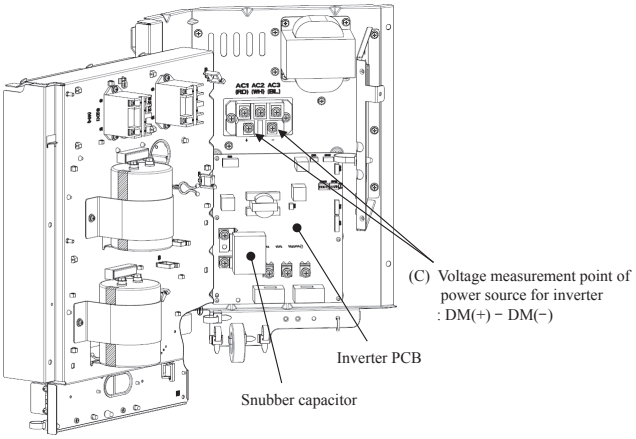
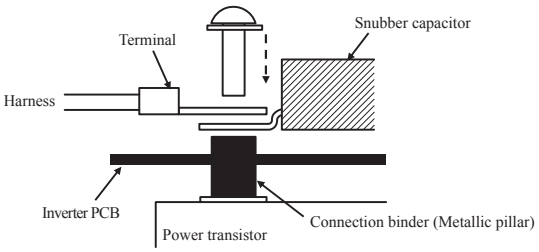


Fig.4 Installation place of inverter PCB



Procedure on tightening harness (Snubber capacitor) and power transistor with screw.
A metallic connection binder is set in each hole of the inverter PCB of "P", "N", "U", "V", and "W" beforehand.
Then tighten the harness (Snubber capacitor) and the power transistor with the screw together.
(Set the harness wires to be fixed to"U" and "W" with screws in respective holes after passing them through IC21 and 22.)
(Connect the snubber capacitor with "P" and "N".)

Fig.5 Installation method to power transistor

●DIP switch setting list (Outdoor unit)

Models FDC71, 100, 125, 140VNX, 100, 125, 140VSX

(1) Control PCB

Model FDC71VNX

Switches	Description		Default setting		Remarks
SW3-1	Defrost condition	Normal*/Cold region	OFF	Normal	
SW3-2	Snow protection control	Normal*/Snow protection	OFF	Normal	
SW3-3	Model selection	Cooling only/Heat pump*	OFF	Heat pump	Keep OFF
SW3-4	Defrost prohibition time	ON: 37min*/OFF: 45min	ON	37min.	
SW4-1	Model selection	Domestic/Overseas*	ON	Overseas	Keep ON
SW4-2	Model selection	3-phase/Single phase*	ON	Single phase	Keep ON
SW4-3	Reserved		OFF		Keep OFF
SW4-4	Reserved		OFF		Keep OFF
SW5-1	Model selection		OFF		Keep OFF
SW5-2	Model selection		OFF		Keep OFF
SW5-3	Test run SW	Normal*/Test run	OFF	Normal	
SW5-4	Test run mode	Cooling*/Heating	OFF	Cooling	
SW7-1	Reserved		OFF		Keep OFF
SW7-2	Reserved		OFF		Keep OFF
SW7-3	Reserved		OFF		Keep OFF
SW8-1	Reserved		OFF		Keep OFF
SW8-2	Reserved		OFF		Keep OFF
SW8-3	Reserved		OFF		Keep OFF
SW9	Pump down operation	Normal*/Pump down	OFF	Normal	

* Default setting

Models FDC100,125,140VNX,100,125,140VSX

Switches	Description		Default setting		Remarks
SW1	Pump down operation	Normal*/Pump down	OFF	Normal	
JSW1-1	Model selection		As per model		See table 1
JSW1-2					
JSW1-3					
JSW1-4					
SW3-1	Defrost condition	Normal*/Cold region	OFF	Normal	
SW3-2	Snow protection control	Normal*/Snow protection	OFF	Normal	
SW3-3	Test run SW	Normal*/Test run	OFF	Normal	
SW3-4	Test run mode	Cooling*/Heating	OFF	Cooling	
SW4-1	Model selection	Domestic/Overseas*	ON	Overseas	See table 1
SW4-2	Model selection	3-phase/Single phase	As per model		See table 1
SW4-3	Reserved		OFF		Keep OFF
SW4-4	Reserved		ON		Keep ON
SW5-1	Reserved		OFF		Keep OFF
SW5-2	Reserved		OFF		Keep OFF
SW5-3	Reserved		OFF		Keep OFF
SW5-4	Reserved		OFF		Keep OFF

* Default setting

Table 1: Outdoor unit model selection with JSW1-1-JSW1-4 and SW4-1-SW4-2

Switches	FDC100VNX	FDC100VSX	FDC125VNX	FDC125VSX	FDC140VNX	FDC140VSX
JSW1-1	OFF	OFF	ON	ON	OFF	OFF
JSW1-2	OFF	OFF	OFF	OFF	ON	ON
JSW1-3	OFF	OFF	OFF	OFF	OFF	OFF
JSW1-4	OFF	OFF	OFF	OFF	OFF	OFF
SW4-1	ON	ON	ON	ON	ON	ON
SW4-2*	ON	OFF	ON	OFF	ON	OFF

* 3-phase: OFF/Single phase: ON

(2) Inverter PCB

Switches	FDC71VNX	FDC100, 125, 140VNX	FDC100, 125, 140VSX
	Single phase models	Single phase models	3-phase models
JSW10-1	OFF	OFF	OFF
JSW10-2	OFF	OFF	OFF
JSW10-3	OFF	OFF	OFF
JSW10-4	OFF ∗	OFF ∗	OFF ∗
JSW11-1	ON	OFF	ON
JSW11-2	ON	OFF	OFF
JSW11-3	ON	ON	ON
JSW11-4	ON	ON	ON

∗ When checking inverter PCB of FDC71－140 models with inverter checker, turn JSW10-4 ON.
(Regarding the checking method of inverter PCB with inverter checker, refer to page 183 for details)

Models FDC100, 125, 140VN, 100, 125, 140VS

(1) Control PCB

Switches	Description		Default setting		Remarks
SW1	Pump down operation	Normal*/Pump down	OFF	Normal	
JSW1-1	Model selection		As per model		See table 1
JSW1-2					
JSW1-3					
JSW1-4					
SW3-1	Defrost condition	Normal*/Cold region	OFF	Normal	
SW3-2	Snow protection control	Normal*/Snow protection	OFF	Normal	
SW3-3	Test run SW	Normal*/Test run	OFF	Normal	
SW3-4	Test run mode	Cooling*/Heating	OFF	Cooling	
SW4-1	Model selection	Domestic/Overseas*	ON	Overseas	See table 1
SW4-2	Model selection	3-phase/Single phase	As per model		See table 1
SW4-3	Reserved		OFF		Keep OFF
SW4-4	Reserved		OFF		Keep OFF
SW5-1	Reserved		OFF		Keep OFF
SW5-2	Reserved		OFF		Keep OFF
SW5-3	Reserved		OFF		Keep OFF
SW5-4	Reserved		OFF		Keep OFF

* Default setting

Table 1: Outdoor unit model selection with JSW1-1-JSW1-4 and SW4-1-SW4-2

Switches	FDC100VN	FDC100VS	FDC125VN	FDC125VS	FDC140VN	FDC140VS
JSW1-1	OFF	OFF	ON	ON	OFF	OFF
JSW1-2	OFF	OFF	OFF	OFF	ON	ON
JSW1-3	OFF	OFF	OFF	OFF	OFF	OFF
JSW1-4	OFF	OFF	OFF	OFF	OFF	OFF
SW4-1	ON	ON	ON	ON	ON	ON
SW4-2*	ON	OFF	ON	OFF	ON	OFF

* 3-phase: OFF/Single phase: ON

(2) Inverter PCB

Switches	FDC100, 125, 140VN	FDC100, 125, 140VS
	Single phase models	3-phase models
JSW10-1	OFF	OFF
JSW10-2	ON	ON
JSW10-3	OFF	OFF
JSW10-4	OFF ∗	OFF ∗
JSW11-1	ON	OFF
JSW11-2	OFF	OFF
JSW11-3	OFF	ON
JSW11-4	OFF	OFF

∗ When checking inverter PCB of FDC100-140 models with inverter checker, turn JSW10-4 ON.
(Regarding the checking method of inverter PCB with inverter checker, refer to page 183 for details)

Models FDC200, 250VSA

(1) Control PCB

Switches	Description		Default setting		Remarks
SW1	Pump down operation	Normal*/Pump down	OFF	Normal	
JSW1-1	Model selection		As per model		See table 1
JSW1-2					
JSW1-3					
JSW1-4					
SW3-1	Defrost condition	Normal*/Cold region	OFF	Normal	
SW3-2	Snow protection control	Normal*/Snow protection	OFF	Normal	
SW3-3	Test run SW	Normal*/Test run	OFF	Normal	
SW3-4	Test run mode	Cooling*/Heating	OFF	Cooling	
SW4-1	Model selection	Domestic/Overseas*	ON	Overseas	See table 1
SW4-2	Model selection	3-phase/Single phase	As per model		See table 1
SW4-3	Reserved		OFF		Keep OFF
SW4-4	Reserved		OFF		Keep OFF
SW5-1	Utilization of existing piping control	Normal*/Existing piping control	OFF		Keep OFF
SW5-2	Reserved		OFF		Keep OFF
SW5-3	Reserved		OFF		Keep OFF
SW5-4	Reserved		OFF		Keep OFF
SW7-1	Silent mode setting	Capacity priority/Silent priority	ON	Silent priority	
SW7-2	Reserved		ON		Keep ON
SW7-3	Anti frost control	Invalid/Valid	ON	Valid	

* Default setting

Table 1: Outdoor unit model selection with JSW1-1-JSW1-4 and SW4-1-SW4-2

Switches	FDC200	FDC250
JSW1-1	ON	OFF
JSW1-2	ON	OFF
JSW1-3	OFF	ON
JSW1-4	OFF	OFF
SW4-1	ON	ON
SW4-2	OFF	OFF

(2) Inverter PCB

Switches	FDC200	FDC250
JSW10-1	OFF	OFF
JSW10-2	OFF	ON
JSW10-3	OFF	OFF
JSW10-4	OFF *	OFF *
JSW11-1	OFF	OFF
JSW11-2	OFF	OFF
JSW11-3	OFF	OFF
JSW11-4	OFF	OFF

* When checking inverter PCB of FDC200, 250 models with inverter checker, turn JSW10-4 ON.
(Regarding the checking method of inverter PCB with inverter checker, refer to page 183 for details)

(5) Check of anomalous operation data with the remote control

(a) In case of RC-EX1A remote control

[Operating procedure]

① On the TOP screen, touch the buttons in the order of "Menu" → "Next" → "Service & Maintenance" → "Service password" → "Set" → "Error display" → "Error history".

② When only one indoor unit is connected to the remote control, followings will be displayed.

1. When there is any anomaly: "Loading. Wait a while" is displayed, followed by the operation data at the occurrence of anomaly

Contents of display

- Error code
- Number and data item

2. When there is no anomaly: "No anomaly" is displayed, and this mode is terminated.

③ When two or more indoor units are connected to the remote control, followings will be displayed.

1. When there is any anomaly: If the unit having anomaly is selected on the "Select IU" screen, "Loading. Wait a while" is displayed, followed by the operation data at the occurrence of anomaly.

Contents of display

- Indoor unit No.
- Error code
- Number and data item

2. When there is no anomaly: "No anomaly" is displayed, ant this mode is terminated.

Note (1) When the number of connected units cannot be shown in a page, select "Next".

④ If you press [RUN/STOP] button, the display returns to the TOP screen.

◎ **If you touch "Back" button on the way of setting, the display returns to the last precious screen.**

Note (1) When two remote controls are used to control indoor units, the check of anomaly operation data can be made on the master remote control only. (It cannot be operated from the slave remote control.)

■ Anomaly operation data (Corresponding data may not be provided depending on models. Such items will not be displayed.)

Number		Data Item
01	❊	(Operation Mode)
02	SET TEMP ___℃	(Set Temperature)
03	RETURN AIR___℃	(Return Air Temperature)
04	SENSOR ___℃	(Remote Control Thermistor Tempeature)
05	THI-R1___℃	(Indoor Heat Exchanger Thermistor / U Bend)
06	THI-R2___℃	(Indoor Heat Exchanger Thermistor /Capillary)
07	THI-R3___℃	(Indoor Heat Exchanger Thermistor /Gas Header)
08	I/U FANSPEED___	(Indoor Unit Fan Speed)
09	DEMAND ___Hz	(Frequency Requirements)
10	ANSWER ___Hz	(Response Frequency)
11	I/U EEV____P	(Pulse of Indoor Unit Expansion Value)
12	TOTAL I/U RUN___H	(Total Running Hours of The Indoor Unit)
21	OUTDOOR___℃	(Outdoor Air Temperature)
22	THO-R1___℃	(Outdoor Heat Exchanger Thermistor)
23	THO-R2___℃	(Outdoor Heat Exchanger Thermistor)
24	COMP___Hz	(Compressor Frequency)
25	HP___MPa	(High Pressure)
26	LP____MPa	(Low Pressure)
27	Td___℃	(Discharge Pipe Temperature)
28	COMP BOTTOM___℃	(Comp Bottom Temperature)
29	CT___AMP	(Current)
30	TARGET SH___℃	(Target Super Heat)
31	SH___℃	(Super Heat)
32	TDSH___℃	(Discharge Pipe Super Heat)
33	PROTECTION No.__	(Protection State No. of The Compressor)
34	O/U FANSPEED___	(Outdoor Unit Fan Speed)
35	63H1	(63H1 On/Off)
36	DEFROST	(Defrost Control On/Off)
37	TOTAL COMP RUN___H	(Total Running Hours of The Compressor)
38	O/U EEV1____P	(Pulse of The Outdoor Unit Expansion Valve EEVC)
39	O/U EEV2____P	(Pulse of The Outdoor Unit Expansion Valve EEVH)

●Details of Compressor protection status No. 33
Models FDC71, 100, 125, 140VNX, 100,125,140VSX

No.	Contents of display	Reference page
"0"	Normal	
"1"	Discharge pipe temperature protection control	P.148, (6).(a).(i)
"2"	Discharge pipe temperature anomaly	P.148, (6).(a).(ii)
"3"	Current safe control of inverter primary current	P.150, (6).(g)
"4"	High pressure protection control	P.148, (6).(b).(i), P.149, (6).(c).(i)
"5"	High pressure anomaly	P.148, (6).(b).(ii)
"6"	Low pressure protection control	P.149, (6).(e).(i)
"7"	Low pressure anomaly	P.149, (6).(e).(ii)
"8"	Anti-frost prevention control	P.150, (6).(k)
"9"	Current cut	P.150, (6).(g)
"10"	Power transistor protection control	P.150, (6).(h)
"11"	Power transistor anomaly (Overheat)	P.150, (6).(i)
"12"	Compression ratio control	P.149, (6).(f)
"13"	Spare	
"14"	Dewing prevention control	P.151, (6).(l)
"15"	Current safe control of inverter secondary current	P.150, (6).(g)
"16"	Stop by compressor rotor lock	
"17"	Stop by compressor startup failure	P.151, (6).(p)

Note(1) Operation data display on the remote control.
・Data is dispalyed until canceling the protection control.
・In case of multiple protections controlled, only the younger No. is displayed.
Note(2) Common item.
① In heating mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "4" is displayed.
② In cooling and dehumidifying mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "8" is displayed.

Models FDC71, 90VNP

No.	Contents of display	Reference page
"0"	Normal	
"1"	Discharge pipe temperature protection control	P379, (11). (b). (i)
"2"	Discharge pipe temperature anomaly	P379, (11). (b). (ii)
"3"	Current safe control of inverter primary current	P379, (12)
"4"	High pressure protection control	P377, (6). (c)
"5"	High pressure anomaly	P379, (11)
"8"	Anti-frost prevention control	
"9"	Current cut	P380, (13)
"11"	Power transistor anomaly (Overheat)	
"12"	Compression ratio control	
"13"	Spare	
"14"	Dewing prevention control	
"15"	Current safe control of inverter secondary current	
"16"	Stop by compressor rotor lock	
"17"	Stop by compressor startup failure	

Note(1) Operation data display on the remote control.
・Data is dispalyed until canceling the protection control.
・In case of multiple protections controlled, only the younger No. is displayed.
Note(2) Common item.
① In heating mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "4" is displayed.
② In cooling and dehumidifying mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "8" is displayed.

Models FDC100, 125, 140VN, 100, 125, 140VS

No.	Contents of display	Reference Page
"0"	Normal	
"1"	Discharge pipe temperature protection control	P.387, (6).(a).(i)
"2"	Discharge pipe temperature anomaly	P.387, (6).(a).(ii)
"3"	Current safe control of inverter primary current	P.388, (6).(g)
"4"	High pressure protection control	P.387, (6).(b).(i), (c).(i)
"5"	High pressure anomaly	P.387, (6).(b).(ii)
"6"	Low pressure protection control	P.388, (6).(e).(i)
"7"	Low pressure anomaly	P.388, (6).(e).(ii)
"8"	Anti-frost prevention control	P.389, (6).(k)
"9"	Current cut	P.388, (6).(g)
"10"	Power transistor protection control	P.389, (6).(h)
"11"	Power transistor anomaly (Overheat)	P.389, (6).(i)
"12"	Compression ratio control	P.388, (6).(f)
"13"	Spare	
"14"	Dewing prevention control	P.389, (6).(l)
"15"	Current safe control of inverter secondary current	P.388, (6).(g)
"16"	Stop by compressor rotor lock	
"17"	Stop by compressor startup failure	P.390, (6).(p)

Note(1) Operation data display on the remote control.
・Data is dispalyed until canceling the protection control.
・In case of multiple protections controlled, only the younger No. is displayed.
Note(2) Common item.
① In heating mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "4" is displayed.
② In cooling and dehumidifying mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "8" is displayed.

Models FDC200, 250VSA

No.	Contents of display	Reference page
"0"	Normal	
"1"	Discharge pipe temperature protection control	P.396, (6).(a).(i)
"2"	Discharge pipe temperature anomaly	P.396, (6).(a).(ii)
"3"	Current safe control of inverter primary current	P.398, (6).(g)
"4"	High pressure protection control	P.396, (6).(b).(i), P.397, (6).(c).(i)
"5"	High pressure anomaly	P.396, (6).(b).(ii)
"6"	Low pressure protection control	P.397, (6).(e).(i)
"7"	Low pressure anomaly	P.397, (6).(e).(ii)
"8"	Anti-frost prevention control	P.398, (6).(k)
"9"	Current cut	P.398, (6).(g)
"10"	Power transistor protection control	P.398, (6).(h)
"11"	Power transistor anomaly (Overheat)	P.398, (6).(i)
"12"	Compression ratio control	P.397, (6).(f)
"13"	Spare	
"14"	Dewing prevention control	P.399, (6).(1)
"15"	Current safe control of inverter secondary current	P.398, (6).(g)
"16"	Stop by compressor rotor lock	
"17"	Stop by compressor startup failure	P.399, (6).(p)

Note(1) Operation data display on the remote control.
・Data is dispalyed until canceling the protection control.
・In case of multiple protections controlled, only the younger No. is displayed.
Note(2) Common item.
① In heating mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "4" is displayed.
② In cooling and dehumidifying mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "8" is displayed.

(b) In case of RC-E5 remote control

Operation data can be checked with remote control unit operation.

① Press the CHECK button.
The display change " OPER DATA ▼ "

② Press the (SET) button while " OPER DATA ▼ " is displayed.

③ When only one indoor unit is connected to remote control, " DATA LOADING " is displayed (blinking indication during data loading).
Next, operation data of the indoor unit will be displayed. Skip to step ⑦.

④ When plural indoor units is connected, the smallest address number of indoor unit among all connected indoor unit is displayed.
[Example]:
" SELECT I/U " (blinking 1 seconds) → " I/U000 ▲ " blinking.

⑤ Select the indoor unit number you would like to have data displayed with the ▲ ▼ button.

⑥ Determine the indoor unit number with the (SET) button.
(The indoor unit number changes from blinking indication to continuous indication)
" I/U000 " (The address of selected indoor unit is blinking for 2 seconds.)
↓
" DATA LOADING " (A blinking indication appears while data loaded.)
Next, the operation data of the indoor unit is indicated.

⑦ Upon operation of the ▲ ▼ button, the current operation data is displayed in order from data number 01.
The items displayed are in the above table.
*Depending on models, the items that do not have corresponding data are not displayed.

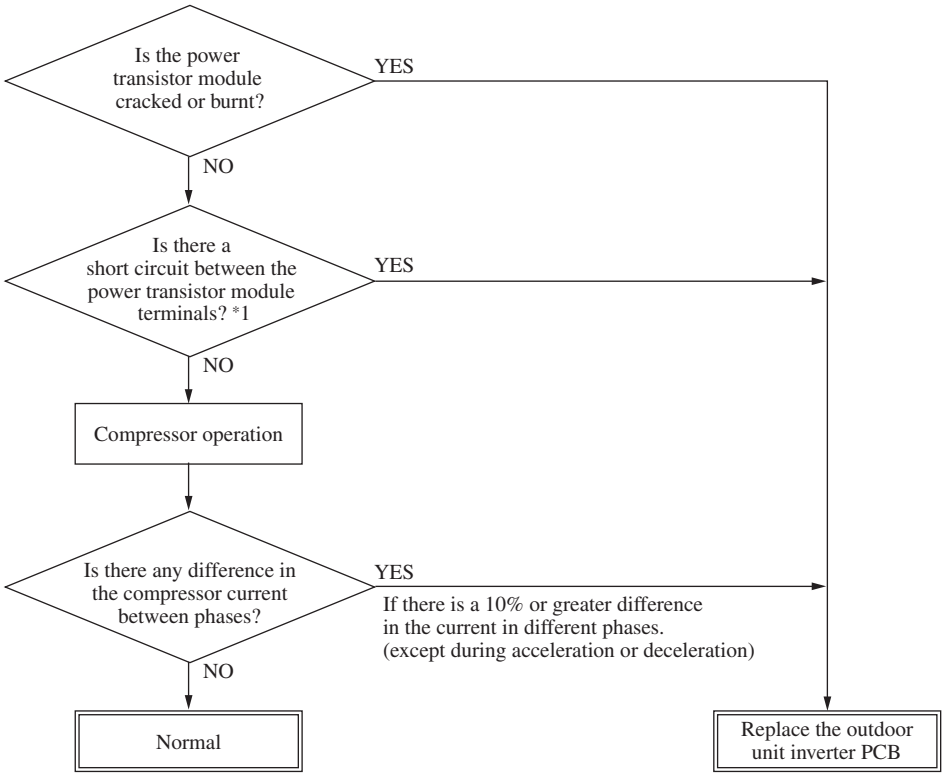
Number	Data Item	
01	❄	(Operation Mode)
02	SET TEMP ___℃	(Set Temperature)
03	RETURN AIR ___℃	(Return Air Temperature)
04	SENSOR ___℃	(Remote Control Thermistor Tempeature)
05	THI-R1 ___℃	(Indoor Heat Exchanger Thermistor / U Bend)
06	THI-R2 ___℃	(Indoor Heat Exchanger Thermistor /Capillary)
07	THI-R3 ___℃	(Indoor Heat Exchanger Thermistor /Gas Header)
08	I/U FANSPEED ___	(Indoor Unit Fan Speed)
09	DEMAND ___Hz	(Frequency Requirements)
10	ANSWER ___Hz	(Response Frequency)
11	I/U EEV ___P	(Pulse of Indoor Unit Expansion Value)
12	TOTAL I/U RUN ___H	(Total Running Hours of The Indoor Unit)
21	OUTDOOR ___℃	(Outdoor Air Temperature)
22	THO-R1 ___℃	(Outdoor Heat Exchanger Thermistor)
23	THO-R2 ___℃	(Outdoor Heat Exchanger Thermistor)
24	COMP ___Hz	(Compressor Frequency)
25	HP ___MPa	(High Pressure)
26	LP ___MPa	(Low Pressure)
27	Td ___℃	(Discharge Pipe Temperature)
28	COMP BOTTOM ___℃	(Comp Bottom Temperature)
29	CT ___AMP	(Current)
30	TARGET SH ___℃	(Target Super Heat)
31	SH ___℃	(Super Heat)
32	TDSH ___℃	(Discharge Pipe Super Heat)
33	PROTECTION No. ___	(Protection State No. of The Compressor)
34	O/U FANSPEED ___	(Outdoor Unit Fan Speed)
35	63H1	(63H1 On/Off)
36	DEFROST	(Defrost Control On/Off)
37	TOTAL COMP RUN ___H	(Total Running Hours of The Compressor)
38	O/U EEV1 ___P	(Pulse of The Outdoor Unit Expansion Valve EEVC)
39	O/U EEV2 ___P	(Pulse of The Outdoor Unit Expansion Valve EEVH)

⑧ To display the data of a different indoor unit, press the AIR CON NO. button, which allows you to go back to the indoor unit selection screen.

⑨ Pressing the ⏻ON/OFF button will stop displaying data.
Pressing the (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.
⊙If two (2) remote controls are connected to one (1) inside unit, only the master control is available for trial operation and confirmation of operation data. (The slave remote control is not available.)

●Details of Compressor protection status No. 33
Refer to page 178 and 179.

(6) Power transistor module (including the driver PCB) inspection procedure



*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 te rminal.

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 or blue harness to compressor

Check for a power transistor short circuit.

- When you do not have a diagnostic checker for judging if the inverter is defective, measure between the terminals of the power transistor parts, judge whether the power transistor is defective or not.
- Disconnect the compressor, then measure with the control incorporated.

Models FDC71-140VNX, 100-140VSX

100-140VN, 100-140VS

Tester		Normal values (Ω)	
Terminal (+)	Terminal (-)	Model FDC71	Model FDC100-140
P	N	0 - (Numerical value rises.)	Approx. 1 M Approx. 300-400
N	P		
P	U	Several M (Numerical value rises.)	0
P	V		
P	W		
N	U	Approx. 650 k	Approx. 1.2 M
N	V		
N	W		
U	P	Approx. 670 k	Approx. 1.3 M
V	P	Approx. 4.4 M	
W	P	Approx. 4.4 M	
U	N	Approx. 650 k	0
V	N	Approx. 4.8 M	
W	N	Approx. 4.9 M	

If the measured values range from 0 - several kW, there is a possibility that the elements are damaged, so replace the power transistor parts.

Models FDC71, 90VNP

Tester		Normal values (Ω)	Diode mode (V)
Terminal (+)	Terminal (-)		
P	N	A few of MΩ (Not short)	—
N	P		
P	U		
P	V		
P	W		
N	U		Approx. 0.4V
N	V		
N	W		
U	P		
V	P		
W	P		
U	N		—
V	N		
W	N		

If the measured values range from 0 - several kΩ, there is a possibility that the elements are damaged, so replace the power transistor parts.

Models FDC200, 250VSA

Tester		Normal values (Ω)	
Terminal (+)	Terminal (-)	Model FDC200	Model FDC250
P	N	Scores of M	Scores of M
N	P	Approx. 4.5M	Approx. 8.9M
P	U	Scores of M	Scores of M
P	V		
P	W		
N	U	Approx. 130k	Approx. 4.6M
N	V		
N	W		
U	P	Approx. 4.5M	Approx. 4.8M
V	P		
W	P		
U	N	Approx. 6.7M	Scores of M
V	N	Approx. 6.0M	
W	N	Approx. 5.7M	

If the measured values range from 0 - several kW, there is a possibility that the elements are damaged, so replace the power transistor parts.

(7) Inverter checker for diagnosis of inverter output
Models SRC40, 50, 60ZMX-S, FDC71, 100, 125, 140VNX,100, 125, 140VSX
FDC100, 125, 140VN, 100, 125, 140VS, 200, 250VSA

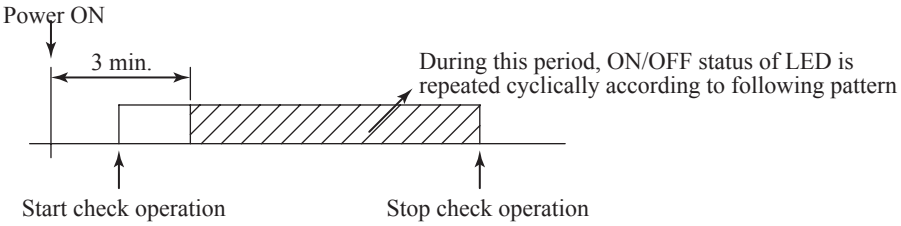
●Checking method

(a) Model: SRC40-60

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

2) Operation for judgment.
a) Power ON and start check operation on cooling or heating mode.
b) Check ON/OFF status of 6 LED's on the checker.
c) Judge the PCB by ON/OFF status of 6 LED's on the checker.

ON/OFF status of LED	If all of LED are ON/OFF according to following pattern	If all of LED stay OFF or some of LED are ON/OFF
Inverter PCB	Normal	Anomalous



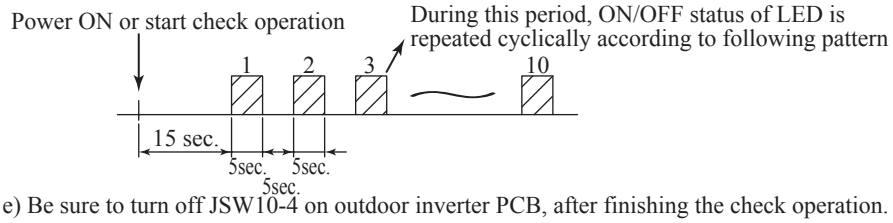
d) Stop check operation within about 2minutes after starting check operation.

(b) Model: FDC71-250

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

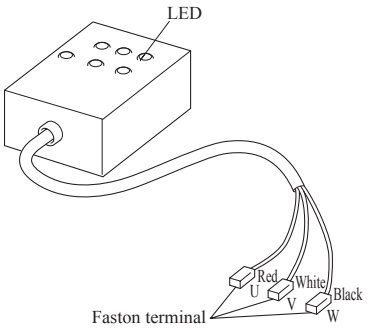
2) Operation for judgment.
a) Power ON after JSW10-4 on outdoor inverter PCB was turned ON.
b) After 15 seconds since power has turned ON, LED start ON/OFF for 5 seconds cyclically and it repeats 10 times.
c) Check ON/OFF status of 6 LED's on the checker.
d) Judge the PCB by ON/OFF status of 6 LED's on the checker.

ON/OFF status of LED	If all of LED are ON/OFF according to following pattern	If all of LED stay OFF or some of LED are ON/OFF
Inverter PCB	Normal	Anomalous



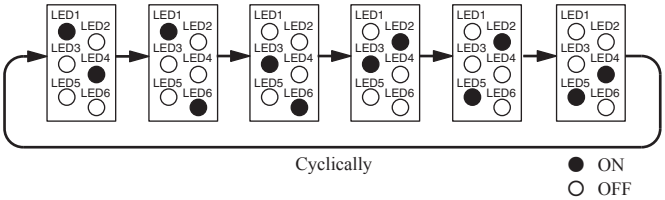
e) Be sure to turn off JSW10-4 on outdoor inverter PCB, after finishing the check operation.

〈Inverter checker〉



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

LED ON/OFF pattern



Models FDC71, 90VNP

●Checking method

(a) Setup procedure of checker.

(i) Power OFF (Turn off the breaker).

(ii) Remove the terminal cover of compressor and disconnect the wires (U, V, W) from compressor.

(iii) Connect the wires U (Red) , V (White) and W (Black) of checker to the terminal of disconnected wires (U, V, W) from compressor respectively.

(iv) Connect the short connector to CNROM on the main PCB.

(b) Operation for judgment.

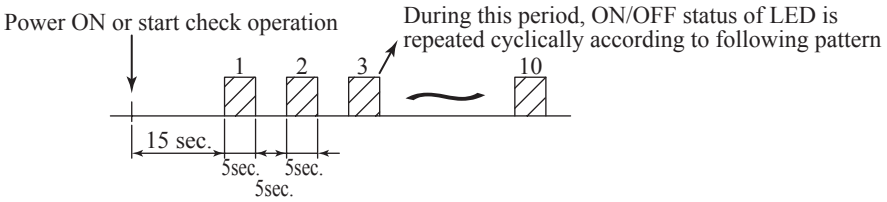
(i) Power ON.

(ii) After 15 seconds since power has turned ON. LED start ON/OFF for 5 seconds cyclically and it repeats 10 times.

(iii) Check ON/OFF status of 6 LED's on the checker.

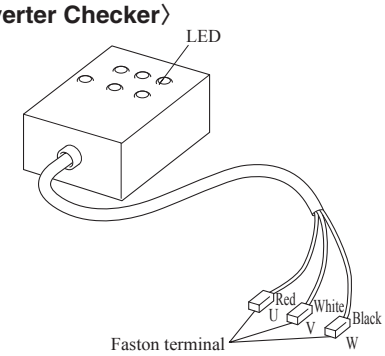
(iv) Judge the PCB by ON/OFF status of 6 LED's on the checker.

ON/OFF status of LED	If all of LED are ON/OFF according to following pattern	If all of LED stay OFF or some of LED are ON/OFF
Inverter PCB	Normal	Anomalous

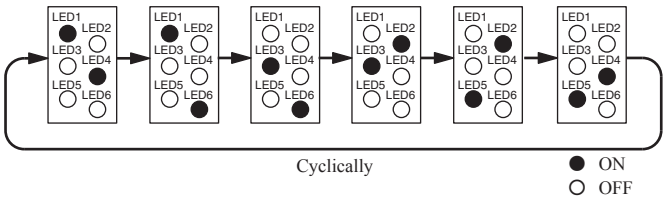


(v) Be sure to disconnect the connector from CNROM, after finishing the check operation.

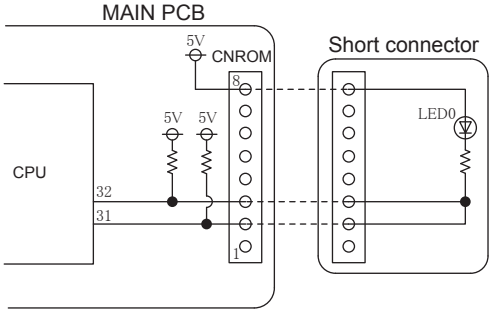
〈Inverter Checker〉



LED ON/OFF pattern



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



(8) Outdoor unit control failure diagnosis circuit diagram

Models SRC40ZM-S, 50ZM-S, 60ZM-S

● Outdoor unit check points

⚠ CAUTION – HIGH VOLTAGE

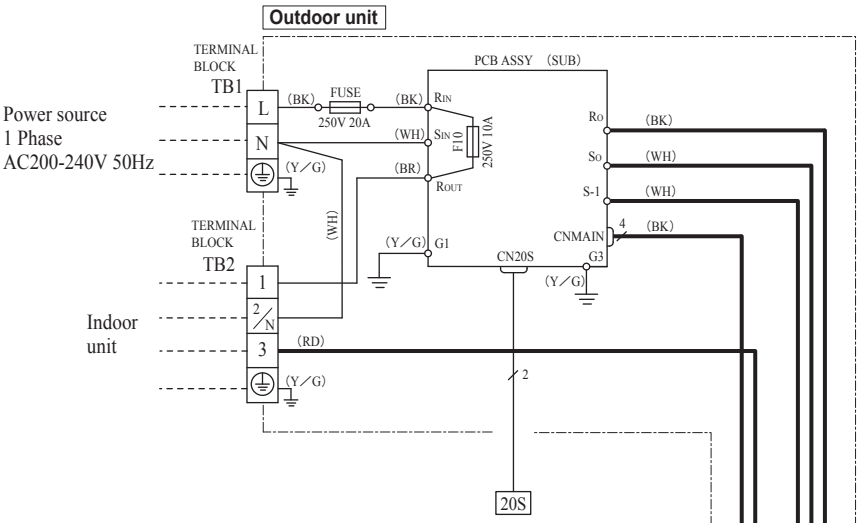
High voltage is produced in the control box. Don't touch electrical parts in the control box for 5 minutes after the unit is stopped.

◆Power source and serial signal inspection

Ⓛ to Ⓝ : AC 220/230/240V
① to ②/N : AC 220/230/240V
②/N to ③ : Normal if the voltage oscillates between DC 0 and approx. 20V

Color symbol

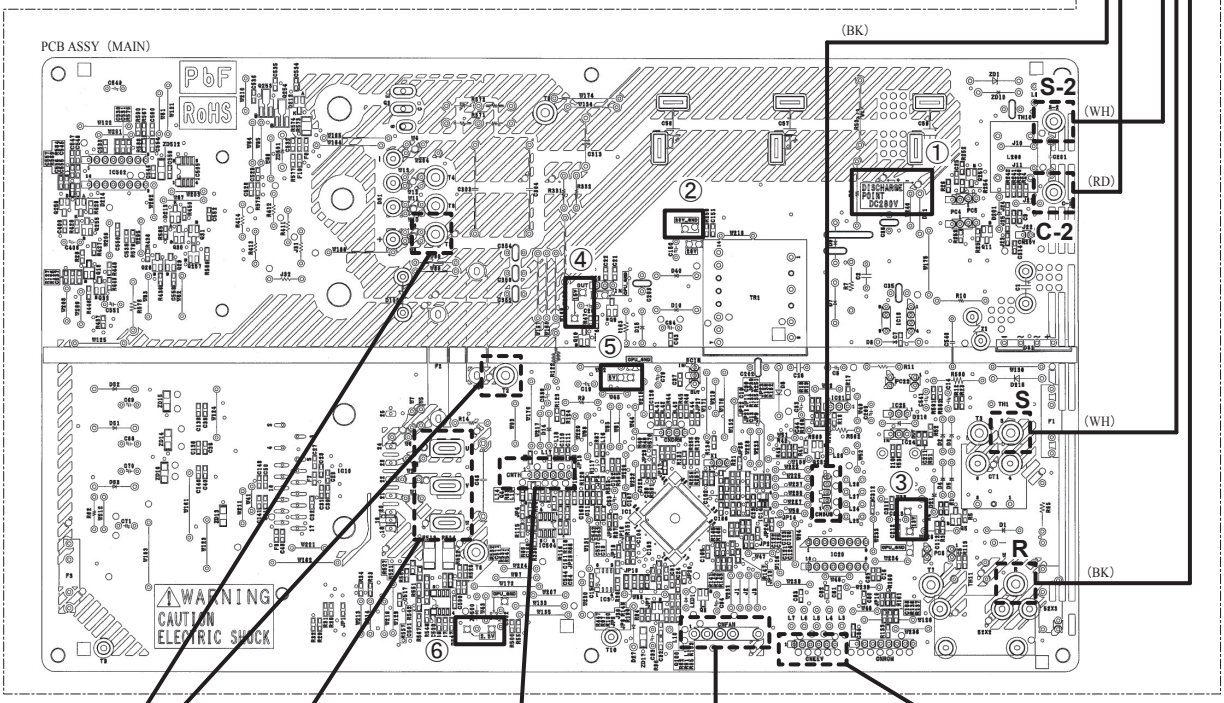
Mark	Color
BK	Black
BR	Brown
OR	Orange
RD	Red
WH	White
Y／G	Yellow／Green

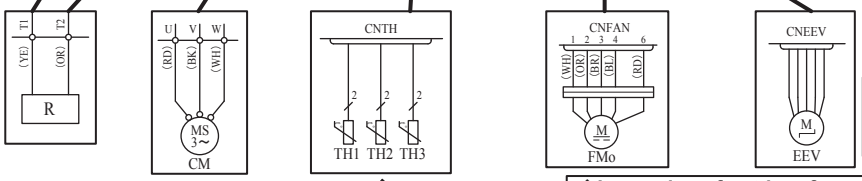


◆Voltage check in PCB

The normal range is as follows.

Display	Voltage range
①DC280V	DC230V – DC310V
②DC 20V	DC 18V – DC 22V
③DC 13V	DC 12V – DC 14V
④DC 15V	DC 14V – DC 16V
⑤DC 5V	DC 4V – DC 6V
⑥DC 2.5V	DC 2.3V – DC 2.5V





◆Inspection of electronic expansion valve

See next page.

◆Inspection of outdoor fan motor

See next page.

◆Inspection power transistor

Remove the fasten terminal and test output voltage

◆Inspection of resistance valve of sensor

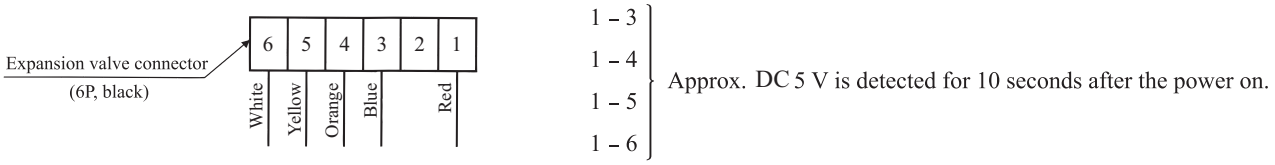
Remove the connector and check the resistance valve.

① Inspection of electronic expansion valve

Electronic expansion valve operates for approx. 10 seconds after the power on, in order to determine its aperture. Check the operating sound and voltage during the period of time. (Voltage cannot be checked during operation in which only the aperture change occurs.)

(i) If it is heard the sound of operating electronic expansion valve, it is almost normal.

(ii) If the operating sound is not heard, check the output voltage.



(iii) If voltage is detected, the outdoor PCB is normal.

(iv) If the expansion valve does not operate (no operating sound) while voltage is detected, the expansion valve is defective.

• Inspection of electronic expansion valve as a separate unit

Measure the resistance between terminals with an analog tester.

Measuring point	Resistance when normal
1 – 6	46 ± 4Ω (at 20ºC)
1 – 5	
1 – 4	
1 – 3	

② Outdoor unit fan motor check procedure

• When the outdoor unit fan motor error is detected, diagnose which of the outdoor unit fan motor or outdoor PCB is defective.

• Diagnose this only after confirming that the indoor unit is normal.

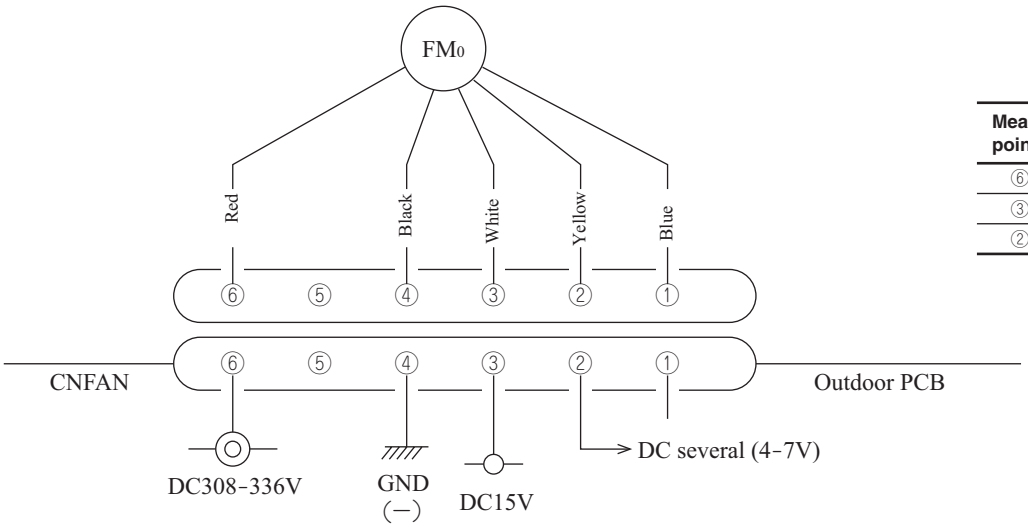
(i) Outdoor PCB output check

1) Turn off the power.

2) Disconnect the outdoor unit fan motor connector CNFAN.

3) When the indoor unit is operated by inserting the power source plug and pressing (ON) the backup switch for more than 5 seconds, if the voltage of pin No. ② in the following figure is output for 30 seconds at 20 seconds after turning "ON" the backup switch, the outdoor PCB is normal but the fan motor is defective.
If the voltage is not detected, the outdoor PCB is defective but the fan motor is normal.

Note (1) The voltage is output 3 times repeatedly. If it is not detected, the indoor unit displays the error message.



Measuring point	Voltage range when normal
⑥ - ④	DC 308-336V
③ - ④	DC 15V
② - ④	DC several V (4-7V)

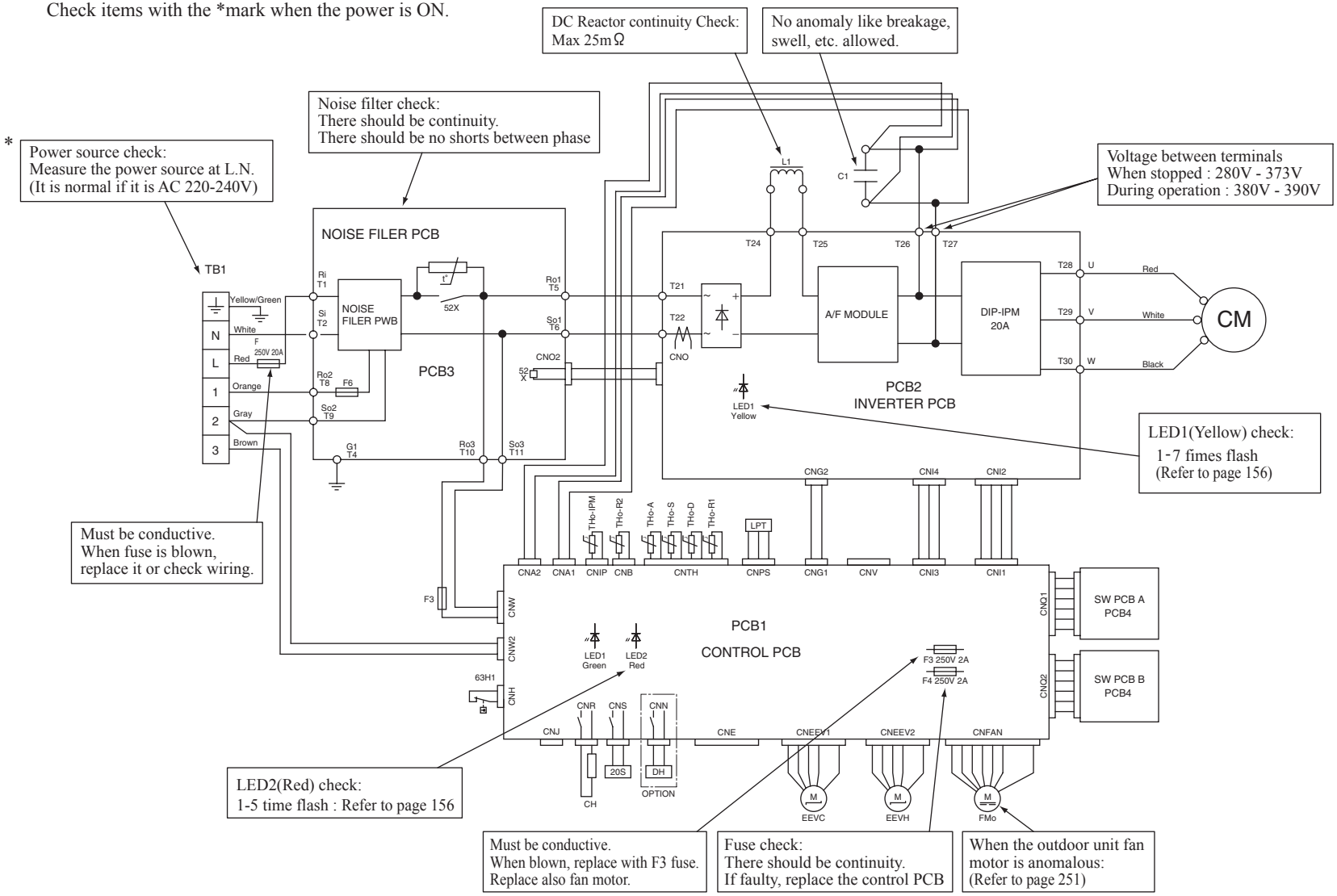
(ii) Fan motor resistance check

Measuring point	Resistance when normal
⑥ - ④ (Red - Black)	20 MΩ or higher
③ - ④ (White - Black)	20 kΩ or higher

Notes (1) Remove the fan motor and measure it without power connected to it.
(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

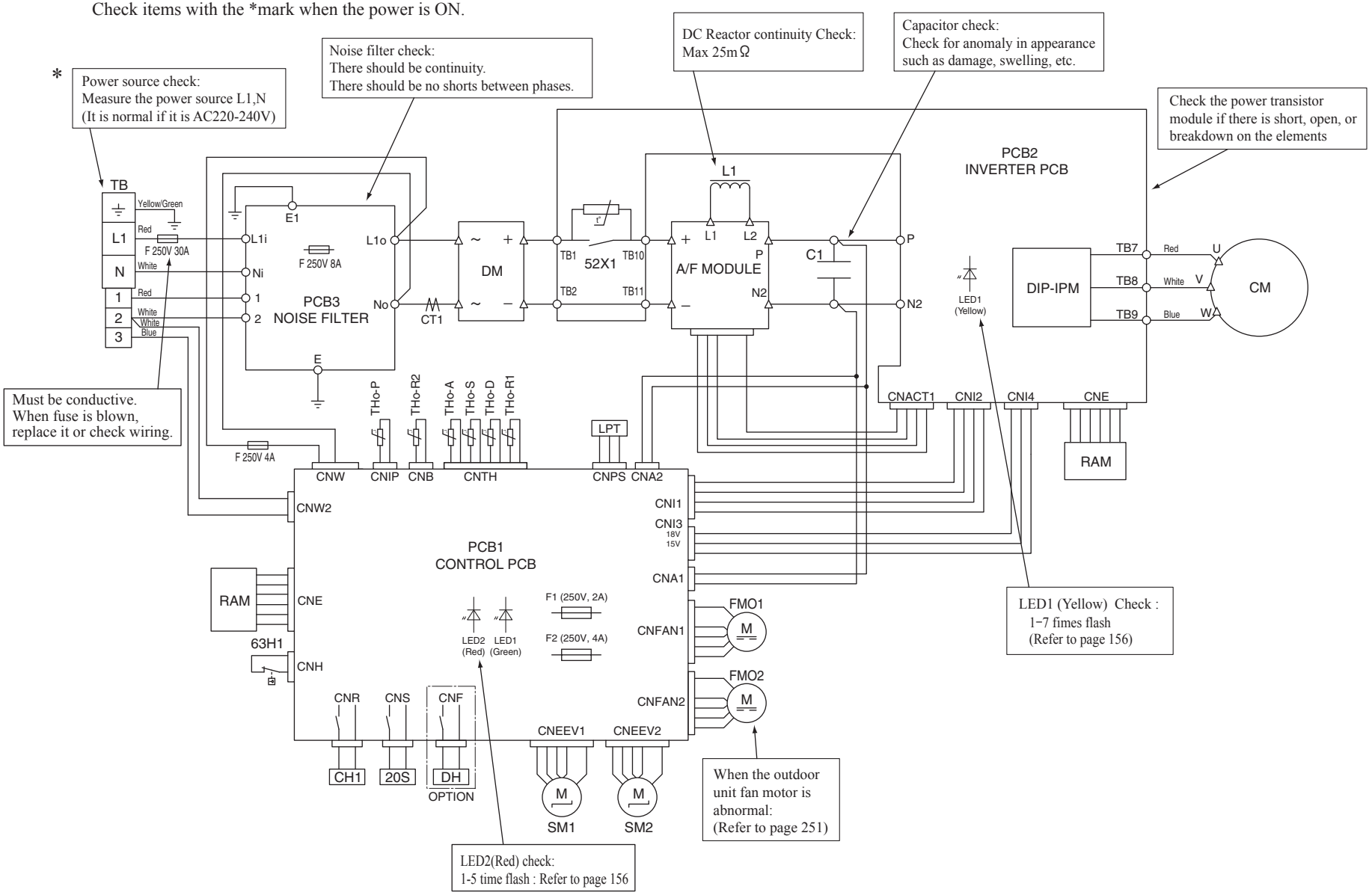
Model FDC71VNX

●Outdoor unit check points
Check items with the *mark when the power is ON.



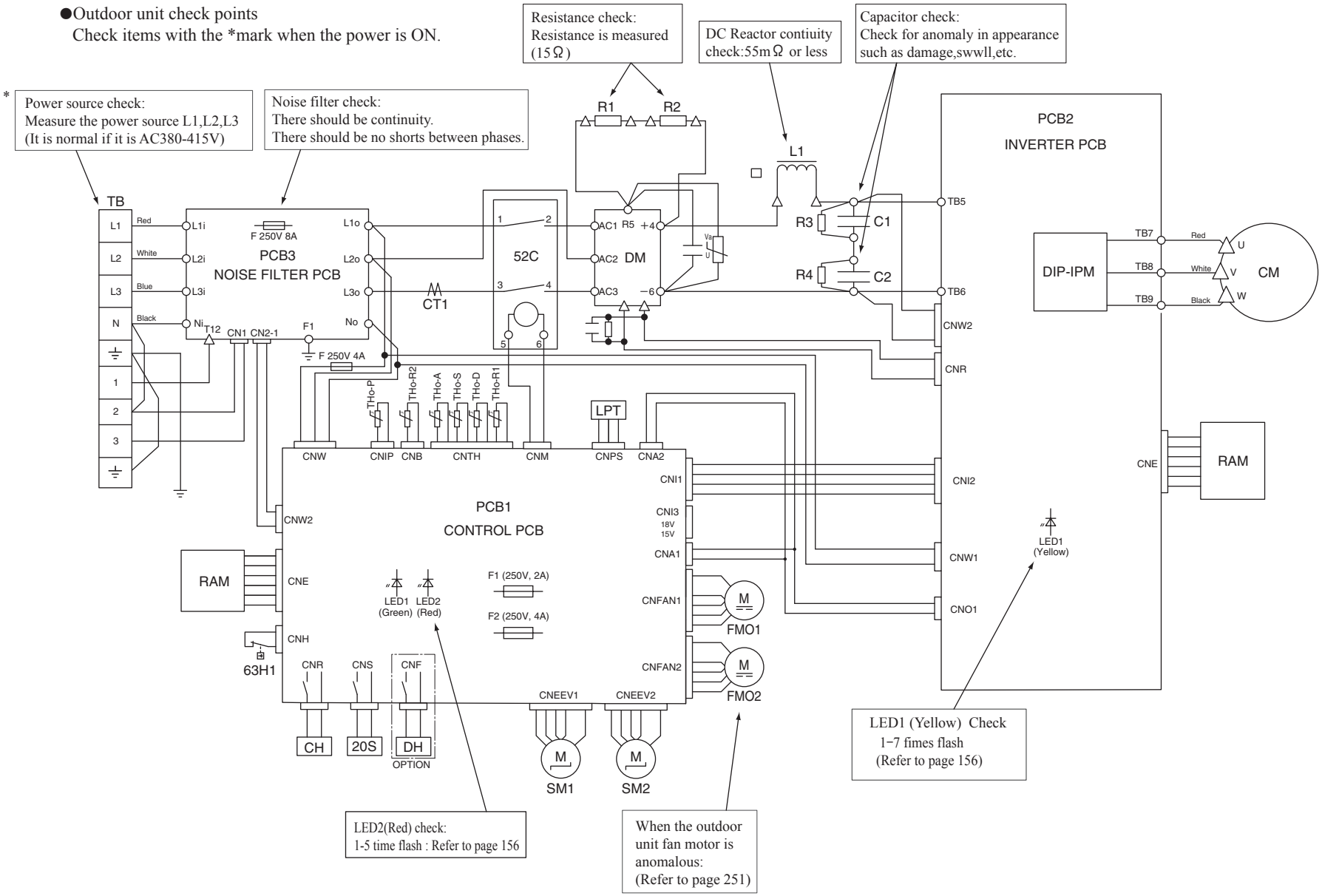
Models FDC100VNX,125VNX,140VNX

●Outdoor unit check points
Check items with the *mark when the power is ON.



Models FDC100VSX,125VSX,140VSX

●Outdoor unit check points
Check items with the *mark when the power is ON.



Model FDC71VNP

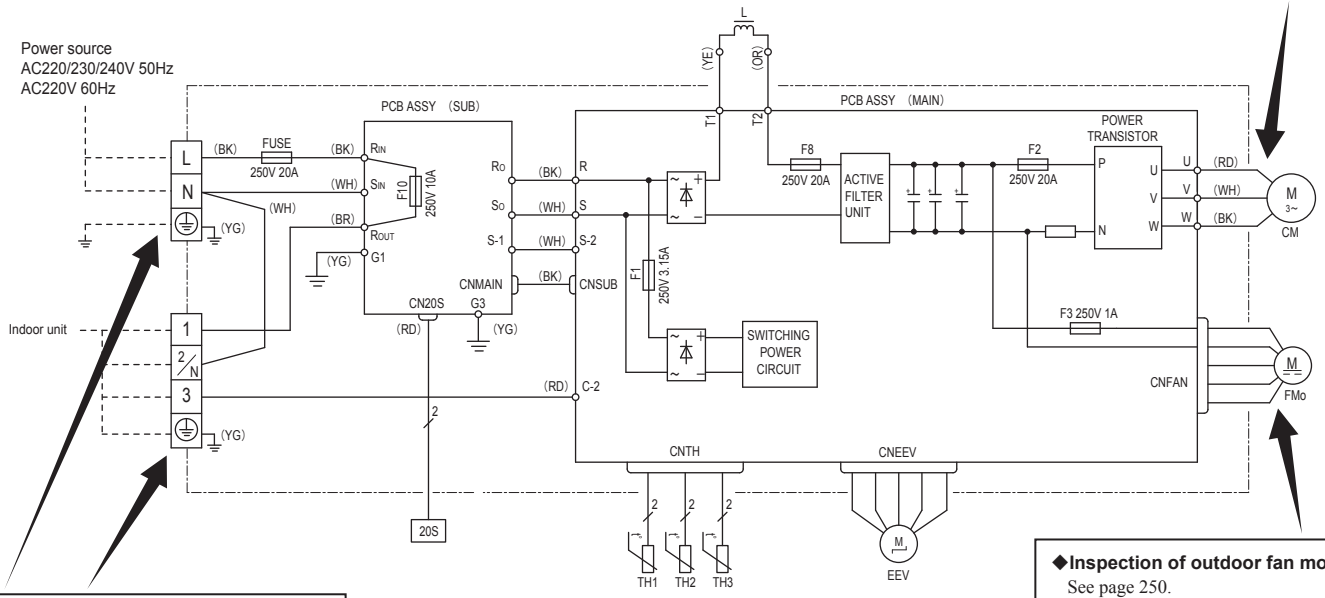
◆Check point of outdoor unit

⚠CAUTION- HIGH VOLTAGE

High voltage is produced in the control box. Don't touch electrical parts in the control box for 5 minutes after the unitisstopped.

Color symbol

BK	Black
BR	Brown
OR	Orange
RD	Red
WH	White
Y	Yellow
YG	Yellow Green



◆Inspection power transistor
Remove the fasten terminal and test output voltage

◆Inspection of outdoor fan motor
See page 250.

◆Power source and serial signal inspection

Ⓛ to Ⓝ: AC 220/230/240V
① to ②/Ⓝ:AC220/230/240V
②/Ⓝ to ③: Normal if the voltage oscillates between DC 0 and approx. 20V

Model FDC90VNP

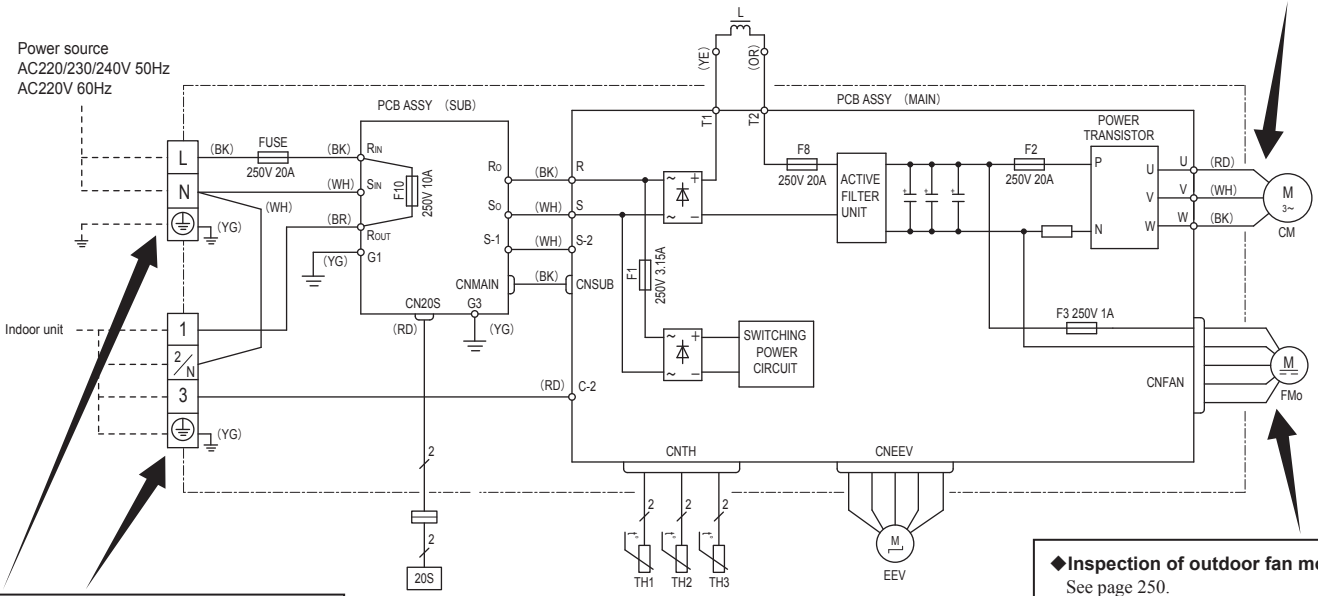
◆Check point of outdoor unit

⚠CAUTION- HIGH VOLTAGE

High voltage is produced in the control box. Don't touch electrical parts in the control box for 5 minutes after the unitisstopped.

Color symbol

BK	Black
BR	Brown
OR	Orange
RD	Red
WH	White
Y	Yellow
YG	Yellow Green



◆Inspection power transistor
Remove the fasten terminal and test output voltage

◆Inspection of outdoor fan motor
See page 250.

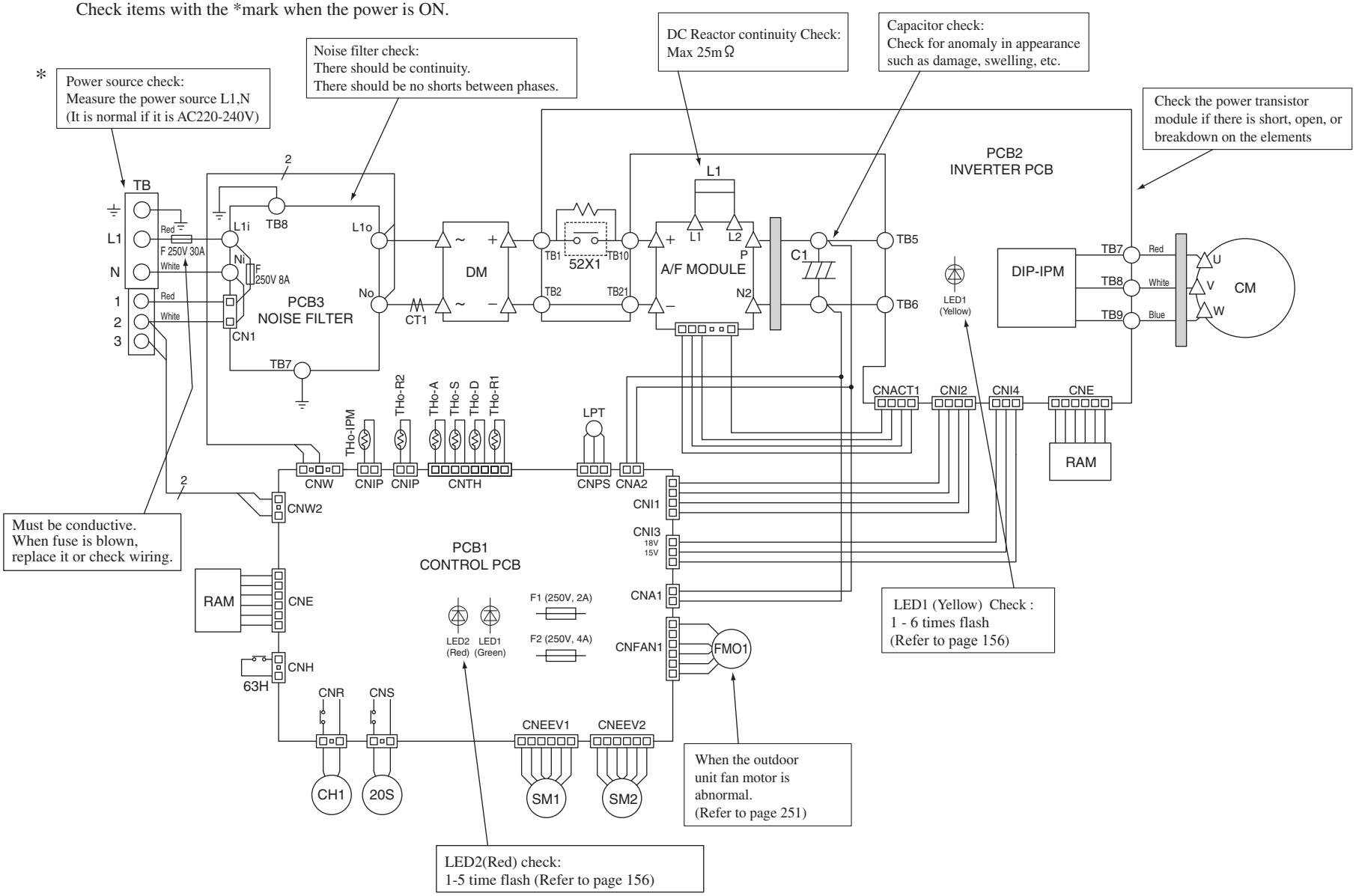
◆Power source and serial signal inspection

Ⓛ to Ⓝ: AC 220/230/240V
① to ②/Ⓝ:AC220/230/240V
②/Ⓝ to ③: Normal if the voltage oscillates between DC 0 and approx. 20V

Models FDC100VN,125VN,140VN

●Outdoor unit check points

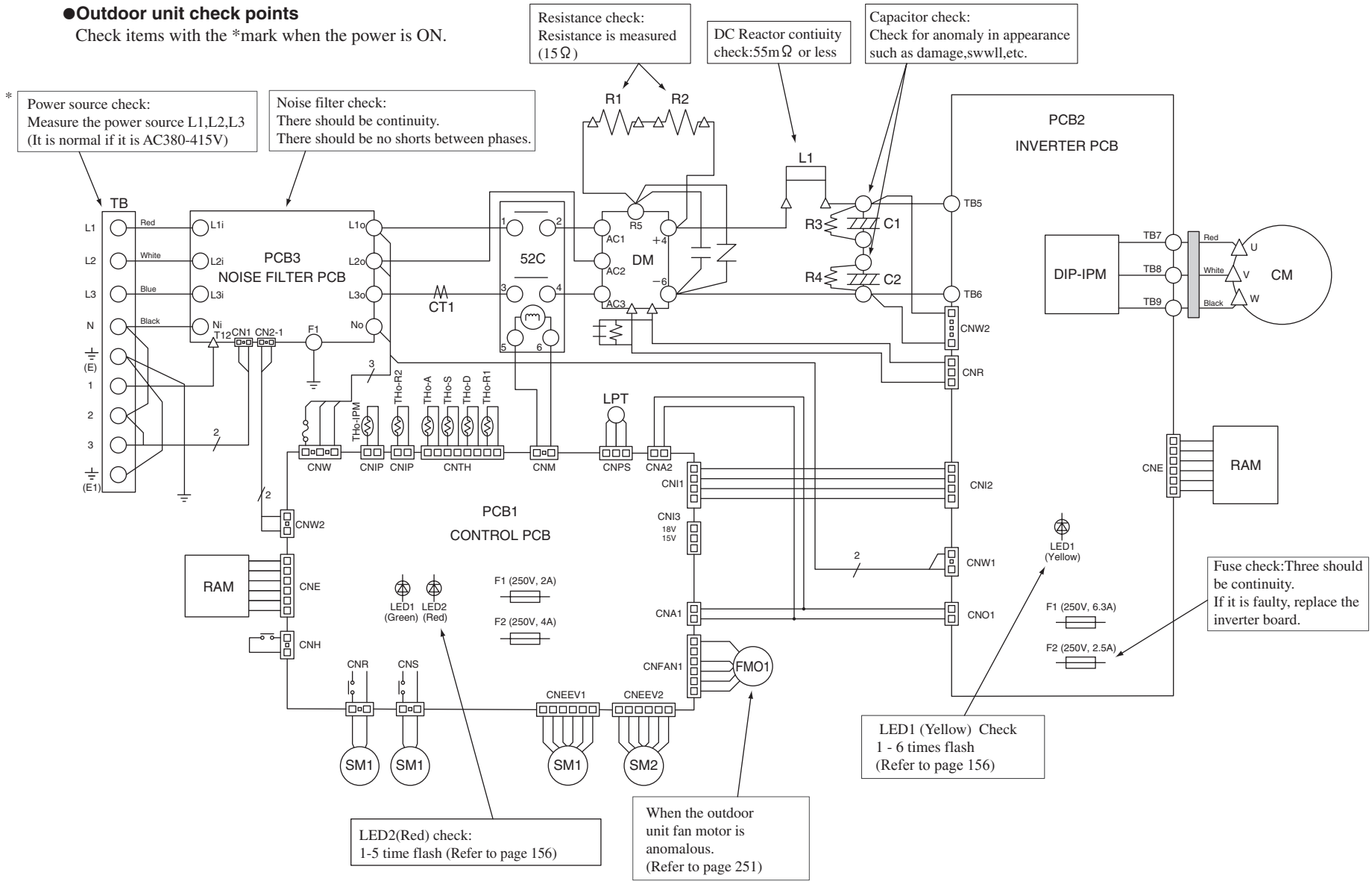
Check items with the *mark when the power is ON.



Models FDC100VS,125VS,140VS

●Outdoor unit check points

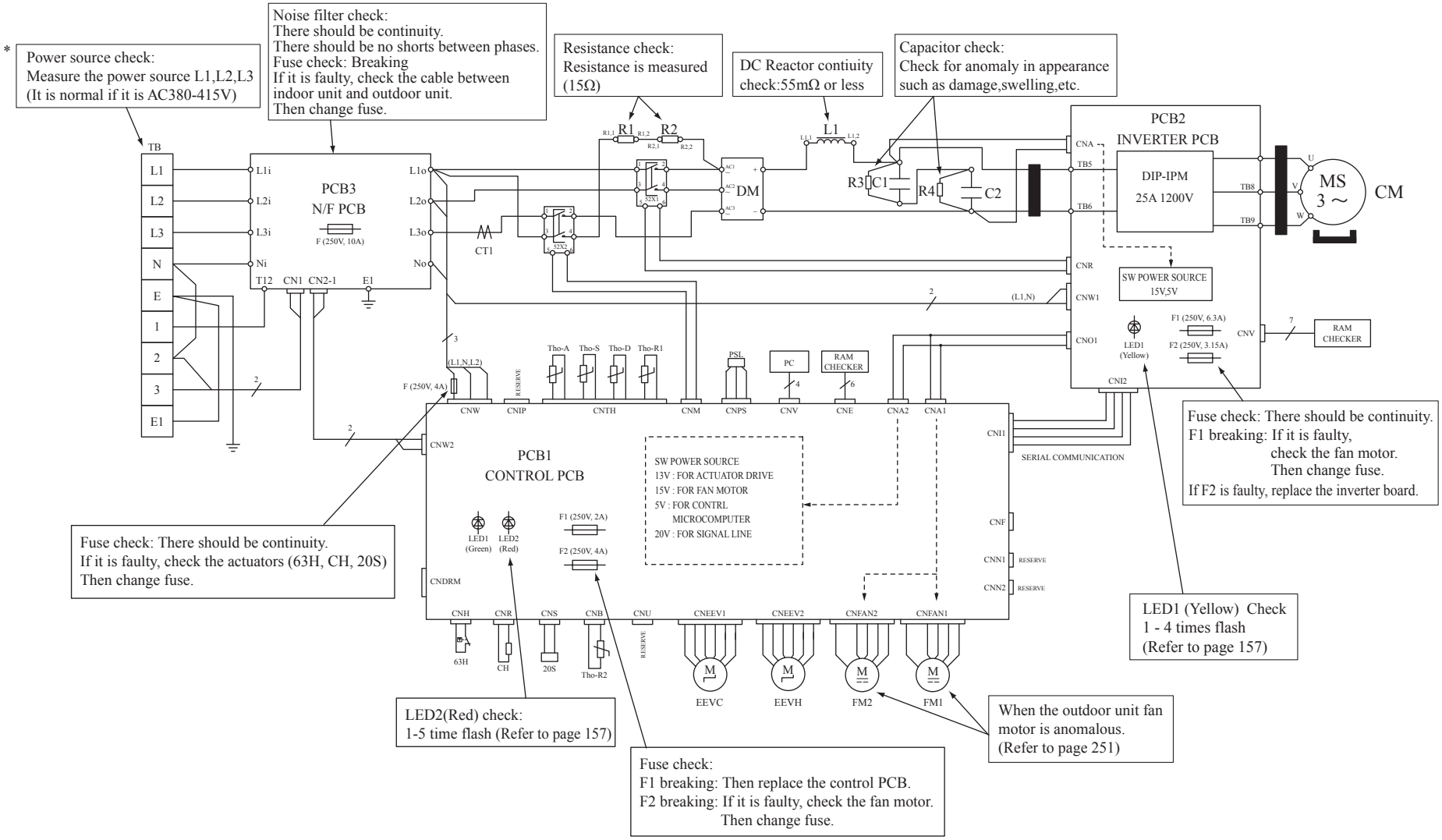
Check items with the *mark when the power is ON.



Model FDC200VSA

•Outdoor unit check points

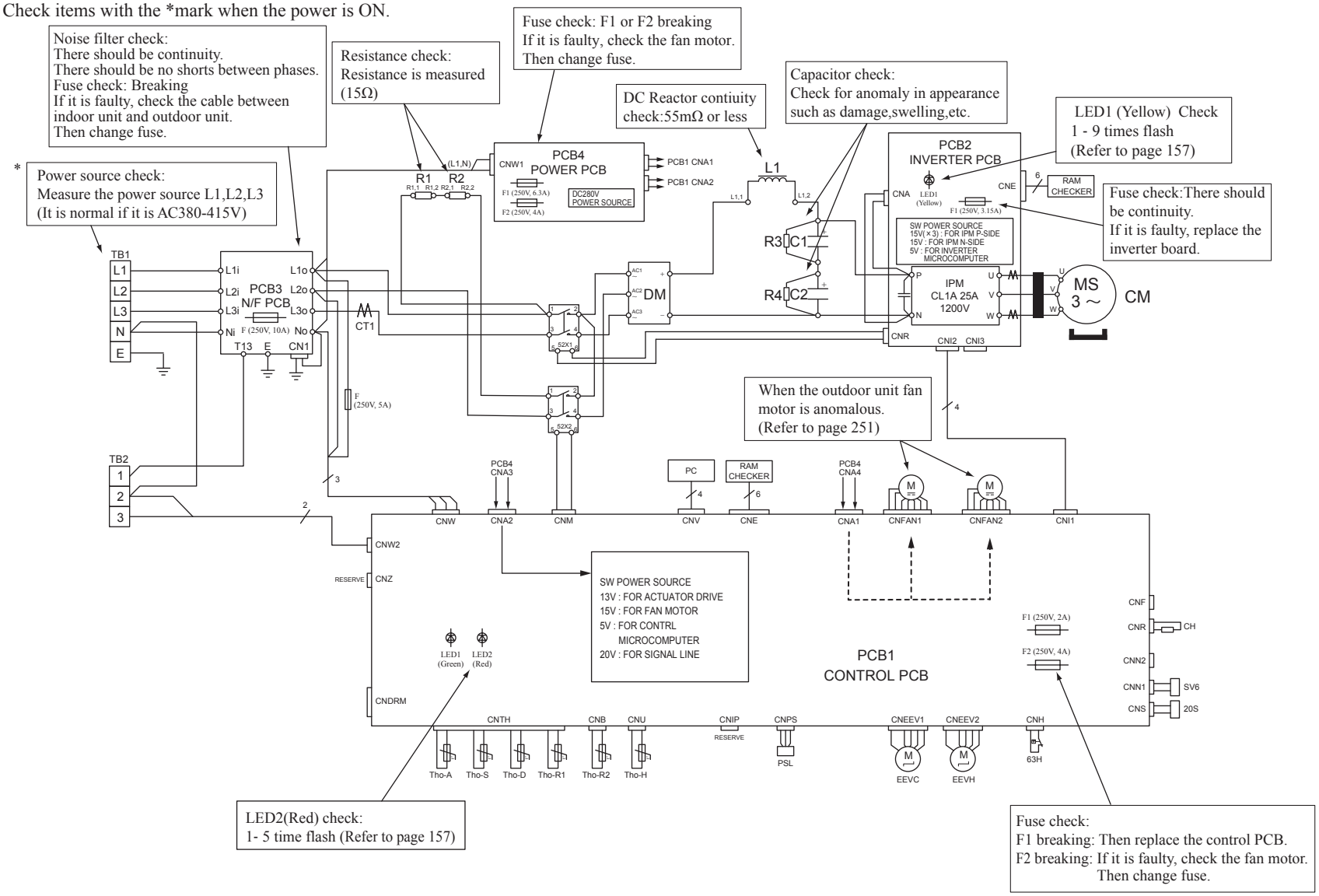
Check items with the *mark when the power is ON.



Model FDC250VSA

•Outdoor unit check points

Check items with the *mark when the power is ON.



1.11.2 Troubleshooting flow

(1) List of troubles

Models SRC40, 50, 60ZMX-S, FDC71, 100, 125, 140VNX, 100, 125,140VSX

FDC100, 125, 140VN, 100, 125, 140VS

Remote controller display	Description of trouble	Reference page
None	Operates but does not cool.	199
None	Operates but does not heat.	200
None	Earth leakage breaker activated	201
None	Excessive noise/vibration (1/3)	202
None	Excessive noise/vibration (2/3)	203
None	Excessive noise/vibration (3/3)	204
None	Louver motor failure	205
None	Power source system error (Power source to indoor control PCB)	206
None	Power source system error (Power source to remote control)	207
INSPECT I/U	INSPECT I/U (When 1 or 2 remote controls are connected)	208
INSPECT I/U	INSPECT I/U (Connection of 3 units or more remote controls)	209
♨WAIT♨	Communication error at initial operation (Models SRC40-60 only)	210~212
♨WAIT♨	Communication error at initial operation (Models FDC71-140 only)	213~215
None	No display	221
E1	Remote control communication circuit error	222
E5	Communication error during operation	223
E6	Indoor heat exchanger temperature thermistor anomaly	224
E7	Return air temperature thermistor anomaly	225
E8	Heating overload operation	226
E10	Excessive number of connected indoor units (more than 17 units) by controlling with one remote control	227
E11	Address setting error of indoor units	228
E14	Communication error between master and slave indoor units	229
E16	Indoor fan motor anomaly	230
E18	Address setting error of moster and slave indoor unit	231
E19	Indoor unit operation setting error	232
E20	Indoor fan motor rotation speed anomaly	233
E28	Remote control temperature thermistor anomaly	234
E35	Cooling overload operation (Models SRC40-60 only)	235
E35	Cooling overload operation (Models FDC71-140 only)	236
E36	Discharge pipe temperature error	237
E37	Outdoor heat exchanger temperature thermistor anomaly	238
E38	Outdoor air temperature thermistor anomaly	239
E39	Discharge pipe temperature thermistor anomaly	240
E40	Service valve (gas side) closing operation (Models SRC40-60 only)	241
E40	High pressure error (63H1 activated) (Models FDC71-140 only)	242
E41	Power transistor overheat (Models FDC71-140 only)	243
E42	Current cut	245・246
E45	Communication error between inverter PCB and outdoor control PCB (Models FDC71-140 only)	247
E47	Active filter voltage error (Models SRC40-60 only)	248
E47	Inverter PCB A/F module anomaly (Model FDC71 only)	249
E48	Outdoor fan motor anomaly (Models SRC40-60 only)	250
E48	Outdoor fan motor anomaly (Models FDC71-140 only)	251
E49	Low pressure error or low pressure sensor anomaly (Models FDC71-140 only)	252・253
E51	Power transistor anomaly (Models SRC40-60 only)	254
E51	Inverter and fan motor anomaly (Models FDC71-140 only)	255
E53	Suction pipe temperature thermistor anomaly (Models FDC71-140 only)	257
E54	Low pressure sensor anomaly (Models FDC71-140 only)	258
E57	Insufficient refrigerant amount or detection of service valve closure (Models SRC40-60 only)	260
E57	Insufficient refrigerant amount or detection of service valve closure (Models FDC71-140 only)	261
E58	Current safe stop (Models SRC40-60 only)	262
E59	Compressor startup failure (Models SRC40-60 only)	263
E59	Compressor startup failure (Models FDC71-140 only)	264・265
E60	Anomalous compressor rotor lock (Models SRC40-60 only)	268

Models FDC71, 90VNP

Remote control display	Description of trouble	Reference page
None	Operates but does not cool.	199
None	Operates but does not heat.	200
None	Earth leakage breaker activated	201
None	Excessive noise/vibration (1/3)	202
None	Excessive noise/vibration (2/3)	203
None	Excessive noise/vibration (3/3)	204
None	Louver motor failure	205
None	Power source system error (Power source to indoor control PCB)	206
None	Power source system error (Power source to remote control)	207
INSPECT I/U	INSPECT I/U (When 1 or 2 remote controls are connected)	208
INSPECT I/U	INSPECT I/U (Connection of 3 units or more remote controls)	209
WAIT	Communication error at initial operation	216-218
E1	Remote control communication circuit error	222
E5	Communication error during operation	223
E6	Indoor heat exchanger temperature thermistor anomaly	224
E7	Return air temperature thermistor anomaly	225
E8	Heating overload operation	226
E10	Excessive number of connected indoor units (more than 17 units) by controlling with one remote control	227
E11	Address setting error of indoor units	228
E14	Communication error between master and slave indoor units	229
E16	Indoor fan motor anomaly	230
E18	Address setting error of moster and slave indoor unit	231
E19	Indoor unit operation check error	232
E20	Indoor fan motor rotation speed anomaly	233
E28	Remote control temperature thermistor anomaly	234
E35	Cooling overload operation	235
E36	Discharge pipe temperature error	237
E37	Outdoor heat exchanger temperature sensor anomaly	238
E38	Outdoor air temperature sensor anomaly	239
E39	Discharge pipe temperature sensor anomaly	240
E40	Service valve (gas side) closing operation	241
E42	Current cut	245,246
E47	Active filter voltage error	248
E48	Outdoor fan motor anomaly	250
E51	Power transistor anomaly	254
E57	Insufficient refrigerant amount or detection of service valve closure	260
E58	Current safe stop	262
E59	Compressor startup failure	263
E60	Compressor rotor lock error	268

Models FDC200, 250VSA

Remote control display	Description of trouble	Reference page
None	Operates but does not cool.	199
None	Operates but does not heat.	200
None	Earth leakage breaker activated	201
None	Excessive noise/vibration (1/3)	202
None	Excessive noise/vibration (2/3)	203
None	Excessive noise/vibration (3/3)	204
None	Louver motor failure	205
None	Power source system error (Power source to indoor control PCB)	206
None	Power source system error (Power source to remote control)	207
INSPECT I/U	INSPECT I/U (When 1 or 2 remote controls are connected)	208
INSPECT I/U	INSPECT I/U (Connection of 3 units or more remote controls)	209
♨WAIT♨	Communication error at initial operation	219・220
None	No display	221
E1	Remote control communication circuit error	222
E5	Communication error during operation	223
E6	Indoor heat exchanger temperature thermistor anomaly	224
E7	Return air temperature thermistor anomaly	225
E8	Heating overload operation	226
E10	Excessive number of connected indoor units (more than 17 units) by controlling with one remote control	227
E11	Address setting error of indoor units	228
E14	Communication error between master and slave indoor units	229
E16	Indoor fan motor anomaly	230
E18	Address setting error of moster and slave indoor unit	231
E19	Indoor unit operation setting error	232
E20	Indoor fan motor rotation speed anomaly	233
E28	Remote control temperature thermistor anomaly	234
E35	Cooling overload operation	236
E36	Discharge pipe temperature error	237
E37	Outdoor heat exchanger temperature thermistor anomaly	238
E38	Outdoor air temperature thermistor anomaly	239
E39	Discharge pipe temperature thermistor anomaly	240
E40	High pressure error (63H1 activated)	242
E41	Power transistor overheat	244
E42	Current cut	245・246
E45	Communication error between inverter PCB and outdoor control PCB	247
E48	Outdoor fan motor anomaly	251
E49	Low pressure error or low pressure sensor anomaly	252・253
E51	Inverter or power transistor anomaly	256
E53	Suction pipe temperature thermistor anomaly	257
E54	Low pressure sensor anomaly	258
E55	Compressor under dome temperature thermistor anomaly (Model FDC250 only)	259
E57	Insufficient refrigerant amount or detection of service valve closure	261
E59	Compressor startup failure	266・267

(2) Troubleshooting

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

1. Applicable model

All models

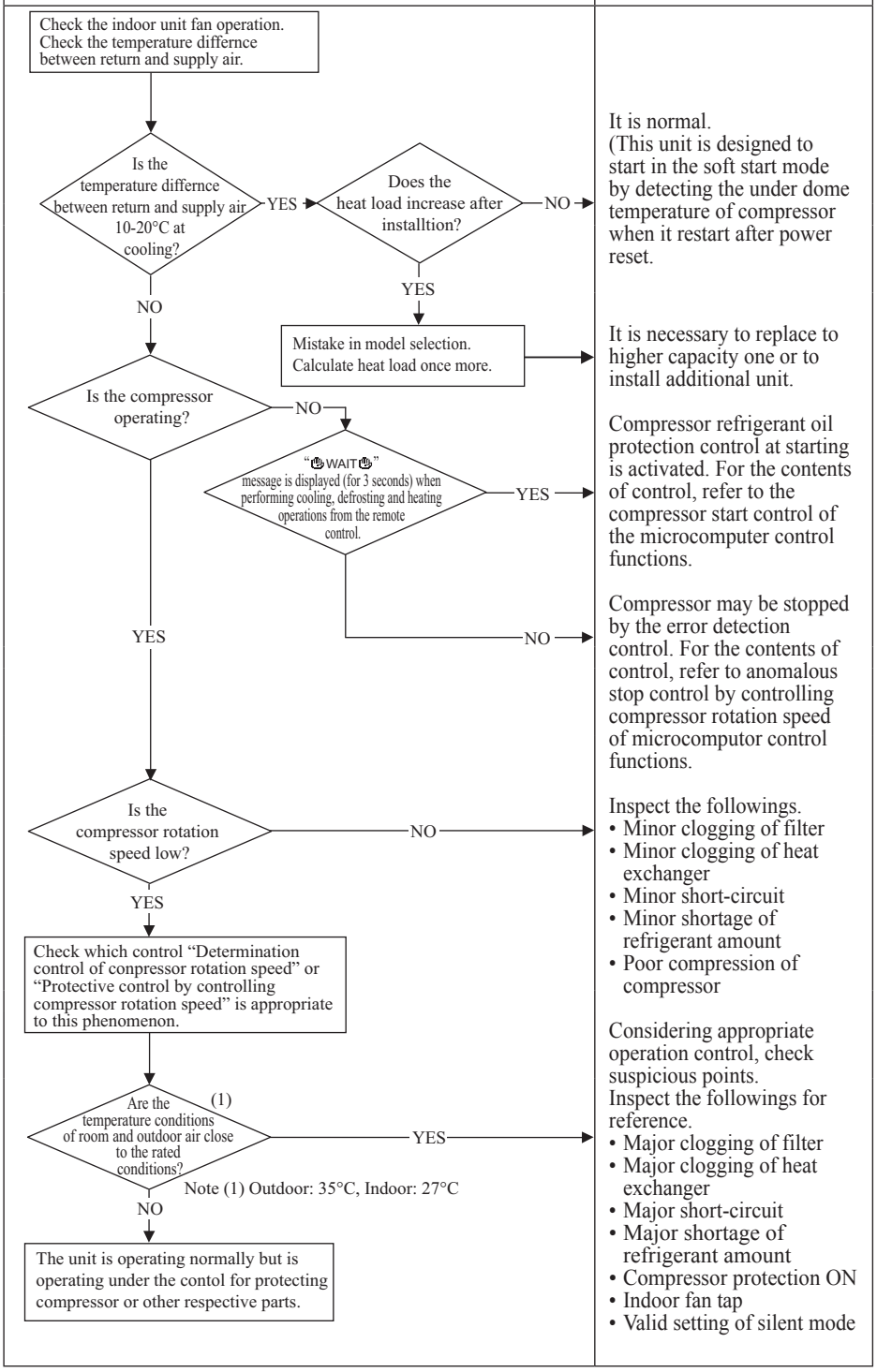
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Poor compression of compressor
- Faulty expansion valve operation

5. Troubleshooting



Note:

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

1. Applicable model

All models

2. Error detection method

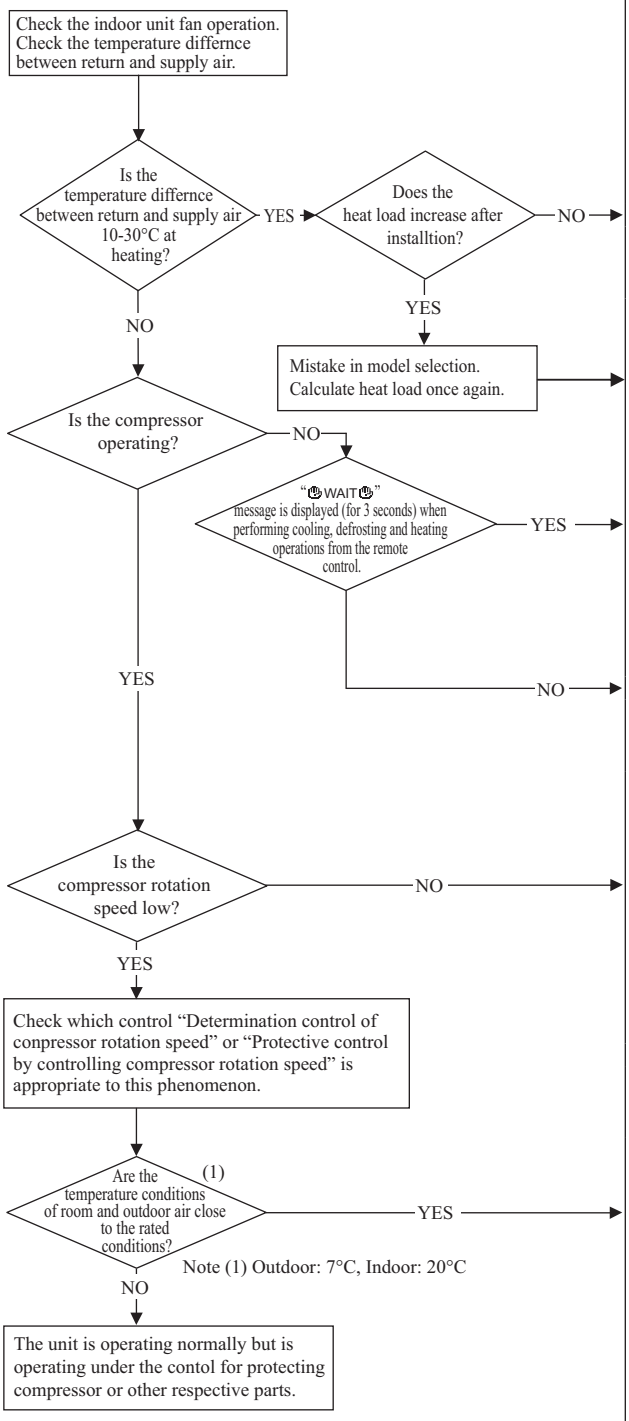
3. Condition of error displayed

4. Presumable cause

- Faulty 4-way valve operation
- Poor compression of compressor
- Faulty expansion valve operation

5. Troubleshooting

Diagnosis



Countermeasure

It is normal.
(This unit is designed to start in the soft start mode by detecting the under dome temperature of compressor when it restart after power reset.

It is necessary to replace to higher capacity one or to install additional unit.

Compressor refrigerant oil protection control at starting is activated. For the contents of control, refer to the compressor start control of the microcomputer control functions.

Compressor may be stopped by the error detection control.
For the contents of control, refer to anomalous stop control by controlling compressor rotation speed of microcomputor control functions.

Inspect the followings.
- Minor clogging of filter
- Minor clogging of heat exchanger
- Minor short-circuit
- Minor shortage of refrigerant amount
- Poor compression of compressor

Considering appropriate operation control, check suspicious points.
Inspect the followings for reference.
- Major clogging of filter
- Major clogging of heat exchanger
- Major short-circuit
- Major shortage of refrigerant amount
- Compressor protection ON
- Indoor fan tap
- Valid setting of silent mode

Note:

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

1.Applicable model

All models

2.Error detection method

3. Condition of error displayed

4.Presumable cause

- Defective compressor
- Noise

5.Troubleshooting

Diagnosis	Countermeasure
Are OK the insulation resistance and coil resistance of compressor? — NO →	Replace compressor.*
YES ↓ Is insulation of respective harnesses OK? Is any harness bitten between pannel and casing or etc? — NO →	Secure insulation resistance.
YES ↓ Check the outdoor unit grounding wire/earth leakage breaker.	

Check of the outdoor unit grounding wire/earth leakage breaker

① Run an independent grounding wire from the grounding screw of outdoor unit to the grounding terminal on the distribution panel. (Do not connect to another grounding wire.)
② In order to prevent malfunction of the earth leakage breaker itself, confirm that it is conformed to higher harmonic regulation.

* Insulation resistance of compressor
- Immediately after installation or when the unit has been left for long time without power source, the insulation resistance may drop to a few MΩ because of refrigerant migrated in the compressor.
  When the earth breaker is activated at lower insulation resistance, check the following points.

① 6 hours after power ON, check if the insulation resistance recovers to normal. (FDC71-250 only)
When power ON, crankcase heater heat up compressor and evaporate the refrigerant migrated in the compressor.
② Check if the earth leakage breaker is conformed to higher harmonic regulation or not.
Since the unit is equipped with inverter, it is necessary to use components conformed to higher harmonic regulation in order to prevent malfunction of earth leakage breaker.

Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	–	–	Excessive noise/vibration (1/3)
	Outdoor	–	–	

1.Applicable model

All models

2.Error detection method

3. Condition of error displayed

4.Presumable cause

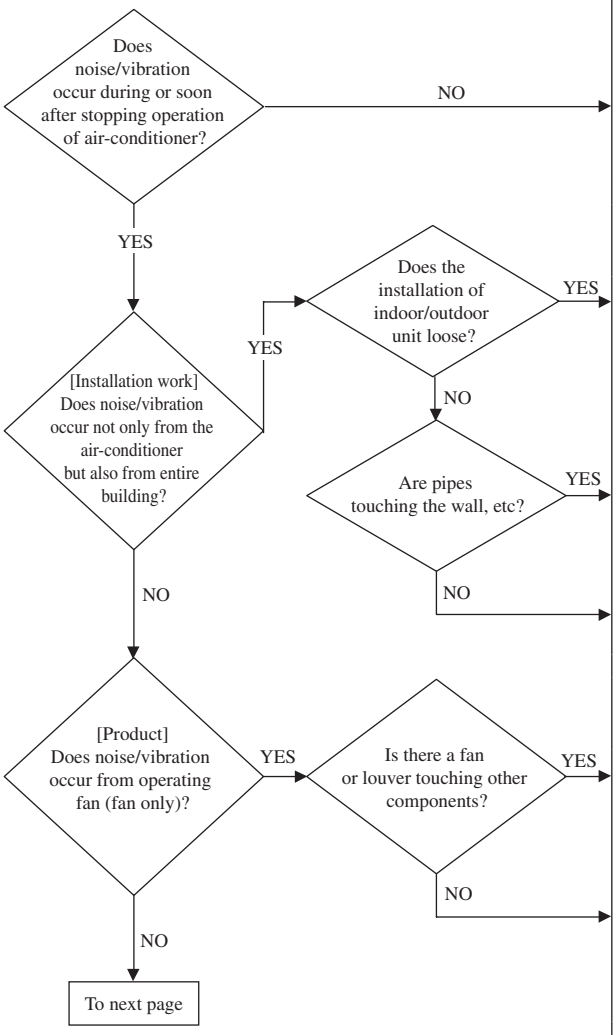
① Improper installation work
- Improper anti-vibration work at instllation
- Insufficient strength of mounting face

② Defective product
- Before/after shipping from factory

③ Improper adjustment during commissioning
- Excess/shortage of refrigerant, etc.

5.Troubleshooting

Diagnosis



Countermeasure

If excessive noise/vibration persists when sufficient time has elapsed after stopping the unit, it is considered that the air-conditioner is not the source.

Check the installed condition carefully, and correct the position or insert rubber cushions or others into the gap, if necessary.

Prevent the vibration from transmitting to wall and etc by fixing pipes on the wall or wrapping rubber cushion around the pipe which goes through the hole in the wall or applying other appropriate means.

Strength of ceiling wall, floor, etc. may be insufficient. Review the installing position or reinforce it.

Check for leaning of installed unit or anomalous mounting of fan, louver or motor and specify the contacting point and correct it.

When the heat exchanger or filter is clogged, clean them. In case that the unit is installed at the site where background noise is very low, small noise from indoor unit can be heard, but it is normal. Before installation, check for background noise. If backgound nois is very low, convince client prior to installation.

Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	–	–	Excessive noise/vibration (2/3)
	Outdoor	–	–	

1.Applicable model

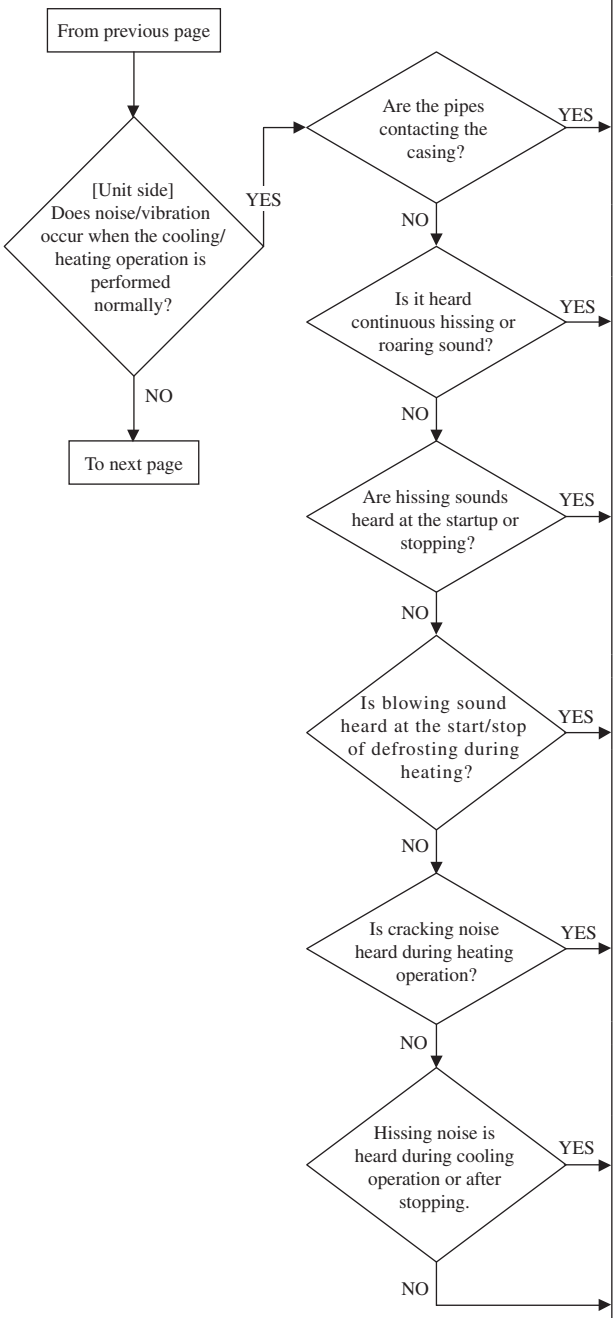
All models

2.Error detection method

3. Condition of error displayed

4.Presumable cause

5.Troubleshooting

Diagnosis	Countermeasure
	Rearrange the piping to avoid contact with the casing. It is noise/vibration that is generated when the refrigerant gas or liquid flow through inside of piping of air-conditioner. It is likely to occur particularly during cooling or defrosting in the heating mode. It is normal. The noise/vibration occurs when the refrigerant starts or stops flowing. It is normal. When the defrosting starts or stops during heating, the refrigerant flow is reversed due to switching 4-way valve. This causes a large change in pressure which produces a blowing sound. It may accompany also the hissing sounds as mentioned above. They are normal. After the start or stop of heating operation or during defrosting, abrupt changes in temperature cause resin parts to shrink or expand. This is normal. It is the sound produced by the drain pump that discharges drain from the indoor unit. The pump continues to run for 5 minutes after stopping the cooling operation. This is normal. Apply the damper sealant at places considered to be the sources such as the pressure reducing mechanism (expansion valve), capillary, etc.

Note:

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

1.Applicable model

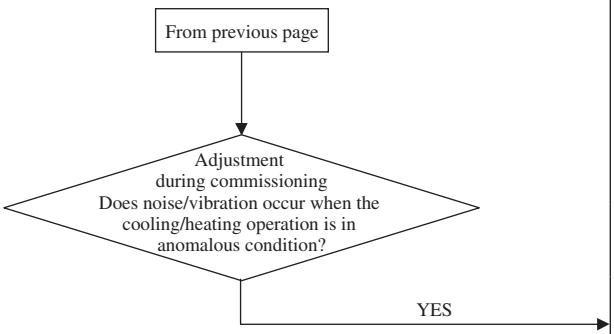
All models

2.Error detection method

3. Condition of error displayed

4.Presumable cause

5.Troubleshooting

Diagnosis	Countermeasure
	If insufficient cooling/ heating problem happens due to anomalous operating conditions at cooling/ heating, followings are suspicious. • Overcharge of refrigerant • Insufficient charge of refrigerant • Intrusion of air, nitrogen, etc. In such occasion, it is necessary to recover refrigerant, vacuum-dry and recharge refrigerant. * Since there could be many causes of noise/ vibration, the above do not cover all. In such case, check the conditions when, where, how the noise/vibration occurs according to following check point. • Indoor/outdoor unit • Cooling/heating/fan mode • Startup/stop/during operation • Operating condition (Indoor/outdoor temperatures, pressure) • Time it occurred • Operation data retained by the remote control such as compressor rotation speed, heat exchanger temperature, EEV opening degree, etc. • Tone (If available, record the noise) • Any other anomalies

Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Keeps flashing	Stays OFF	Louver motor failure
	Outdoor	Keeps flashing	Stays OFF	

1.Applicable model

All models

2.Error detection method

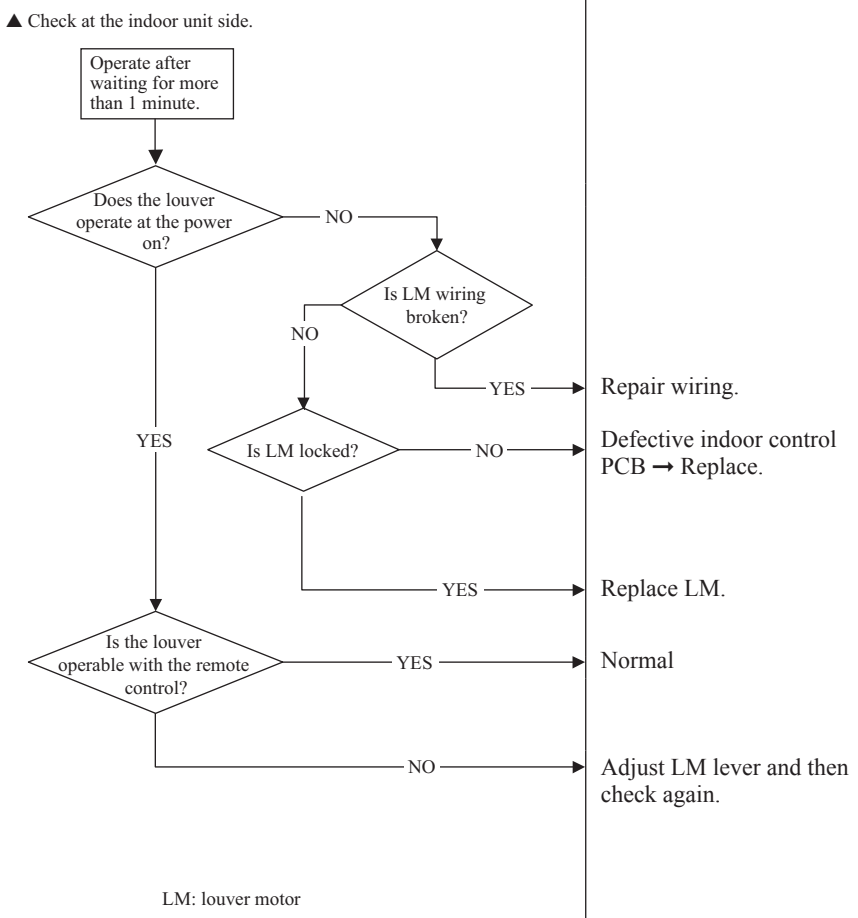
3. Condition of error displayed

4.Presumable cause

- Defective LM
- LM wire breakage
- Faulty indoor control PCB

5.Troubleshooting

Diagnosis	Countermeasure



Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Stays OFF	Stays OFF	Power source system error (Power source to indoor control PCB)
	Outdoor	Stays OFF	2-time flash	

1. Applicable model

All models

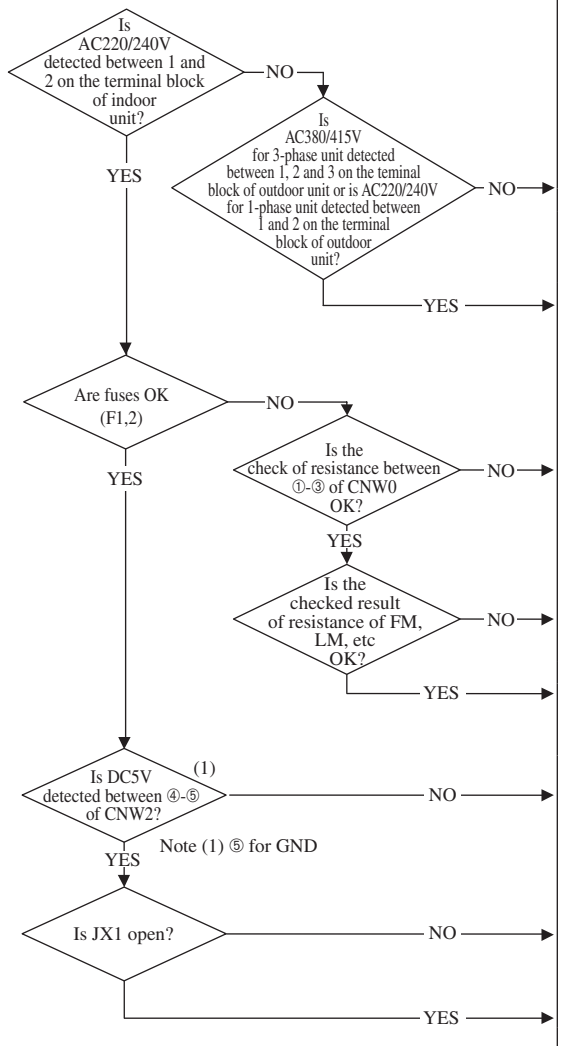
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Misconnection or breakage of connecting wires
- Blown fuse
- Faulty transformer
- Faulty indoor control or power PCB
- Broken harness
- Faulty outdoor control PCB (Noise filter)

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Keeps flashing	3-time flash	Power source system error (Power source to remote control)
	Outdoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Remote control wire breakage/short-circuit
- Defective remote control
- Malfunction by noise
- Faulty indoor power PCB
- Broken harness
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Isn't there any loose connection of remote control wires? — YES →	Correct.
NO ↓ Isn't remote control wire broken or short-circuited? — YES →	Replace wires.
NO ↓ Disconnect remote control wires. ↓ Is DC15V or higher detected between X-Y of indoor unit terminal block? — YES →	Replace remote control.
NO ↓ Is DC180V between ①-② of CNW2 ? — NO →	Defective indoor power PCB→Replace.
YES →	Defective indoor control PCB→Replace.

Note:

Error code	LED	Green	Red	Content
Remote control: INSPECT I/U	Indoor	Keeps flashing	Stays OFF	INSPECT I/U (When 1 or 2 remote controls are connected)
	Outdoor	Keeps flashing	2-time flash	

1. Applicable model

All models

2. Error detection method

Communication between indoor unit and remote control is disabled for more than 30 minutes after the power on.

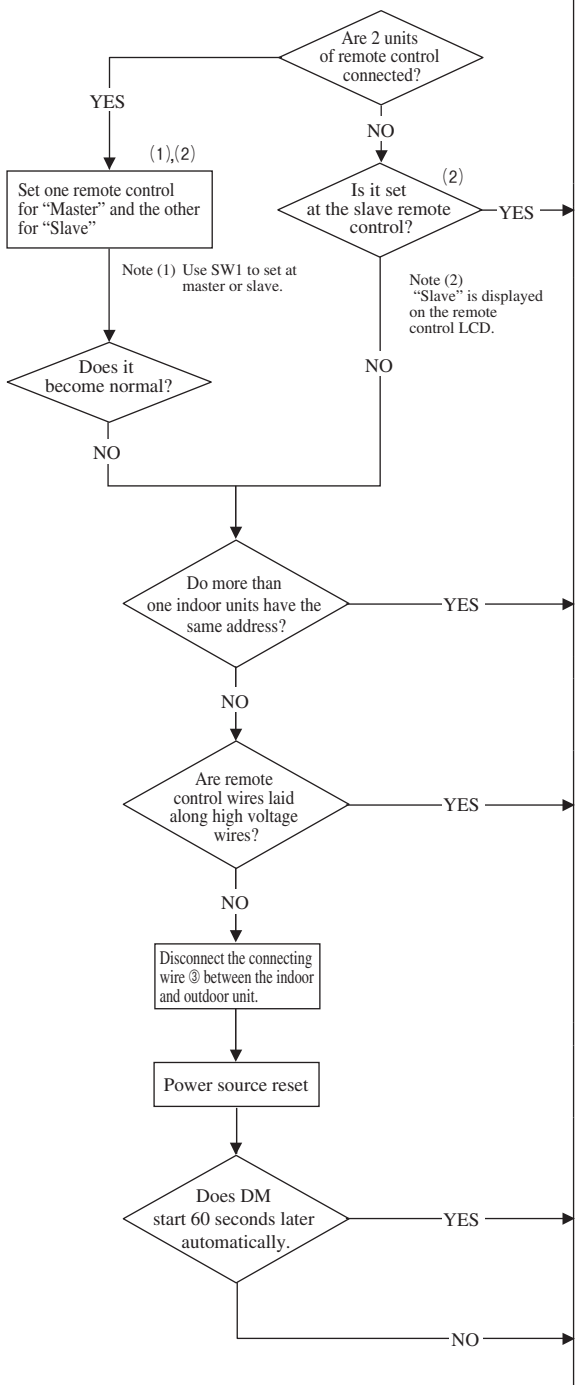
3. Condition of error displayed

Same as above

4. Presumable cause

- Improper setting
- Surrounding environment
- Defective remote control communication circuit
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
	

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

Error code	LED	Green	Red	Content
Remote control: INSPECT I/U	Indoor	Keeps flashing	Stays OFF	INSPECT I/U (Connection of 3 units or more remote control)
	Outdoor	Keeps flashing	2-time flash	

1. Applicable model

All models

2. Error detection method

Indoor unit cannot communicate for more than 30 minutes after the power on with remote control.

3. Condition of error displayed

Same as above

4. Presumable cause

- Improper setting
- Surrounding environment
- Defective remote control communication circuit
- Faulty indoor control or power PCB
- Faulty outdoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Are more than 3 units of remote control connected? — YES →	Reduce to 2 units or less.
NO ↓ Does remote control display "Slave"? — YES →	Change remote control setting to "Master". (SW1 on remote control PCB)
NO ↓ Do more than one indoor units have the same address? — YES →	Change address. (SW2 on indoor control PCB)
NO ↓ Is it set to a slave indoor unit. SW5-1, 2? — YES →	Change to master. (SW5-1, 2 on indoor control PCB)
NO ↓ Is there loose or wrong connection at the termanal of wiring between indoor and outdoor units? — YES →	Correct
NO ↓ Is the grounding wire connected properly? — NO →	Correct
YES ↓ Is approx. DC20V detected between ②-③ on the outdoor unit terminal block? — NO →	Defective outdoor control PCB→Replace.
YES ↓ Is approx. DC20V detected between ②-③ on the indoor unit terminal block? — NO →	Broken connecting wire→ Correct.
YES →	Defective indoor control or power PCB→Replace.

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

Error code	LED	Green	Red	Content
Remote control: ✋WAIT✋	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (1/3) (Models SRC40-60)
	Outdoor	–	2-time flash	

1. Applicable model

Models SRC40-60

When the remote control LCD displays "✋WAIT✋" 2 minutes after the power on.

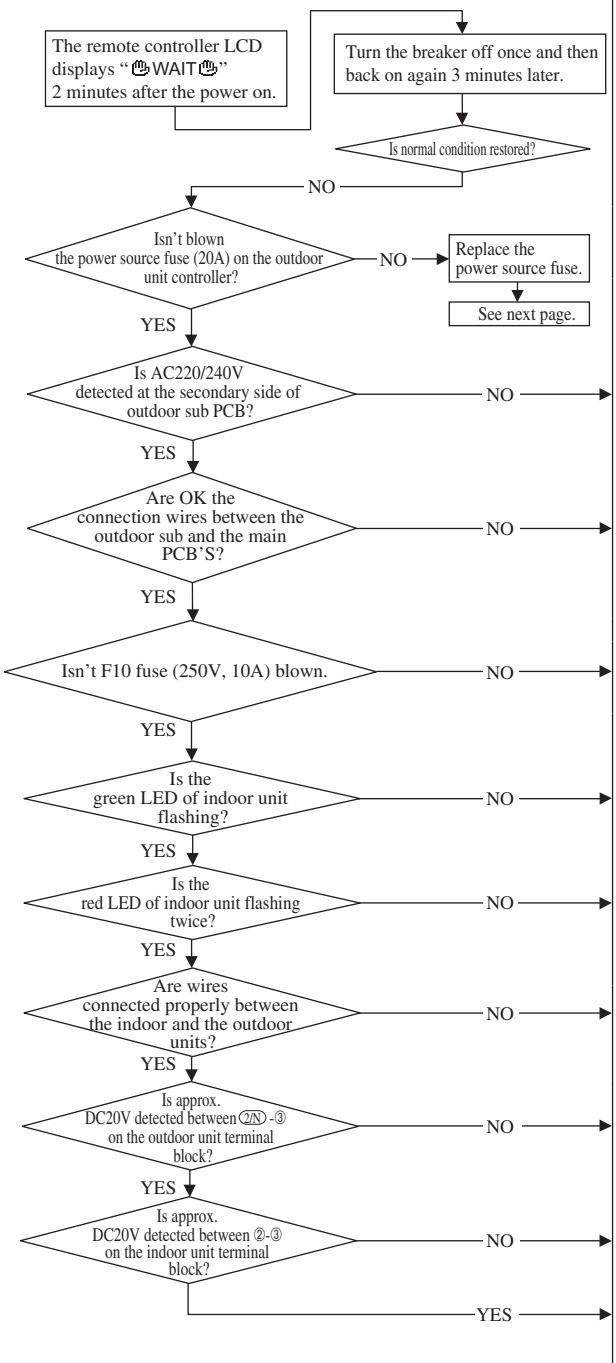
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor sub PCB
- Connection between PCB's
- Blown fuse on single phase model
- Faulty indoor control PCB
- Defective remote control
- Broken remote control wire

5. Troubleshooting



Note: If any anomaly is detected during communication, the error code E5 is displayed. (Outdoor unit red LED flashes twice.) Inspection procedure is same as above. (Excluding matters related to connection) When the power source is reset after the occurrence of E5, the LED will display "✋WAIT✋" if the anomaly continues. If the breaker ON/OFF is repeated in a short period of time (within 1 minute), "✋WAIT✋" may be displayed. In such occasion, turn the breaker off and wait for 3 minutes.

Error code	LED	Green	Red	Content
Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (2/3) (Models SRC40-60)
	Outdoor	–	2-time flash	

1. Applicable model

Models SRC40-60

When the fuse is blown, the method to inspect inverter before replacing the power source fuse

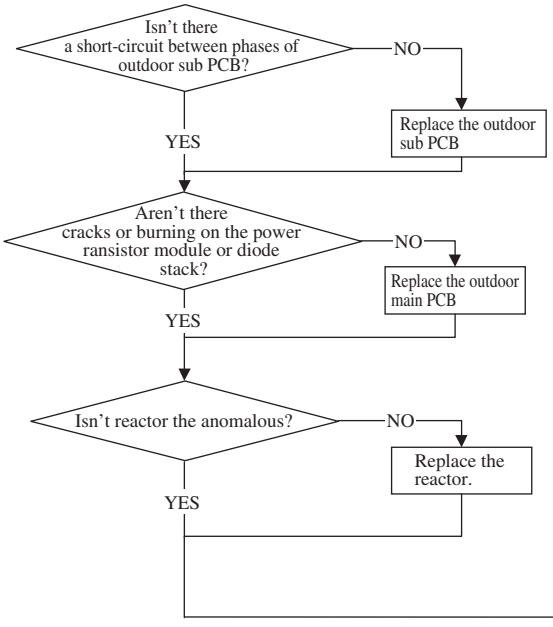
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor sub PCB
- Faulty outdoor main PCB
- Faulty reactor

5. Troubleshooting

Diagnosis	Countermeasure
	Replace fuse.

Note:

Error code	LED	Green	Red	Content
Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (3/3) (Models SRC40-60)
	Outdoor	–	2-time flash	

1. Applicable model

Models SRC40-60

When the remote control display is extinguished after the power on.

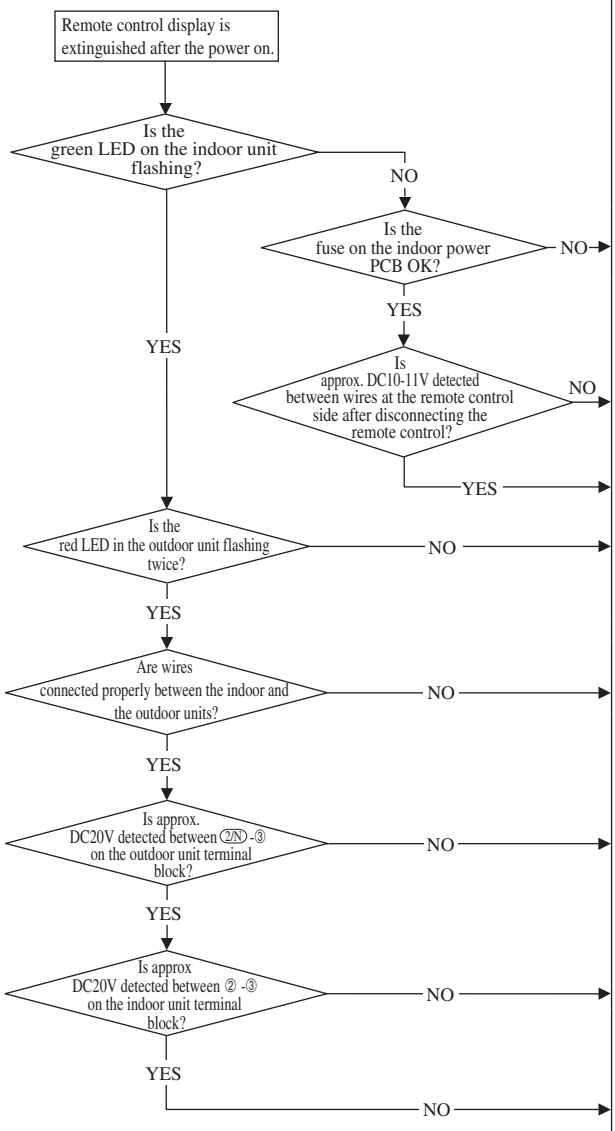
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Blown fuse
- Connection between PCB's
- Blown fuse
- Faulty indoor power PCB
- Defective remote control
- Wire breakage on remote control
- Faulty outdoor sub PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (1/3) (Models FDC71-140)
	Outdoor	Keeps flashing	2-time flash	

1. Applicable model

Models FDC71-140

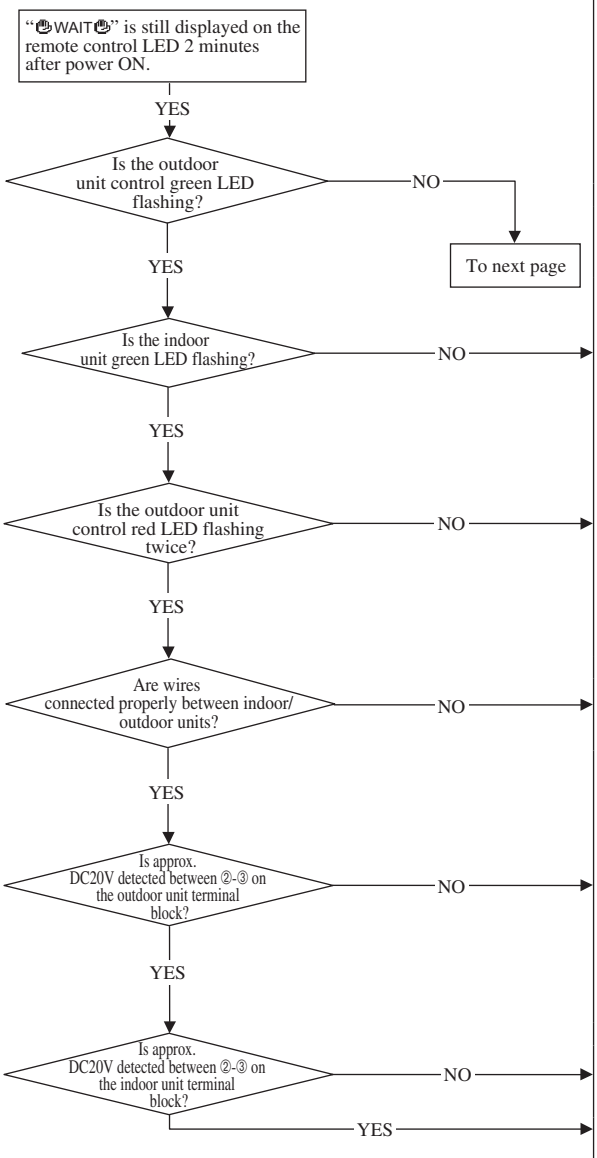
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Faulty indoor control or power PCB
- Defective remote control
- Broken remote control wire
- Faulty outdoor control PCB
- Broken connection wires

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (2/3) (Models FDC71-140)
	Outdoor	Keeps flashing	2-time flash	

1. Applicable model

Models FDC71-140

2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Faulty noise filter
- Faulty indoor control PCB
- Faulty outdoor control PCB
- Faulty inverter PCB
- Faulty fan motor

5. Troubleshooting

Diagnosis	Countermeasure
Diagnosis for when the outdoor control PCB LED is turned off	
Shut down the breaker and back on again the breaker 3 minutes later. (From previous page)	
Does it reset normally?	
YES →	Normal (Malfunction by noise)
NO → Isn't the outdoor unit controller power source fuse (71:20A, 100-140:30A) blown? (1) Note (1) 1-phase model only	
NO → To check method for inverter PCB before replacment of blown power source fuse. → To next page	
YES → Is AC220/240V or AC380/415V detected at the noise filter secondary side?	
NO →	Replace noise filter.
YES → Is DC255-310V detected at CNA2?	
NO →	Check connection of diode stack and electrolytic capacitor by refering main electrical circuit diagram
YES → Isn't fuse 〔250V, 2A〕on the outdoor control PCB blown?	
NO →	Defective outdoor control PCB→Replace.
YES → Is DC5V detected on the outdoor control PCB (Between ①-④ of CNV)?	
NO →	Defective outdoor control PCB→Replace.
YES → Is DC5V detected if the connector of outdoor unit fan motor is disconnected?	
NO →	Defective outdoor fan motor
YES → Is DC5V detected if the inverter power source connector (CNI2) is disconnected?	
NO →	Defective inverter PCB →Replace.
YES →	Defective outdoor control PCB→Replace.

Note:

Error code	LED	Green	Red	Content
Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (3/3) (Models FDC71-140)
	Outdoor	Keeps flashing	2-time flash	

1. Applicable model

Models FDC71-140

2. Error detection method

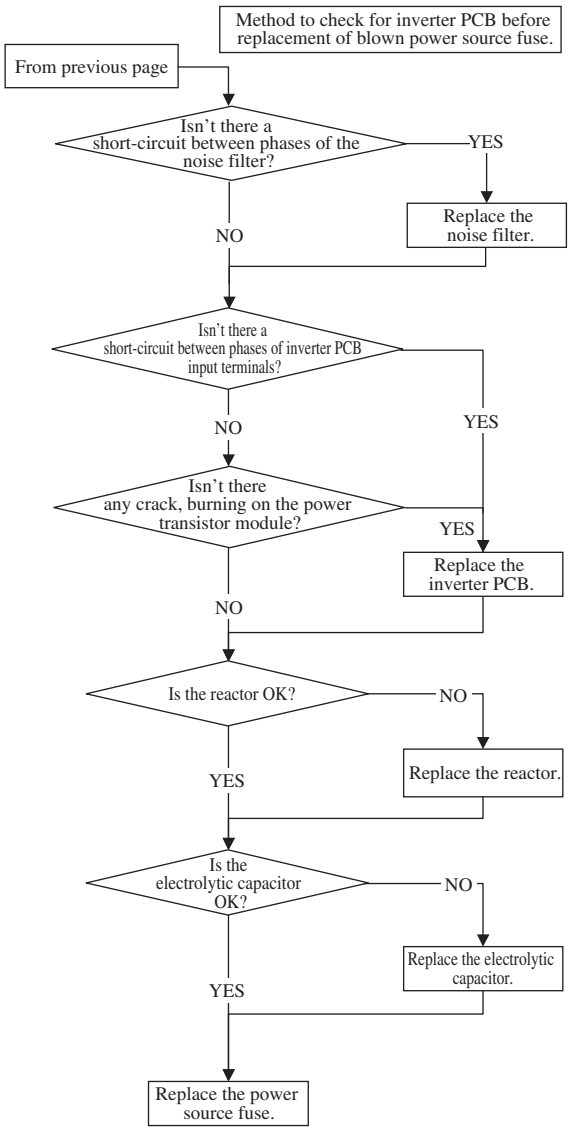
3. Condition of error displayed

4. Presumable cause

- Blown fuse
- Faulty noise filter
- Faulty inverter PCB
- Faulty reactor
- Faulty electrolytic capacitor

5. Troubleshooting

Diagnosis	Countermeasure



Note:

Error code	LED	Green	Red	Content
Remote control: ✋WAIT✋	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (1/3) (Models FDC71, 90VNP only)

1. Applicable model

Models FDC71, 90VNP

When the remote control LCD displays "✋WAIT✋" 2 minutes after the power on.

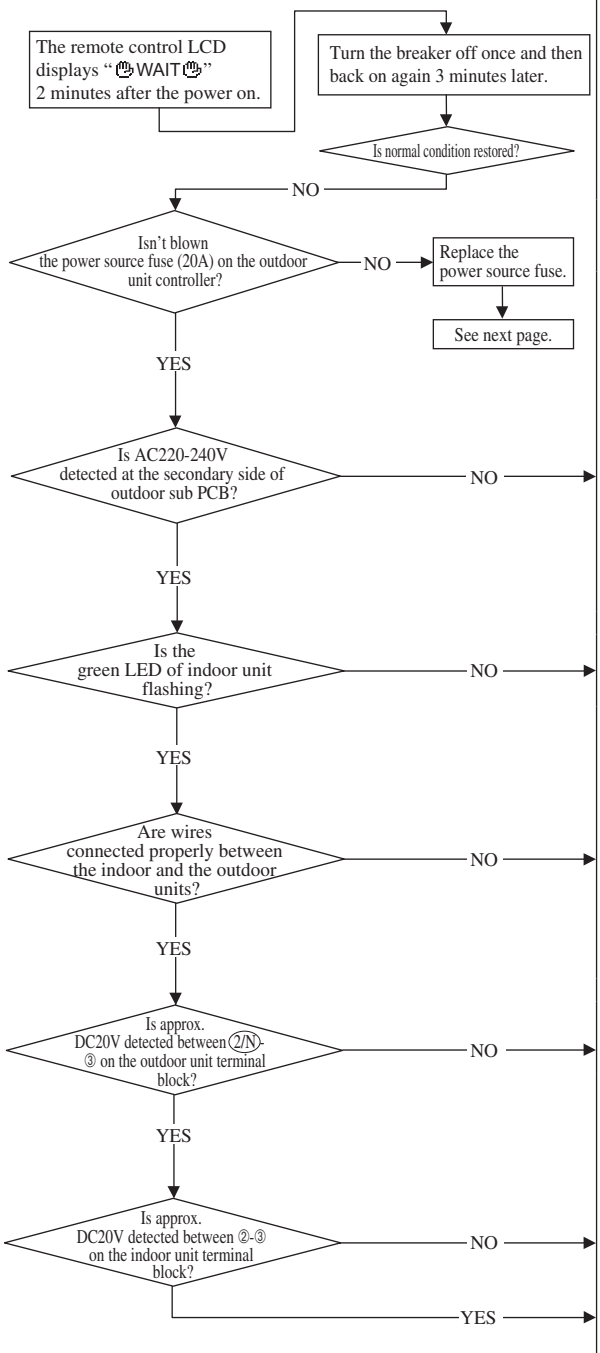
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor sub PCB
- Connection between PCB's
- Faulty indoor control PCB
- Defective remote control
- Broken remote control wire

5. Troubleshooting



Note: If any anomaly is detected during communication, the error code E5 is displayed. Inspection procedure is same as above. (Excluding matters related to connection) When the power source is reset after the occurrence of E5, the LED will display "✋WAIT✋" if the anomaly continues. If the breaker ON/OFF is repeated in a short period of time (within 1 minute), "✋WAIT✋" may be displayed. In such occasion, turn the breaker off and wait for 3 minutes.

Error code	LED	Green	Red	Content
Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (2/3) (Models FDC71, 90VNP only)

1. Applicable model

Models FDC71, 90VNP

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

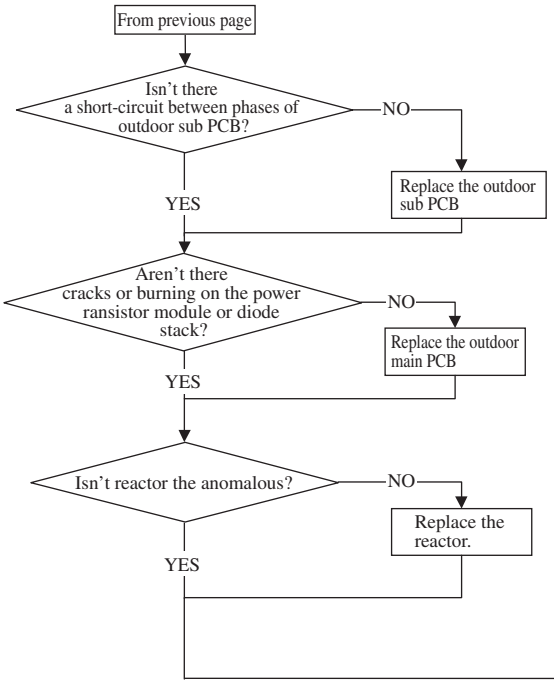
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor sub or main PCB
- Faulty reactor

5. Troubleshooting

Diagnosis	Countermeasure
	Replace fuse.

Note:

Error code	LED	Green	Red	Content
Remote control: ✋WAIT✋	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (3/3) (FDC71, 90VNP only)

1. Applicable model

Models FDC71, 90VNP

When the remote control display is extinguished after the power on.

2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Blown fuse
- Connection between PCB's
- Blown fuse
- Faulty indoor control PCB
- Defective remote control
- Wire breakage on remote control
- Faulty outdoor sub PCB

5. Troubleshooting

Diagnosis	Countermeasure
Remote control display is extinguished after the power on.	
Is the green LED on the indoor unit flashing? — NO	
Is the fuse on the indoor control PCB OK? — NO	Replace fuse.
YES	
Is approx. DC10-11V detected between wires at the remote control side after disconnecting the remote control? — NO	Short-circuit on remote control wire
YES	Defective remote control
YES	
Are wires connected properly between the indoor and the outdoor units? — NO	Correct wires.
YES	
Is approx. DC20V detected between ②/N-③ on the outdoor unit terminal block? — NO	Defective outdoor sub PCB→Replace.
YES	
Is approx DC20V detected between ②-③ on the indoor unit terminal block? — NO	Defective connection wire (Broken wire) Noise
YES	Defective indoor control PCB→Replace.

Note:

Error code	LED	Green	Red	Content
Remote control: ✋WAIT✋	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (1/2) (Models FDC200, 250VSA only)
	Outdoor	Keeps flashing	2-time flash	

1. Applicable model

Models FDC200, 250VSA

2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Faulty indoor control or power PCB
- Defective remote control
- Broken remote control wire
- Faulty outdoor control PCB
- Broken connection wires

5. Troubleshooting

Diagnosis	Countermeasure
"✋WAIT✋" is still displayed on the remote control LED 2 minutes after power ON. → YES	
Is the outdoor unit control green LED flashing? → NO → To next page; YES	
Is the indoor unit green LED flashing? → NO	Defective indoor control PCB→Replace.
Is the indoor unit green LED flashing? → YES	
Is the outdoor unit control red LED flashing twice? → NO	Defective indoor control PCB→Replace. Defective remote control→Replace. Broken remote control wire Y→Replace.
Is the outdoor unit control red LED flashing twice? → YES	
Are wires connected properly between indoor/outdoor units? → NO	Correct connection wires between indoor and outdoor units.
Are wires connected properly between indoor/outdoor units? → YES	
Is approx. DC20V detected between ②-③ on the outdoor unit terminal block? → NO	Defective outdoor control PCB→Replace.
Is approx. DC20V detected between ②-③ on the outdoor unit terminal block? → YES	
Is approx. DC20V detected between ②-③ on the indoor unit terminal block? → NO	Defective connection wire (Broken) Noise
Is approx. DC20V detected between ②-③ on the indoor unit terminal block? → YES	Defective indoor control or power PCB→Replace.

Note:

Error code	LED	Green	Red	Content
Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (2/2) (Models FDC200, 250VSA only)
	Outdoor	Keeps flashing	2-time flash	

1. Applicable model

Models FDC200, 250VSA

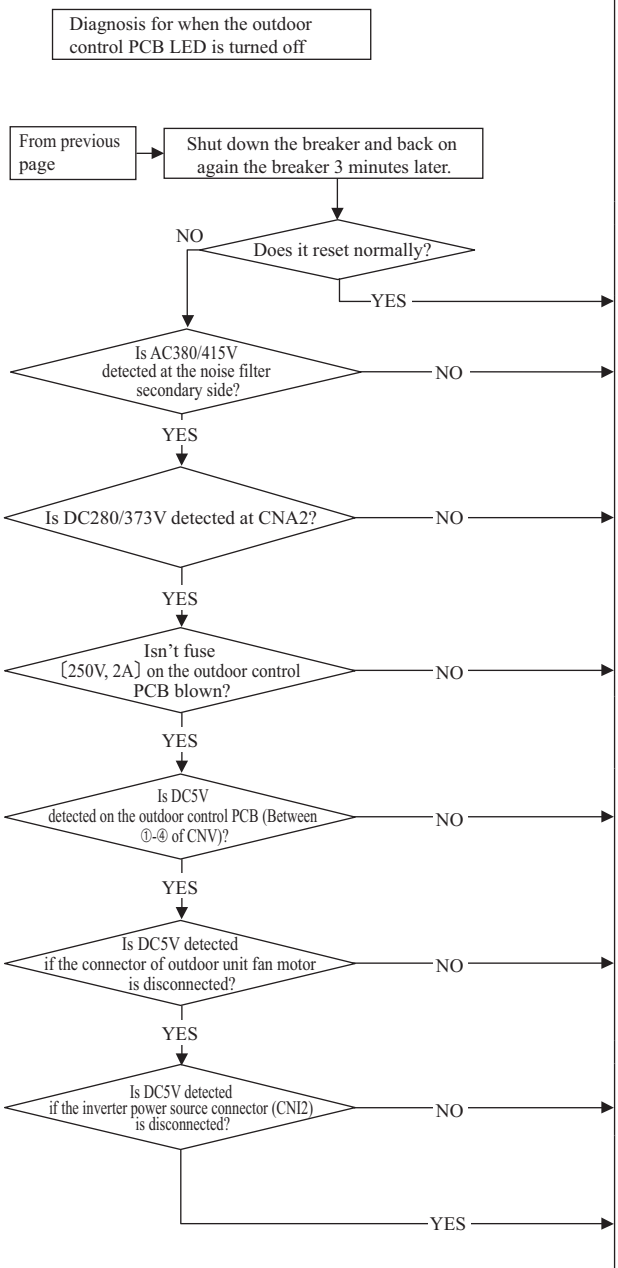
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Faulty noise filter
- Faulty indoor control PCB
- Faulty outdoor control PCB
- Faulty inverter PCB
- Faulty fan motor

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Stays OFF	Stays OFF	No display
	Outdoor	Stays OFF	Stays OFF	

1. Applicable model

All models
(FDC71, 90VNP is removed)

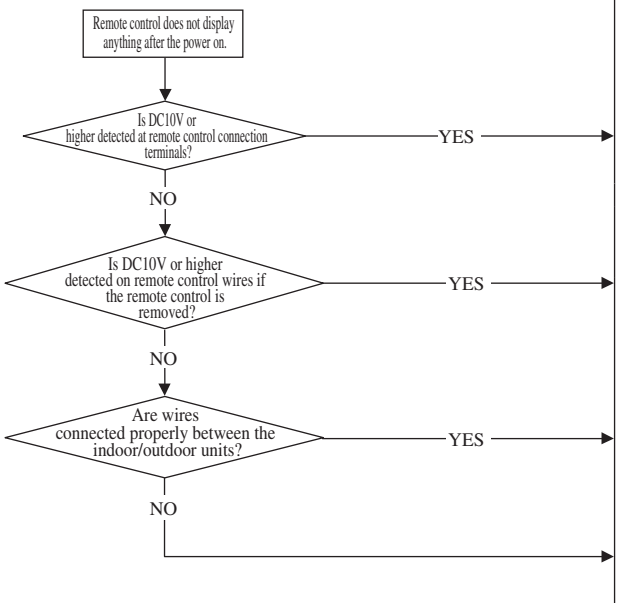
2. Error detection method

3. Condition of error displayed

4. Presumable cause

- Faulty indoor control PCB
- Defective remote control
- Broken remote control wire

5. Troubleshooting



Diagnosis	Countermeasure
Is DC10V or higher detected at remote control connection terminals? YES	Defective remote control
Is DC10V or higher detected on remote control wires if the remote control is removed? YES	Defective remote control
Are wires connected properly between the indoor/outdoor units? YES	Defective connecting wire. Defective remote control wire (Short-circuit, etc.)
NO	Defective indoor control PCB→Replace.

Note:

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

1. Applicable model

All models

2. Error detection method

When normal communication between the remote control and the indoor unit is interrupted for more than 2 minutes. (Detectable only with the remote control)

3. Condition of error displayed

Same as above

4. Presumable cause

- Defective communication circuit between remote control-indoor unit
- Noise
- Defective remote control
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is it possible to reset normally by the power reset? → YES	Malfunction by noise Check peripheral environment.
NO → Turn SW7-1 to OFF. → ON Remove the wire ③ connecting between indoor/outdoor units. → Power source reset → Does the drain pump restart automatically 1 minute later? → YES	Defective indoor control PCB → Replace.
NO → Note (2) Does the remote control still display " WAIT " even after 3 minutes?	Defective remote control → Replace.

Note: If the indoor unit cannot communicate normally with the remote control for 180 seconds, the indoor unit PCB starts to reset automatically.

Error code	LED	Green	Red	Content
Remote control: E5	Indoor	Keeps flashing	2-time flash	Communication error during operation
	Outdoor	Keeps flashing	See below	

1. Applicable model

All models

2. Error detection method

When normal communication between indoor and outdoor unit is interrupted for more than 2 minutes.

3. Condition of error displayed

Same as above is detected during operation.

4. Presumable cause

- Unit No. setting error
- Broken remote control wire
- Faulty remote control wire connection
- Faulty outdoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
In case that the outdoor unit red LED flashes 2-time	
Note (1) Inspect faulty connections (disconnection, looseness) on the outdoor unit terminal block. Is the connection of signal wires at the outdoor unit side OK? → NO	Repair signal wires.
YES → Note (2) Check for faulty connection or breakage of signal wires between indoor-outdoor units. Is the connection of signal wires between indoor-outdoor units OK? → NO	Repair signal wires.
YES → Power source reset → Has the remote control LCD returned to normal state? → NO	To the diagnosis of "WAIT"
YES	Unit is normal. (Malfunction by temporary noise, etc.)
In case that the outdoor unit red LED stays OFF (FDC71, 90VNP is removed)	
Power source reset → NO → Has the remote control LCD returned to normal state? → NO	Defective outdoor control PCB (Defective network communication circuit) → Replace.
YES	Unit is normal. (Malfunction by temporary noise, etc.)

Note: Pressing the pump-down switch cancels communications between indoor and outdoor unit so that "communication error-E5" is displayed on indoor unit and remote control, but it is normal. (FDC71, 90VNP is removed)

Error code	LED	Green	Red	Content
Remote control: E6	Indoor	Keeps flashing	1-time flash	Indoor heat exchanger temperature thermistor anomaly
	Outdoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

2. Error detection method

Anomalously low temperature or high temperature (resistance) is detected on the indoor heat exchanger thermistor (ThI-R1, R2 or R3).

3. Condition of error displayed

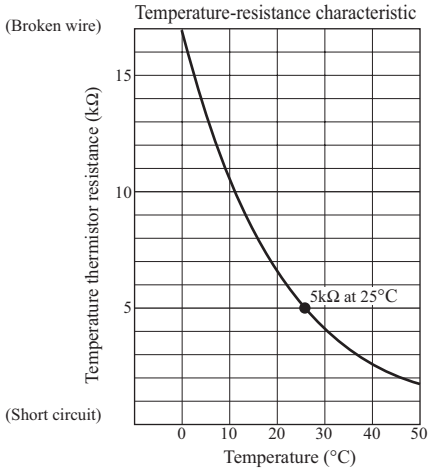
- When the temperature thermistor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.
- Or if 70°C or higher is detected for 5 seconds continuously.

4. Presumable cause

- Defective indoor heat exchanger thermistor connector
- Indoor heat exchanger temperature thermistor anomaly
- Faulty indoor control PCB

5. Troubleshooting

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



Note:

Error code	LED	Green	Red	Content
Remote control: E7	Indoor	Keeps flashing	1-time flash	Return air temperature thermistor anomaly
	Outdoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

2. Error detection method

Anomalously low temperature or high temperature (resistance) is detected by indoor return air temperature thermistor (ThI-A)

3. Condition of error displayed

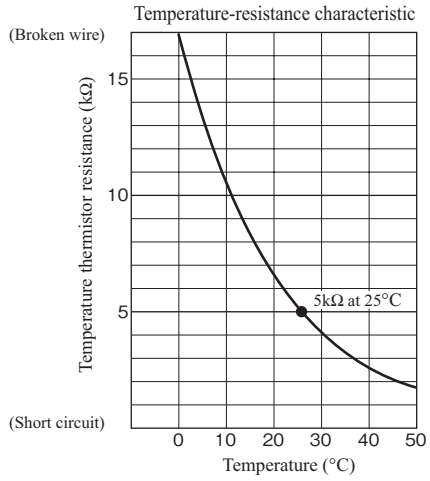
- When the temperature thermistor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minute delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.

4. Presumable cause

- Defective return air temperature thermistor connector
- Defective return air temperature thermistor
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the connection of return air temperature thermistor connector OK? → NO	Correct. → Connect connector.
YES → Are the characteristics of return air temperature thermistor OK? → NO	Defective return air temperature thermistor → Replace.
YES	Defective indoor control PCB → Replace. (Defective return air temperature thermistor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote control: E8	Indoor	Keeps flashing	1-time flash	Heating overload operation
	Outdoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

2. Error detection method

Indoor heat exchanger temperature thermistor (ThI-R1, R2, R3)

3. Condition of error displayed

When it is detected 5 times within 60 minutes from initial detection or when the overload condition is detected for 6 minutes continuously.

4. Presumable cause

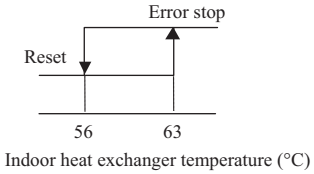
- Clogged air filter
- Defective indoor heat exchanger temperature thermistor connector
- Defective indoor heat exchanger temperature thermistor
- Anomalous refrigerant system

5. Troubleshooting

Diagnosis	Countermeasure
Is the air filter clogged? — YES →	Wash.
Is the indoor heat exchanger temperature thermistor connection OK? — NO →	Defective indoor heat exchanger temperature thermistor connector→ Correct.
Are the characteristics of indoor heat exchanger temperature thermistor OK? (2) — NO →	Defective indoor heat exchanger temperature thermistor.
Check the error data with the remote control.	
Is the unit operating in the state of heating overload? — NO →	Check refrigerant system.
YES →	Adjust

Note (1) Judge if it is in the state of overload or not as follows.
- Is there any short-circuit of air?
- Isn't there any fouling or clogging on the indoor heat exchanger?
- Is the outdoor fan control normal?
- Isn't the room and outdoor air temperature too high?

Note (2) For characteristics of indoor heat exchanger temperature thermistor, see the error display E6.



Note: During heating operation; After starting compressor, compressor rotation speed is decreased by detecting indoor heat exchanger temperature (ThI-R) in order to control high pressure.

Error code	LED	Green	Red	Content
Remote control: E10	Indoor	Keeps flashing	Stays OFF	Excessive number of connected indoor units (more than 17 units) by controlling with one remoto control
	Outdoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

2. Error detection method

When it detects more than 17 of indoor units connected to one remote contorl

3. Condition of error displayed

Same as above

4. Presumable cause

- Excessive number of indoor units connected
- Defective remote control

5. Troubleshooting

Diagnosis	Countermeasure
Aren't more than 17 indoor units connected to one remote control? → NO	Defective remote control → Replace.
Aren't more than 17 indoor units connected to one remote control? → YES	Reduce to 16 or less units.

Note:

Error code	LED	Green	Red	Content
Remote control: E11	Indoor	Keeps flashing	Keeps flashing	Address setting error of indoor units
	Outdoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

2. Error detection method

IU address has been set using the "Master IU address set" function of remote control.

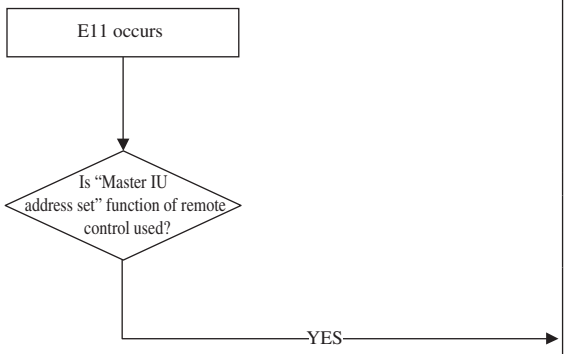
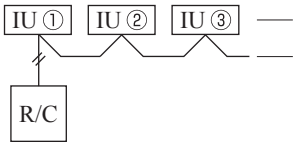
3. Condition of error displayed

Same as above

4. Presumable cause

Same as above

5. Troubleshooting

Diagnosis	Countermeasure
	• In cases of RC-EX1A Menu → Next → IU settings → Select IU • In cases of RC-E5 Return address No. to "IU …" using [▲] or [▲] button.
In case the wiring is below and "Mastar IU address set" is used, E11 is appeared. 	

Note:

Error code	LED	Green	Red	Content
Remote control: E14	Indoor	Keeps flashing	3-time flash	Communication error between master and slave indoor units
	Outdoor	Keeps flashing	Stays Off	

1. Applicable model

All models

2. Error detection method

When communication error between master and slave indoor units occurs

3. Condition of error displayed

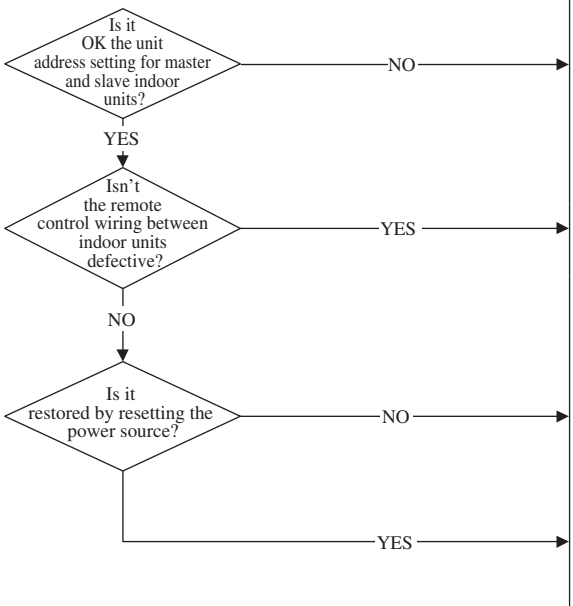
Same as above

4. Presumable cause

- Unit address setting error
- Broken remote control wire
- Defective remote control wire connection
- Defective indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure



Note (1) Set dip switches SW5-1 and SW5-2 as shown in the following table. (Factory default setting – "Master")

		Indoor unit		
		Master	Slave-a	Slave-b
Dip switch	SW5-1	OFF	OFF	ON
	SW5-2	OFF	ON	OFF

Note:

Error code	LED	Green	Red	Content
Remote control: E16	Indoor	Keeps flashing	1-time flash	Indoor fan motor anomaly
	Outdoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

2. Error detection method

Detected by rotation speed of indoor fan motor

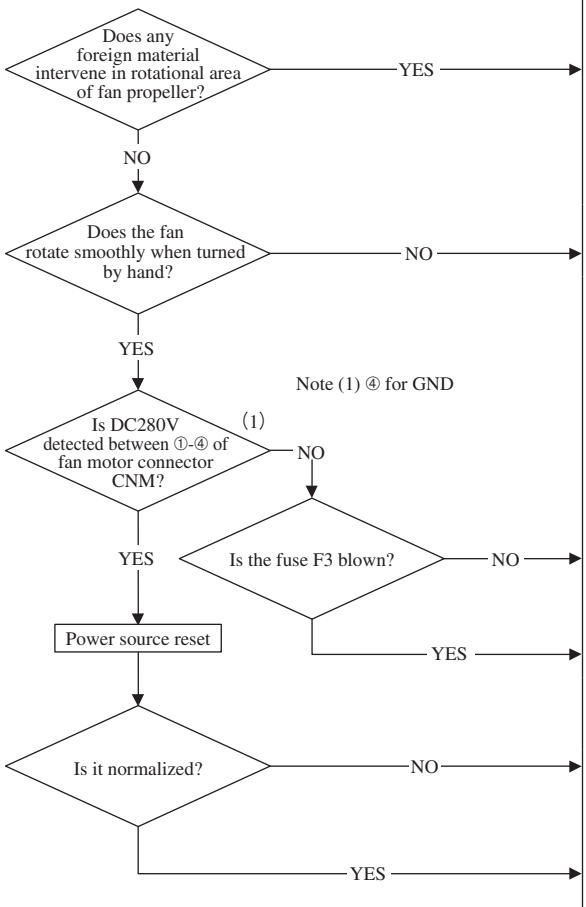
3. Condition of error displayed

- When actual rotation speed of indoor fan motor drops to lower than 200min^{-1} for 30 seconds continuously, the compressor and the indoor fan motor stop.
- After 2-seconds, it starts again automatically, but if this error occurs 4 times within 60 minutes after the initial detection.

4. Presumable cause

- Defective indoor power (control) PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on control PCB
- Blown fuse
- External noise, surge

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E18	Indoor	Keeps flashing	1-time flash	Address setting error of master and slave indoor units
	Outdoor	Keeps flashing	Stays Off	

1. Applicable model

All models

2. Error detection method

IU address has been set using the "Master IU address set" function of remote control.

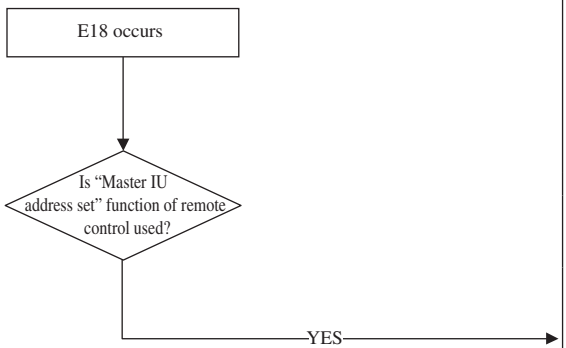
3. Condition of error displayed

Same as above

4. Presumable cause

Same as above

5. Troubleshooting

Diagnosis	Countermeasure
	Return address No. to "IU …" using [▲] or [▲] button.

Note:

Error code	LED	Green	Red	Content
Remote control: E19	Indoor	Keeps flashing	1-time flash	Indoor unit operation check error
	Outdoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

2. Error detection method

After indoor operation check, when the communication between indoor and outdoor unit is established and SW7-1 is still kept ON.

3. Condition of error displayed

Same as above

4. Presumable cause

Mistake in SW7-1 setting
(Due to forgetting to turn OFF SW7-1 after indoor operation check)

5. Troubleshooting

Diagnosis	Countermeasure
E19 occurs when the power ON → Is SW7-1 on the indoor control PCB ON ?	
NO →	Defective indoor control PCB (Defective SW7) →Replace
YES →	Turn SW7-1 on the indoor control PCB OFF and reset the power

Note:

Error code	LED	Green	Red	Content
Remote control: E20	Indoor	Keeps flashing	1-time flash	Indoor fan motor rotation speed anomaly
	Outdoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

2. Error detection method

Detected by rotation speed of indoor fan motor

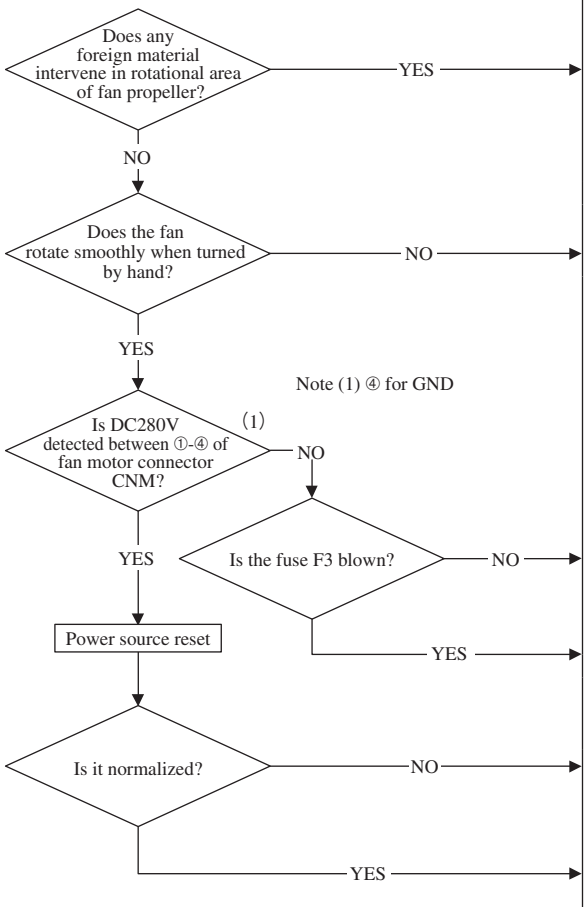
3. Condition of error displayed

When the actual fan rotation speed does not reach to the speed of [required speed -50 min^{-1}] after 2 minutes have been elapsed since the fan motor rotation speed command was output, the unit stops by detecting indoor fan motor anomaly.

4. Presumable cause

- Defective indoor power (control) PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on control PCB
- Blown fuse
- External noise, surge

5. Troubleshooting



Note:

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

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) of remote control temperature thermistor (Thc)

3. Condition of error displayed

When the temperature thermistor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.

4. Presumable cause

- Faulty connection of remote control temperature thermistor
- Defective remote control temperature thermistor
- Defective remote control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the remote control temperature thermistor connected properly? — NO →	Correct.
YES ↓ Are the characteristics of remote control temperature thermistor OK? Is the thermistor wire OK? — NO →	Defective remote control temperature thermistor → Replace.
YES →	Defective remote control PCB → Replace. (Defective remote control temperature thermistor input circuit)

Resistance-temperature characteristics of remote control temperature thermistor (ThC)

Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)
0	65	30	16
1	62	32	15
2	59	34	14
4	53	36	13
6	48	38	12
8	44	40	11
10	40	42	9.9
12	36	44	9.2
14	33	46	8.5
16	30	48	7.8
18	27	50	7.3
20	25	52	6.7
22	23	54	6.3
24	21	56	5.8
26	19	58	5.4
28	18	60	5.0

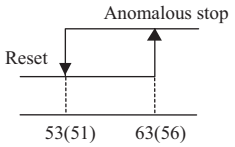
Note: After 10 seconds has passed since remote control thermistor was switched from valid to invalid, E28 will not be displayed even if the thermistor harness is disconnected. At same time the thermistor, which is effective, is switched from remote control thermistor to indoor return air temperature thermistor. Even though the remote control thermistor is set to be Effective, the return air temperature displayed on remote control for checking still shows the value detected by indoor return air temperature thermistor, not by remote control temperature thermistor.

Error code	LED	Green	Red	Content
Remote control: E35	Indoor	Keeps flashing	Stays OFF	Cooling overload operation (Model SRC40-60, FDC71, 90VNP only)
	Outdoor	–	2-time flash	

1. Applicable model

Model SRC40-60, FDC71,90VNP

2. Error detection method



Outdoor heat exchanger temperature (°C)

Note(1) Values in ( ) are applicable when outdoor temperature (TH2) is lower than 32°C

3. Condition of error displayed

When anomalous outdoor heat exchanger temperature occurs 5 times within 60 minutes or 63(56)°C or higher continues for 10 minutes, including the compressor stop.

4. Presumable cause

- Defective outdoor heat exchanger temperature sensor
- Defective outdoor main PCB
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger
- Excessive refrigerant quantity

5. Troubleshooting

Diagnosis	Countermeasure
Are normal the characteristics of outdoor heat exchanger temperature sensor normal? (* For the characteristics of outdoor heat exchanger temperature sensor, refer to E37.) — NO →	Replace outdoor heat exchanger temperature sensor.
YES ↓ Is the unit operating in the state of cooling overload? — YES →	Check unit side. • Isn't the air circulation of outdoor unit short-circuited? • Are installation spaces adequate? • Isn't there any fouling or clogging on heater exchanger?
NO ↓ Is the high pressure control normal — NO →	Control operation check*
YES ↓ Is the temperature (measured actually) at direction of error correct? — NO →	Defective outdoor main PCB→Replace.
YES →	Excessive refrigerant amount: Recharge refrigerant by weighing proper amount on a scale.

* For the contents of control, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

Note:

Error code	LED	Green	Red
Remote control: E35	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

Cooling overload operation
(Models FDC71-250 only)

1. Applicable model

Models FDC71-250

2. Error detection method

For the error detection method, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

3. Condition of error displayed

When outdoor heat exchanger temperature anomaly is detected 5 times within 60 minutes or this anomalous state is detected 60 minutes continuously including compressor stop.

4. Presumable cause

- Defective outdoor heat exchanger temperature thermistor
- Defective outdoor control PCB
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger
- Excessive refrigerant amount

5. Troubleshooting

Diagnosis	Countermeasure
Are the characteristics of outdoor heat exchanger temperature thermistor normal? (* For the characteristics of outdoor heat exchanger temperature thermistor, refer to E37.) — NO →	Replace outdoor heat exchanger temperature thermistor.
YES ↓ Is the unit operating in the state of cooling overload? — YES →	Check unit side. • Isn't the air circulation of outdoor unit short-circuited? • Are installation spaces adequate? • Isn't there any fouling or clogging on heat exchanger?
NO ↓ Is the high pressure control normal? — NO →	Control operation check *
YES ↓ Is the temperature (measured actually) at detection of error correct? — NO →	Defective outdoor control PCB→Replace.
YES →	Excessive refrigerant amount : Recharge refrigerant by weighing proper amount on a scale.

* For the contents of control, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

Note:

Error code	LED	Green	Red	Content
Remote control: E36	Indoor control PCB	Keeps flashing	Stays OFF	Discharge pipe temperature error
	Outdoor control PCB	Keeps flashing	1〔5〕-time flash	
	Outdoor inverter PCB	Yellow LED		
		Keeps flashing		

Note (1) Value in〔 〕is for the models SRC40-60, FDC71, 90VNP.

1. Applicable model

All models

2. Error detection method

For the error detection method, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

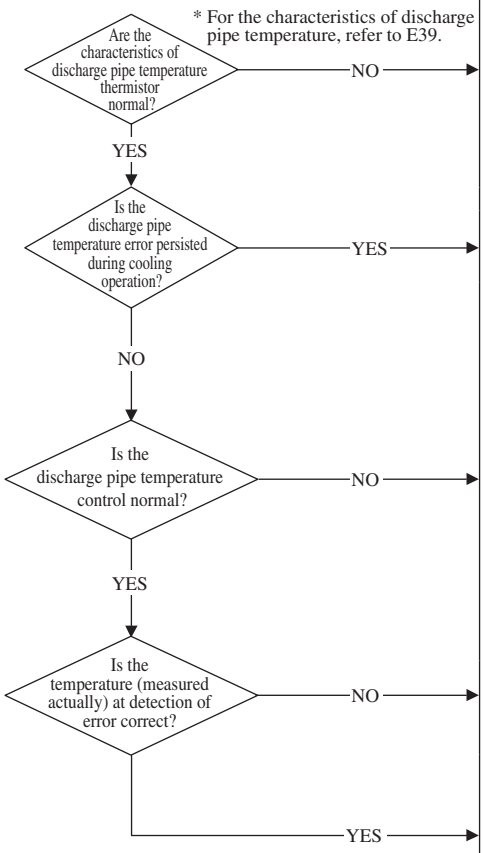
3. Condition of error displayed

When discharge pipe temperature anomaly is detected 2 times within 60 minutes or this anomalous state is detected 60 minutes continuously including compressor stop.

4. Presumable cause

- Defective outdoor control PCB
- Defective discharge pipe temperature thermistor
- Clogged filter
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger

5. Troubleshooting



Diagnosis	Countermeasure
Are the characteristics of discharge pipe temperature thermistor normal? (NO)	Replace discharge pipe temperature thermistor.
Is the discharge pipe temperature error persisted during cooling operation? (YES)	Insufficient refrigerant amount : Recharge refrigerant by weighing proper amount on a scale.
Is the discharge pipe temperature control normal? (NO)	Control operation check *
Is the temperature (measured actually) at detection of error correct? (NO)	Defective outdoor control PCB→Replace.
(YES)	Check unit side: • Isn't filter clogged? • Are adequate indoor, outdoor unit installation spaces? • Isn't there any short-circuit of air? • Isn't there any fouling, clogging on indoor heat exchanger?

* For the contents of control, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

Note:

Error code	LED	Green	Red
Remote control: E37	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1〔8〕-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content: **Outdoor heat exchanger temperature themistor anomaly**

Note (1) Value in〔 〕is for the models SRC40-60, FDC71, 90VNP.

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on the outdoor heat exchanger temperature thermistor

3. Condition of error displayed

- When the temperature thermistor detects -50(-55)°C or lower for 20 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -50(-55)°C or lower is detected for 5 seconds continuously within 20 second after compressor ON.

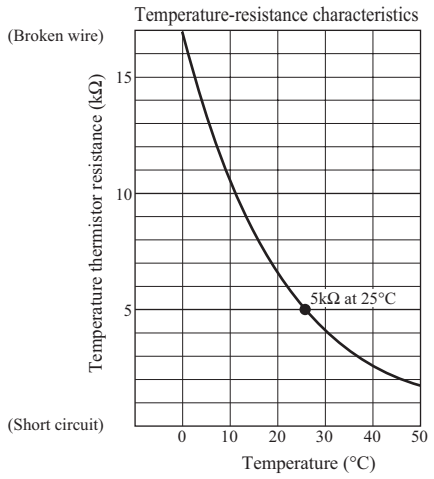
Note (1) Value in ( ) are for the models SRC40-60, FDC71, 90VNP.

4. Presumable cause

- Defective outdoor control PCB
- Broken thermistor harness or temperature sensing section
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the outdoor heat exchanger temperature thermistor connector connected properly? — NO →	Correct connector.
YES ↓	
For the characteristics of outdoor heat exchanger temperature thermistor, see the following graph.	
Are the characteristics of outdoor heat exchanger temperature thermistor OK? — NO →	Defective outdoor heat exchanger temperature thermistor→Replace.
YES →	Defective outdoor control PCB→Replace. (Defective outdoor heat exchanger temperature thermistor input circuit)



Note:

Error code	LED	Green	Red
Remote control: E38	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1(8)-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

Outdoor air temperature thermistor anomaly

Note (1) Value in [ ] is for the models SRC40-60, FDC71, 90VNP.

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on outdoor air temperature thermistor

3. Condition of error displayed

- When the temperature thermistor detects -45(-55)°C or lower for 5 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -45(-55)°C or lower is detected for 5 seconds continuously within 20 second after compressor ON.

Note (1) Value in ( ) are for the models SRC 40-60, FDC71, 90VNP.

4. Presumable cause

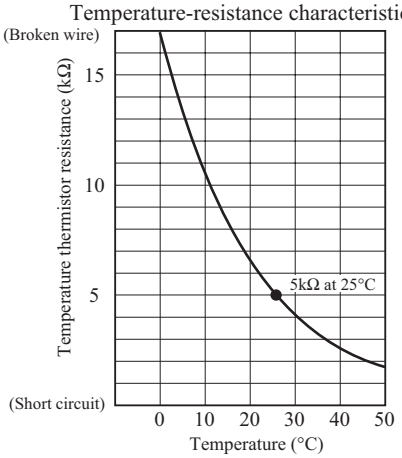
- Defective outdoor control PCB
- Broken thermistor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the outdoor air temperature thermistor connector connected properly? → NO	Correct connector.
YES → Is the characteristics of the outdoor air temperature thermistor OK? (For the characteristics of outdoor air temperature thermistor, see the following graph.) → NO	Defective outdoor air temperature thermistor→ Replace.
YES	Defective outdoor control PCB→Replace. (Defective outdoor air temperature thermistor input circuit)

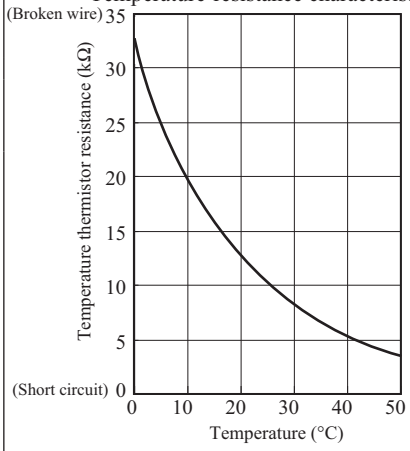
- Models SRC40-60, FDC71, 90VNP

Temperature-resistance characteristics



- Models FDC71 - 250

Temperature-resistance characteristics



Note:

Error code	LED	Green	Red
Remote control: E39	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1(8)-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

Discharge pipe temperature thermistor anomaly

Note (1) Value in〔 〕is for the models SRC40-60, FDC71, 90VNP.

1.Applicable model

All models

2.Error detection method

Detection of anomalously low temperature (resistance) on the discharge pipe temperature thermistor

3.Condition of error displayed

When the temperature thermistor detects -10(-25)°C or lower for 5 seconds continuously within 10 minutes to 10 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.

Note (1) Value in ( ) is for the models SRC40-60, 71,90VNP.

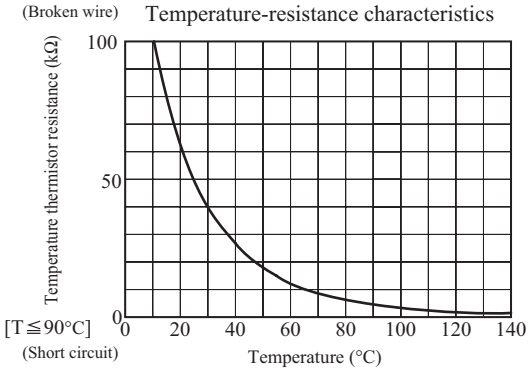
4.Presumable cause

- Defective outdoor control PCB
- Broken thermistor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)

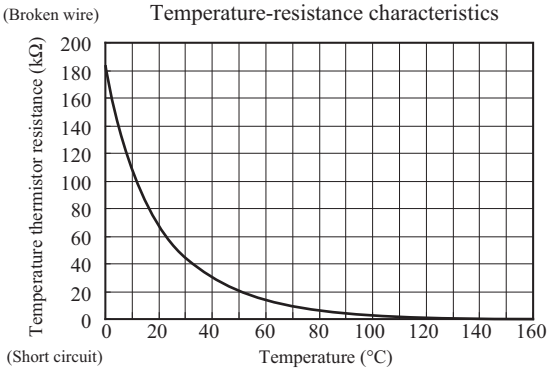
5.Troubleshooting

Diagnosis	Countermeasure
Is the discharge pipe temperature thermistor connector connected properly? — NO →	Correct connector.
YES ↓	
Are the characteristics of discharge pipe temperature thermistor OK? (For the characteristics of discharge pipe temperature thermistor, see the following graph.) — NO →	Defective discharge pipe temperature thermistor→ Replace.
YES →	Defective outdoor control PCB→Replace. (Defective temperature thermistor input circuit)

• Models SRC40-60, FDC71, 90VNP



• Models FDC71-250



Note:

Error code	LED	Green	Red	Content
Remote control: E40	Indoor	Keeps flashing	Stays OFF	Service valve (gas side) closing operation
	Outdoor	–	1-time flash	(Models SRC40-60, FDC71, 90VNP only)

1. Applicable model

Models SRC40-60, FDC71, 90VNP

2. Error detection method

If the inverter output current value exceeds the setting value within 80 seconds after the compressor ON in the heating mode, the compressor stops.

3. Condition of error displayed

- If the output current of inveter exceeds the specifications, it makes the compressor stopping. (In heating mode)
- After 3-minute delay, the compressor restarts, but if this anomaly occurs 2 times within 20 minute after the intial detection.

4. Presumable cause

- Service valve (gas side) closing
- Defective outdoor main PCB

5. Troubleshooting

Diagnosis	Countermeasure
Are the service valve (gas side) opened? — NO →	Open the service valve.
YES ↓	
Is the checked result of power transistor module OK? — NO →	Defective outdoor main PCB→Replace.
YES ↓	
• Is the space for installation of indoor and/or outdoor unit enough? • Is there any short circuit of air on indoor and/or outdoor unit? • At heating, does the indoor fan motor run? Is the filter clogged? • Is there any liquid flooding? • Is there any anoumalous sound on the compressor?	
YES ↓	
After resetting power for several times does it become normal? — NO →	Defective outdoor main PCB→Replace.
YES ↓	
Temporary noise may cause of anomaly. If noise source can be found, take countermeasure.	

Note:

Error code	LED	Green	Red
Remote control: E40	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

High pressure error (63H1 activated)

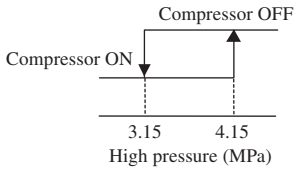
(Models FDC71-250 only)

1. Applicable model

Models FDC71-250

2. Error detection method

When the high pressure switch 63H1 is activated.



3. Condition of error displayed

If 63H1 turns OFF (opened), the compressor stops. After 3-minutes delay, the compressor restarts. If this anomaly occurs 5 times within 60 minutes or continues for 60 minutes continuously.

4. Presumable cause

- Short circuit of air flow, disturbance of air flow and clogging filter at outdoor heat exchanger/Breakdown of fan motor
- Defective outdoor control PCB
- Defective 63H1 connector
- Defective electronic expansion valve connector
- Closed service valve
- Mixing of non-condensing gas (nitrogen, etc.)

5. Troubleshooting

Diagnosis	Countermeasure
If the power source breaker is turned OFF and ON too quickly, E40 may be displayed. (This is normal.)	
Is the service valve fully opened? — NO →	Open the service valve.
YES ↓	
Has 63H1 activated? — NO →	
On operation of 63H1 — YES ↓	
1. During cooling ・ Is the outdoor fan motor running? ・ Isn't any short-circuit of air on the outdoor unit? ・ Are sufficient return air/supply air space secured? 2. During heating ・ Isn't the indoor heat exchanger temperature thermistor disconnected from the thermistor casing? ・ Isn't the filter clogged? * Under the condition of overcharging refrigerant, 63H1 may activate due to delay of starting the preventive control by compressor speed control, because detected heat exhanger temperature, which conducts compressor speed control, becomes lower than normal condition due to excess sub-cooling degree.	
Is 63H1 connector connected properly? — NO →	Correct 63H1 connector.
YES ↓	
Is the electronic expansion valve connector connection OK? — NO →	Correct electronic expansion valve connector.
If any anomaly exists on the electronic expansion valve connector connection, the power source must be reset.	
YES →	Defective outdoor control PCB→Replace. (Defective 63H1 input circuit)

Note: In the protective control range for compressor startup (initial startup after power ON), even if 63H1 is activated only once (63H1turns OFF), immediately the error is displayed.

Error code	LED	Green	Red
Remote control: E41	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		6-time flash	

Content

Power transistor overheat
(Models FDC71-140 only)

1. Applicable model

Models FDC71-140

2. Error detection method

When less than DC14V of the output voltage is detected between ② and ③ on CNI3, E41 is displayed.
(See "Note" mentioned below)

3. Condition of error displayed

Seme as above.

4. Presumable cause

- Inverter PCB anomaly
- Outdoor fan motor anomaly
- Outdoor control PCB anomaly
- Noise filter PCB anomaly

5. Troubleshooting

Diagnosis	Countermeasure
• Single phase models (FDC71-140VNX, 100-140VN)	
(1) (2) Is DC15V detected between ② and ③ on CNI3? → YES	Replace inverter PCB If not solved, replace Noise filter PCB as well
NO Note(1) Under anomalous conditions, the voltage becomes less than DC14V.	
(1) Is DC15V detected after disconnecting outdoor fan motor? → YES	Replace outdoor fan motor
→ NO	Replace outdoor control PCB If not solved, replace inverter PCB as well
Note(2) How to check the voltage between ② and ③ of CNI3? ⇒See E51	
• 3-phase models (FDC100-140VSX, 100-140VS) E41⇒Replace inverter PCB.	

Note: The "Single phase models" of inverter PAC have no function to output the signal for the power transistor overheat. However since the power source for the power transistor and the outdoor fan motor is in the same line, when the anomaly of the outdoor fan motor occurs, E41 is displayed.

Error code	LED	Green	Red
Remote control: E41	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		2-time flash or 8-time flash(1)	

Content

Power transistor overheat
(Models FDC200, 250VSA only)

Note (1) 8-time flash FDC250 model only.

1. Applicable model

Model FDC200, 250VSA

2. Error detection method

When anomalously high temperature is detected by power transistor.

3. Condition of error displayed

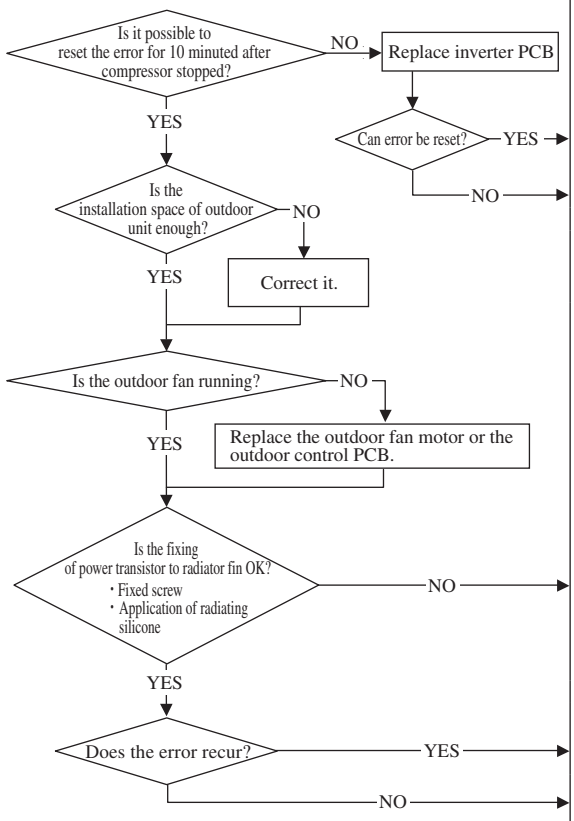
Anomalously high temperature of power transistor is detected 5 times within 60 minutes.

4. Presumable cause

- Inverter PCB anomaly
- Outdoor fan motor anomaly
- Improperly fixing of power transistor to radiator fin
- Inadequate installation space of outdoor unit

5. Troubleshooting

Diagnosis	Countermeasure



Note:

Error code	LED	Green	Red	Content
Remote control: E42	Indoor control PCB	Keeps flashing	Stays OFF	Current cut (1/2)
	Outdoor control PCB	Keeps flashing	1-time flash	
	Outdoor inverter PCB	Yellow LED		
		1-time flash or 9-time flash(1)		

Note (1) 9-time flash is for the FDC250 model only.

1. Applicable model

All models

2. Error detection method

In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

3. Condition of error displayed

- If the output current of inveter exceeds the specifications, it makes the compressor stopping.
- After 3-minute delay, the compressor restarts, but if this amonaly occurs 4 times within 30 minute after the intial detection. (FDC71-250 only)

4. Presumable cause

- The service valves closed
- Faulty power source
- Insufficient refrigerant amount
- Faulty compressor
- Faulty power transistor module

5. Troubleshooting

Diagnosis	Countermeasure
Is the Power source voltage OK? — NO →	Check power source.
YES ↓ Are the service valves opened? — NO →	Open the service valves.
YES ↓ Is the high pressure during operation OK? — NO →	Check refrigerant amount and refregerant circuit *In case of transitional increase of high pressure and/or test run, several times restarting may recover it, because liquid refrigerant (migrated) in the compresser is discharged from the compressor.
YES ↓ Is the checked result of insulation resistance and coil resistance (1) of compressor motor OK? — NO →	Replace compressor.
YES ↓ To next page.	

(1) 0.864Ω or more at 20°C (Model SRC40-60ZMX-S)
1.154Ω or more at 20°C (Model FDC71VNX)
0.293Ω or more at 20°C (Models FDC100-140VNX)
1.172Ω or more at 20°C (Models FDC100-140VSX)
1.619Ω or more at 20°C (Model FDC71VNP)
1.154Ω or more at 20°C (Model FDC90VNP)
0.425Ω or more at 20°C (Models FDC100-140VN)
1.504Ω or more at 20°C (Models FDC100-140VS)
1.172Ω or more at 20°C (Model FDC200VSA)
0.309Ω or more at 20°C (Model FDC250VSA)

Note:

Error code	LED	Green	Red	Content
Remote control: E42	Indoor	Keeps flashing	Stays OFF	Current cut (2/2)
	Outdoor control PCB	Keeps flashing	1-time flash	
	Outdoor inverter PCB	Yellow LED		
		1-time flash or 9-time flash(1)		

Note (1) 9-time flash is for the FDC250 model only.

1. Applicable model

All models

2. Error detection method

In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

3. Condition of error displayed

- If the output current of inveter exceeds the specifications, it makes the compressor stopping.
- After 3-minute delay, the compressor restarts, but if this amonaly occurs 4 times within 30 minute after the intial detection. (FDC71-250only)

4. Presumable cause

- Defective inverter PCB
- Faulty power source
- Insufficient refrigerant amount
- Faulty compressor
- Faulty power transistor module

5. Troubleshooting

Diagnosis	Countermeasure
From previous page ↓ Is the checked result of power transistor module OK? — NO →	Defective inverter PCB→ Replace. *Replace also the power transistor module. (FDC250 only)
YES ↓ • Is the space for installation of indoor and/or outdoor unit enough? • Is there any short circuit of air on indoor and/or outdoor unit? • At cooling, does the outdoor fan motor run? Are the service valves fully opened? Is the filter clogged? • At heating, does the indoor fan motor run? Are the service valves fully opened? Is the filter clogged? • Is there any liquid flooding? Is the superheat within normal range? Is the low pressure sensor and suction pipe temperature thermistor normal? • Is there any anoumalous sound on the compressor?	
YES ↓ After resetting power for several times does it become normal? — NO →	Defective inverter PCB→ Replace. *Replace also the power transistor module. (FDC250 only)
YES ↓ Temporary noise may cause of anomaly. If noise source can be found, take countermeasure.	

Note:

Error code	LED	Green	Red
Remote control: E45	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content: Communication error between inverter PCB and outdoor control PCB (Models FDC71-250 only)

1. Applicable model

Models FDC71-250

2. Error detection method

When the communication between inverter PCB and outdoor control PCB is not established.

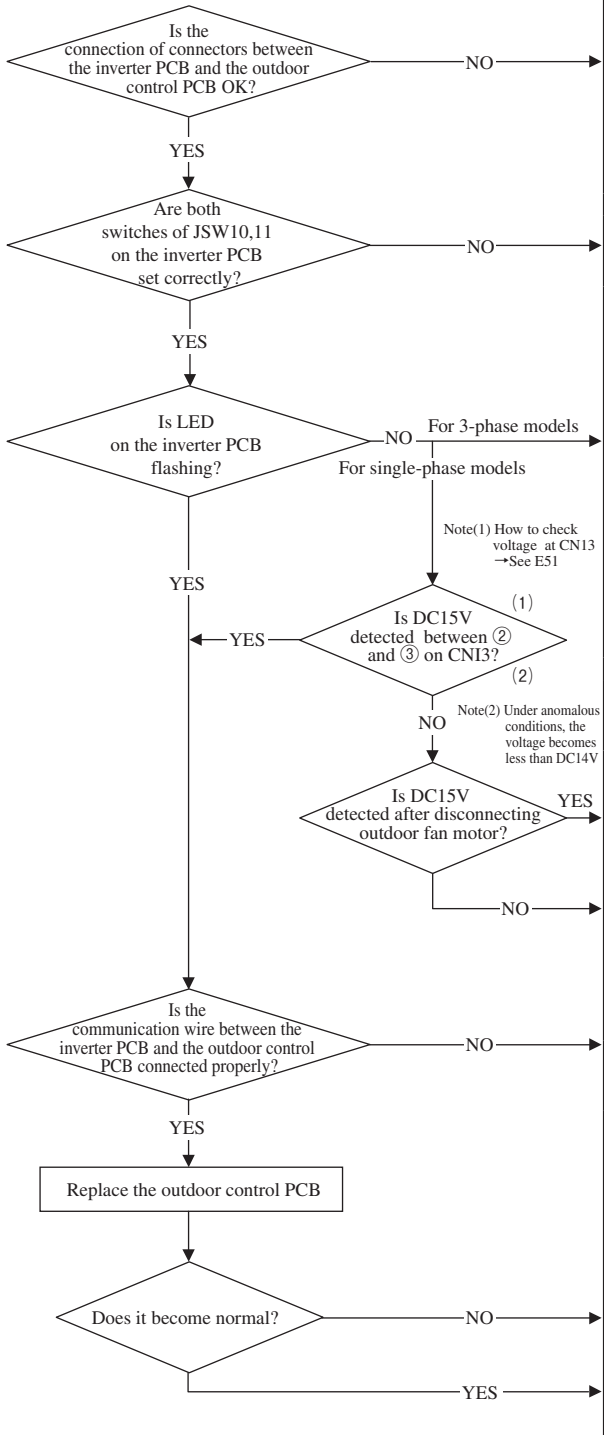
3. Condition of error displayed

Same as above.

4. Presumable cause

- Inverter PCB anomaly
- Anomalous connection of connector between the outdoor control PCB and inverter PCB
- Outdoor control PCB anomaly
- Outdoor fan motor anomaly

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E47	Indoor	Keeps flashing	Stays OFF	Active filter voltage error (Models SRC40-60, FDC71, 90VNP only)
	Outdoor	—	2-time flash	

1. Applicable model

Models SRC40-60,FDC71, 90VNP

2. Error detection method

Error is displayed if the converter voltage exceeds target voltage (3 times within 20 minutes). Remote control may be set after 3 minutes delay. Error is displayed if the converter voltage is lower than DC210V (1-time within 5 seconds after power ON)

3. Condition of error displayed

Same as above

4. Presumable cause

- Defective outdoor main PCB
- Dust on outdoor main PCB
- Anomalous power source

5. Troubleshooting

Diagnosis	Countermeasure
Is the power source normal? — NO →	Restore normal condition.
YES ↓	
Is voltage within the specified range? — NO →	Restore normal condition.
YES ↓	
Check soldered surfaces on the outdoor main PCB for foreign matter like dust, fouling, etc. — NO →	Remove foreign matter like dust, fouling, etc.
YES →	Defective outdoor main PCB→Replace.

- If the overvoltage (DC voltage is higher than 400V) occurs, Red LED flashes 1-time.

Note:

Error code	LED	Green	Red
Remote control: E47	Indoor	Keeps flashing	Stays off
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor Inverter PCB	Yellow LED	
		7-time flashing	

Content

Inverter PCB A/F module anomaly
(Model FDC71 only)

1. Applicable model

Model FDC71

2. Error detection method

In order to prevent from overcurrent of A/F, if the current exceeds the specifications, it makes the compressor stopping.

3. Condition of error displayed

- If the output current of A/F exceeds the specifications, it makes the compressor stopping.

4. Presumable cause

- Defective inverter PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the Power source voltage OK? — NO →	Check power source.
YES ↓	
Is the checked results of insulation resistance and coil resistance (1) of compressor motor OK? (1) 1.154Ω or more at 20°C — NO →	Replace compressor.
YES →	Defective outdoor Inverter PCB→Replace.

Note:

Error code	LED	Green	Red	Content
Remote control: E48	Indoor	Keeps flashing	Stays OFF	Outdoor fan motor anomaly (Models SRC40-60, FDC71, 90VNP only)
	Outdoor	–	ON	

1. Applicable model

Models SRC40-60, FDC71,90VNP

2. Error detection method

Detected by rotation speed of outdoor fan motor

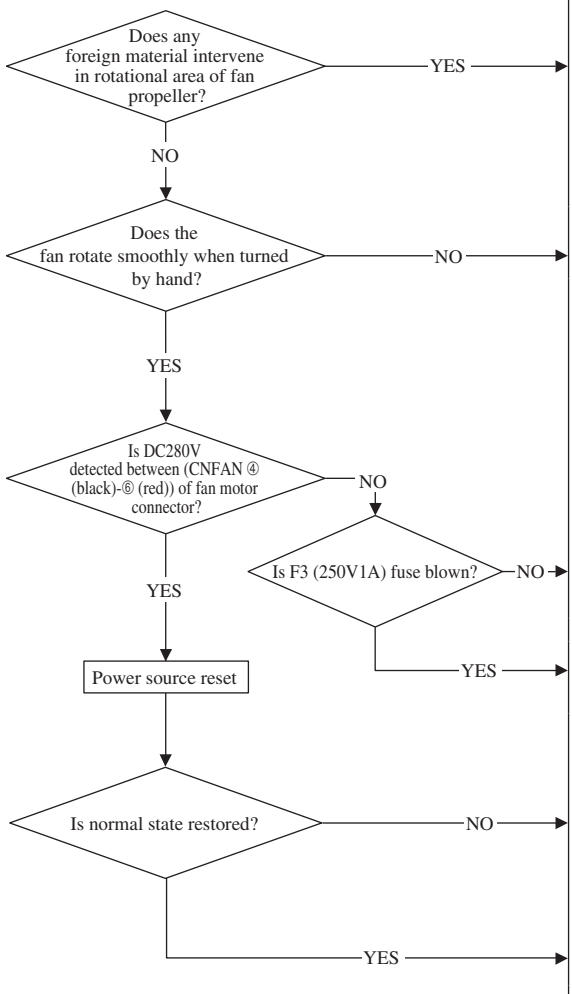
3. Condition of error displayed

When actual rotation speed of outdoor fan motor drops to 75min^{-1} or lower for 30 minutes continuously, the compressor and the outdoor fan motor stop. After 3-minutes delay, it starts again automatically, but if this anomaly occurs 3 times within 60 minutes after the initial detection.

4. Presumable cause

- Defective outdoor PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on outdoor PCB
- Blown F3 fuse

5. Troubleshooting



Note: When E48 error occurs, in almost cases F3 fuse (1A) on the outdoor PCB is blown. There are a lot of cases that fuse is blown and E48 occurs due to defective fan motor. And even though only the outdoor PCB (or fuse) is replaced,, another trouble could occur. Therefore when fuse is blown, check whether the fan motor is OK or not.
After confirming the fan motor normal, check by power ON. (Don't power ON without confirming the fan motor normal.)

Error code	LED	Green	Red
Remote control: E48	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

Outdoor fan motor anomaly
(Models FDC71-250 only)

1. Applicable model

Models FDC71-250

2. Error detection method

Detected by rotation speed of outdoor fan motor

3. Condition of error displayed

When actual rotation speed of outdoor fan motor (FMo1) drops to 100min^{-1} or lower for 30 minutes continuously, the compressor and the outdoor fan motor stop. After 3-minutes delay, it starts again automatically, but if this anomaly occurs 5 times within 60 minutes after the initial detection.

4. Presumable cause

- Defective outdoor control PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on outdoor control PCB
- Blow fuse
- External noise, surge

5. Troubleshooting

Diagnosis	Countermeasure
Does any foreign material intervene in rotational area of fan propeller? — YES →	Remove foreign material.
NO ↓ Does the fan rotate smoothly when turned by hand? — NO →	Replace fan motor. If resistance between ① (Model FDC71:⑥)(Vm): red -④(GND):blue is detected 1kΩ or lower, it is faulty.
YES ↓ Note (1) Modle FDC71: CNFAN⑥(red)-④(blue). (1) Is DC280V detected between (CNFAN ① (red)-④ (blue)) of fan motor connector? — NO →	
(2) Is F2 fuse blown? — NO →	Check power source voltage.
YES ↓ Power source reset — YES → Note (2) Fuse of model FDC71 is F3.	Replace faulty fan motor and control PCB.
Is normal state restored? — NO →	Replace fan motor (If anomaly persists after replacing fan motor, replace control PCB.)
YES →	Malfunction by temporary noise

Note: When E48 error occurs, in almost cases F2 fuse (4A) [Model FDC71:F3 fuse (2A)]on the outdoor control PCB is blown. There are a lot of cases that fuse is blown and E48 occurs due to defective fan motor. And even though only the outdoor control PCB (or fuse) is replaced,, another trouble (*1) could occur. Therefore when fuse is blown, check whether the fan motor is OK or not.
After confirming the fan motor normal, check by power ON. (Don't power ON without confirming the fan motor normal.)
*1 The error which does not seem to relate E48 may occur like as "✋WAIT✋", Stay OFF of LED on outdoor control PCB, inverter communication error (E45) and etc.

Error code	LED	Green	Red
Remote control: E49	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

Low pressure error or low pressure sensor anomaly (1/2)

(Models FDC71-250 only)

1. Applicable model

Models FDC71-250

2. Error detection method

Detected by low pressure drop and suction superheat

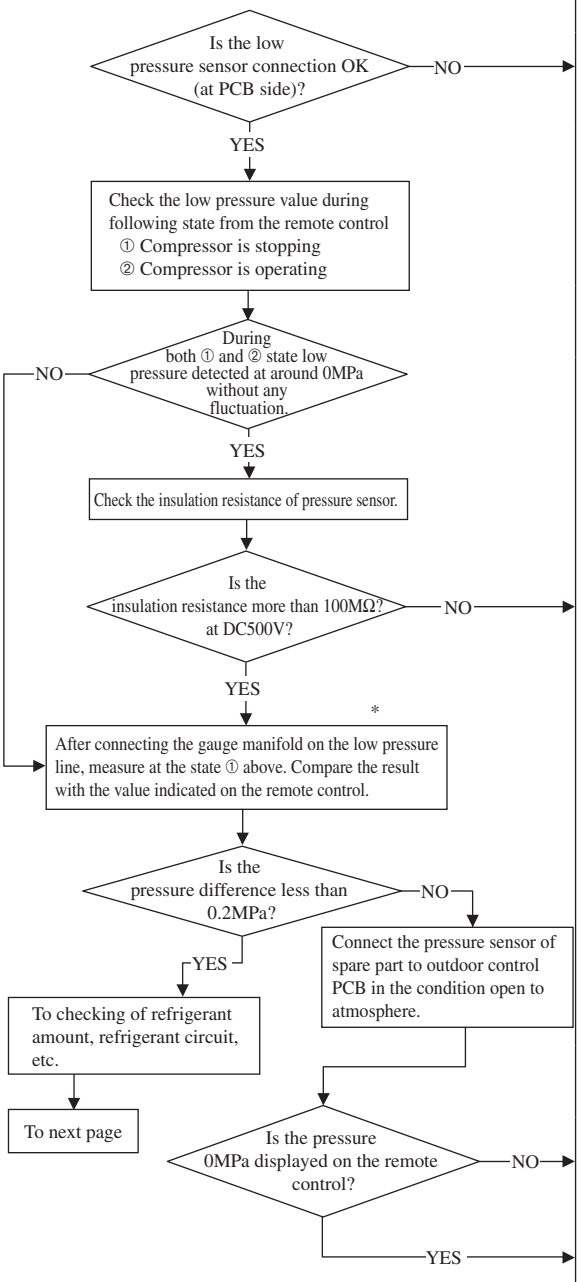
3. Condition of error displayed

① When the low pressure sensor detects 0.079MPa or lower for 15 seconds continuously, compressor stops and it restarts automatically after 3-minutes delay. And if this anomaly occurs 3 times within 60 minutes,
② 10 minutes after the compressor starts, if the low pressure sensor detects 0.15MPa or lower for 60 minutes continuously and compressor suction superheat is detected 30degC or higher for 60 minutes continuously. And if this anomaly occurs 3 times within 60 minutes,
③ If low pressure sensor detects 0.079MPa or lower for 5 minutes continuously (including the compressor stop status),

4. Presumable cause

- Defective outdoor control PCB
- Defective low pressure sensor connector
- Defective low pressure sensor
- Defective suction pipe temperature thermistor connector
- Defective suction pipe temperature thermistor

5. Troubleshooting



Note: * Connect the gauge manifold to the service valve check joint during cooling, or connect it to the check joint at internal piping of outdoor unit during heating.

Error code	LED	Green	Red
Remote control: E49	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

Low pressure error or low pressure sensor anomaly (2/2)

(Models FDC71-250 only)

1. Applicable model

Models FDC71-250

2. Error detection method

3. Condition of error displayed

4. Presumable cause

5. Troubleshooting

Diagnosis	Countermeasure
From previous page	
Is the service valve fully opened? — NO →	Open fully.
YES ↓	
Are the connections of low pressure sensor and suction pipe temprerature thermister connector OK? — NO →	Correct.
YES ↓	
Are the characteristics of low pressure sensor, suction pipe temperature thermistor OK? — NO →	Defective low pressure sensor, suction pipe temperature thermistor→ Replace.
YES ↓	
Is the low pressure normal during operation? — NO →	Charge refrigerant.
YES →	Defective outdoor control PCB→Replace. (Defective low pressure sensor, suction pipe temperature thermistor circuits)

Note:

Error code	LED	Green	Red	Content
Remote control: E51	Indoor	Keeps flashing	Stays OFF	Power transistor anomaly (Models SRC40-60, FDC71,90VNP only)
	Outdoor	—	1-time flash	

1. Applicable model

Models SRC40-60, FDC71,90VNP

2. Error detection method

Power transistor primary current

3. Condition of error displayed

If the power transistor primary current exceeds the setting value for 3 seconds, the compressor stops.

4. Presumable cause

- Outdoor control PCB anomaly
- Dust on outdoor control PCB
- Blown F2 fuse

5. Troubleshooting

Diagnosis	Countermeasure
Check soldered surfaces on the outdoor control PCB for foreign matter like dust, fouling,etc. → NO	Remove foreign matter like dust, fouling, etc.
↓ YES	
Isn't F2 fuse (250V, 20A)blown? → YES	Replace fuse.
→ NO	Defective outdoor control PCB→Replace.

Note:

Error code	LED	Green	Red
Remote control: E51	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		6-time flash	

Content

Inverter and fan motor anomaly
(Models FDC71-140 only)

1. Applicable model

Models FDC71-140

2. Error detection method

When power transistor anomaly is detected for 15 minutes continuously

3. Condition of error displayed

Same as above

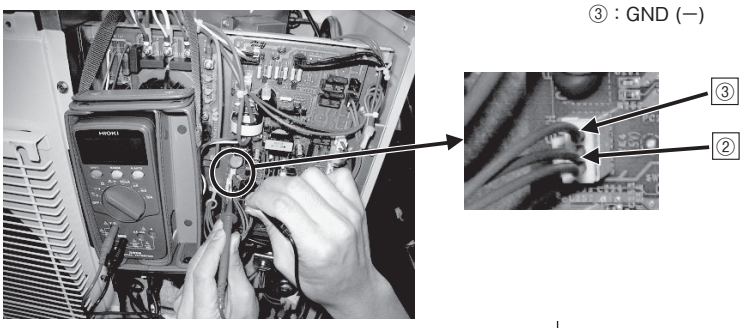
4. Presumable cause

- Outdoor fan motor anomaly
- Inverter PCB anomaly
- Outdoor control PCB anomaly

5. Troubleshooting

Diagnosis	Countermeasure
• Models FDC71-140VNX, 100-140VN Is DC15V detected between ② and ③ on CNI3? (1) (2) — YES → Replace inverter PCB. If not solved, replace Noise filter PCB as well. Note(1) Under anomalous conditions, the voltage becomes less than DC14V. NO ↓ Is DC15V detected after disconnecting outdoor fan motor? (1) — YES → Replace outdoor fan motor. NO → Replace outdoor control PCB. If not solved, replace inverter PCB as well. • Models FDC100-140VSX, 100-140VS Replace immediately the inverter PCB and the power transistor. Note(2) How to check the voltage between ② and ③ of CNI3?	

② : DC15V (+)
③ : GND (−)



Note:

Error code	LED	Green	Red	Content
Remote control: E51	Indoor control PCB	Keeps flashing	Stays OFF	Inverter or power transistor anomaly (FDC200, 250VSA only)
	Outdoor control PCB	Keeps flashing	1-time flash	
	Outdoor inverter PCB	Yellow LED		
		2-time flash or 8-time flash(1)		

Note (1) 8-time flash FDC250 model only.

1. Applicable model

FDC200, 250VSA

2. Error detection method

When power transistor anomaly is detected for 15 minutes continuously

3. Condition of error displayed

Same as above

4. Presumable cause

- Inverter PCB anomaly
- Power transistor anomaly

5. Troubleshooting

Diagnosis	Countermeasure
Replace inverter PCB. → Did it return? YES →	OK
Did it return? NO →	Replace power transistor. (FDC250 model)

Note:

Error code	LED	Green	Red
Remote control: E53	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

Suction pipe temperature thermistor anomaly
(Models FDC71-250 only)

1. Applicable model

Models FDC71-250

2. Error detection method

When the suction pipe temperature thermistor detects anomalously low temperature

3. Condition of error displayed

If the temperature thermistor detects -50°C or lower for 5 seconds continuously within 10 minutes to 10 minutes 20 seconds after compressor ON, the compressor stops. When the compressor is restarted automatically after 3-minutes delay, if this anomaly ocuurs 3 times within 40 minute.

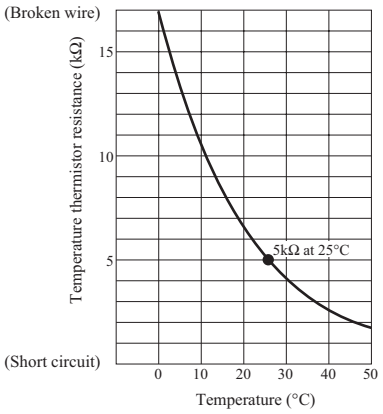
4. Presumable cause

- Defective suction pipe temperature thermistor connection
- Defective suction pipe temperature thermistor
- Defective outdoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the connection of suction pipe temperature thermistor connector OK? — NO →	Correct connection of suction pipe temperature thermistor connector.
YES ↓	
Are the characteristics of suction pipe temperature thermistor OK? — NO →	Defective suction pipe temperature thermistor→ Replace.
YES →	Defective outdoor control PCB→Replace. (Defective suction pipe temperature thermistor input circuit)

Temperature-resistance characteristics



Note:

Error code	LED	Green	Red
Remote control: E54	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

Low pressure sensor anomaly
(Models FDC71-250 only)

1. Applicable model

Models FDC71-250

2. Error detection method

When anomalous voltage (pressure) is detected

3. Condition of error displayed

If the pressure sensor detects DC0V or lower and DC4.0V or higher for 5 seconds continuously within 2 minutes to 2 minutes 20 seconds after compressor ON, the compressor stops. When the compressor is restarted automatically after 3-minuts delay, if this anomaly occurs 3 times within 40 minutes

4. Presumable cause

- Defective low pressure sensor connection
- Defective low pressure sensor
- Defective outdoor control PCB
- Improper amount of refrigerant
- Anomalous refrigeration circuit

5. Troubleshooting

Diagnosis	Countermeasure
Are the connection of low pressure sensor connectors (at sensor side and PCB side) OK? — NO →	Correct low pressure sensor connector connection.
YES ↓ Are the pressure (actual measurement) matched with the value indicated on the remote control? — YES →	Is refrigerant amount charged properly? Is there any anomaly on the refrigeration circuit?
NO ↓ Replace the low pressure sensor. ↓ Is normal condition restored? — NO →	Defective outdoor control PCB→Replace. (Defective low pressure sensor input circuit)
YES →	OK

Note:

Error code	LED	Green	Red	Content
Remote control: E55	Indoor control PCB	Keeps flashing	Stays OFF	Compressor under dome temperature thermistor anomaly (Model FDC250 only)
	Outdoor control PCB	Keeps flashing	1-time flash	
	Outdoor inverter PCB	Yellow LED		
		Keep flashing		

1. Applicable model

Model FDC250

2. Error detection method

When anoumalous low temperature (resistance) is detected by the compressor under dome temperature thermistor

3. Condition of error displayed

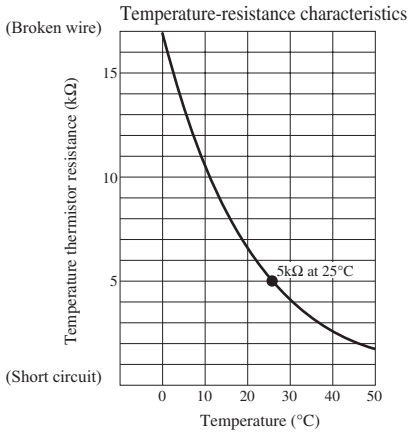
If the temperature thermistor detcts -50°C or lower for 5 seconds continuously within 10 minutes to 10 minutes 20 seconds after compressor ON, the compressor stops. When the compressor is restarted automatically after 3-minutes delay, if this anomaly ocuurs 3 times within 40 minute.

4. Presumable cause

- Defective under dome temperature thermistor connection
- Defective under dome temperature thermistor
- Defective outdoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the connection of under dome temperature thermistor connector OK? — NO →	Correct connection of under dome temperature thermistor connector.
YES ↓ Are the characteristics of under dome temperature thermistor OK? — NO →	Defective under dome temperature thermistor→ Replace.
YES →	Replace outdoor control PCB. (Defective under dome temperature thermistor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote control: E57	Indoor	Keeps flashing	Stays OFF	Insufficient refrigerant amount or detection of service valve closure (Models SRC40-60, FDC71, 90VNP only)
	Outdoor	—	2-time flash	

1. Applicable model

Models SRC40-60, FDC71, 90VNP

2. Error detection method

- Judge insufficient refrigerant amount by detecting the temperature differnce between indoor heat exchanger (ThI-R) and indoor return air (ThI-A).

3. Condition of error displayed

When the insufficient refrigerant amount is detected 3 times within 60 minutes.

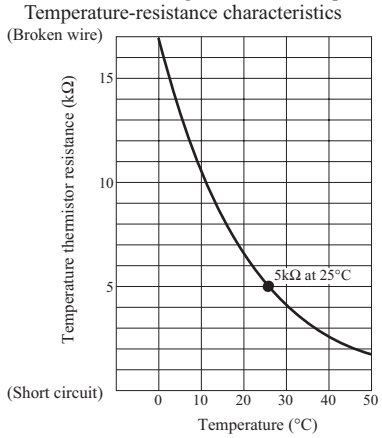
4. Presumable cause

- Defective indoor heat exchanger temperature thermistor
- Defective indoor return air temperature thermistor
- Defective indoor control PCB
- Insufficient refregerant amount

5. Troubleshooting

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

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



Note: When the compressor speed is 50 rps or under at 5 minutes after the start of compressor or the completion of defrosting, the low refrigerant protection control judges, by detecting the difference between the indoor heat exchanger temperature (ThI-R) and the indoor return air temperature (ThI-A), that it is in the state of gas low, and stops the compressor.
Cooling: Indoor return air temperature (ThI-A) – Indoor heat exchanger temperature (ThI-R) ≧ 4 deg
Heating: Indoor heat exchanger temperature (ThI-R) – Indoor return air temperature (ThI-A) ≦ 6 deg

Error code	LED	Green	Red
Remote control: E57	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		Keeps flashing	

Content

Insufficient refrigerant amount or detection of service valve closure
(Models FDC71-250 only)

1. Applicable model

Models FDC71-250

2. Error detection method

- Judge insufficient refrigerant amount by detecting the temperature differnce between indoor heat exchanger (ThI-R) and indoor return air (ThI-A).
- It detects at initial startup in cooling or dehumidifying mode after power ON. (In case of model FDC71 it cannot detect)

3. Condition of error displayed

Anomalous stop at initial detection

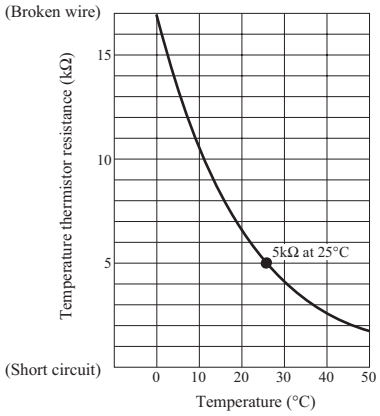
4. Presumable cause

- Defective indoor heat exchanger temperature thermistor
- Defective indoor return air temperature thermistor
- Defective indoor control PCB
- Insufficient refregerant amount

5. Troubleshooting

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

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



Note: Insufficient refrigerant amount preventive control makes compressor stopped, if it judges insufficient refrigerant amount by detecting the temperature difference between indoor heat exchanger (ThI-R) and return air temperature (ThI-A) for 1 minute after compressor ON in cooling or dehumidifying mode and for 9 minutes after compressor ON in heating mode. [in cooling mode: (ThI-A)-(ThI-R)>4degC, in heating mode: (ThI-R)-(ThI-A)<4degC]

Error code	LED	Green	Red	Content
Remote control: E58	Indoor	Keeps flashing	Stays OFF	Current safe stop (Models SRC40-60, FDC71, 90VNP only)
	Outdoor	–	3-time flash	

1. Applicable model

Models SRC40-60,FDC71,90VNP

2. Error detection method

When the current safe control has operated at the compressor speed of 30 rps or under:

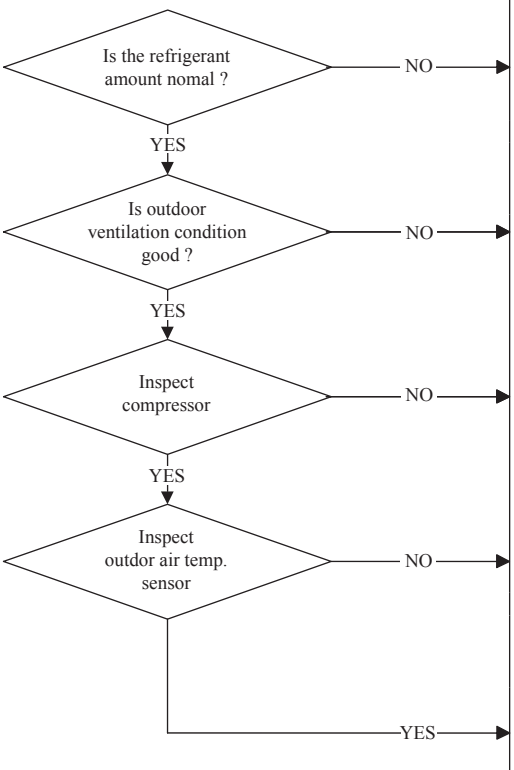
3. Condition of error displayed

Same as above

4. Presumable cause

- Excessive refrigerant amount
- Indoor,outdoor unit installation spaces
- Faulty compressor
- Defective outdor air temp. sensor
- Defective outdoor PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E59	Indoor	Keeps flashing	Stays OFF	Compressor startup failure (Models SRC40-60, FDC71, 90VNP only)
	Outdoor	—	2-time flash	

1. Applicable model

Models SRC40-60, FDC71, 90VNP

2. Error detection method

If it fails to change over to the rotor detection operation of compressor motor

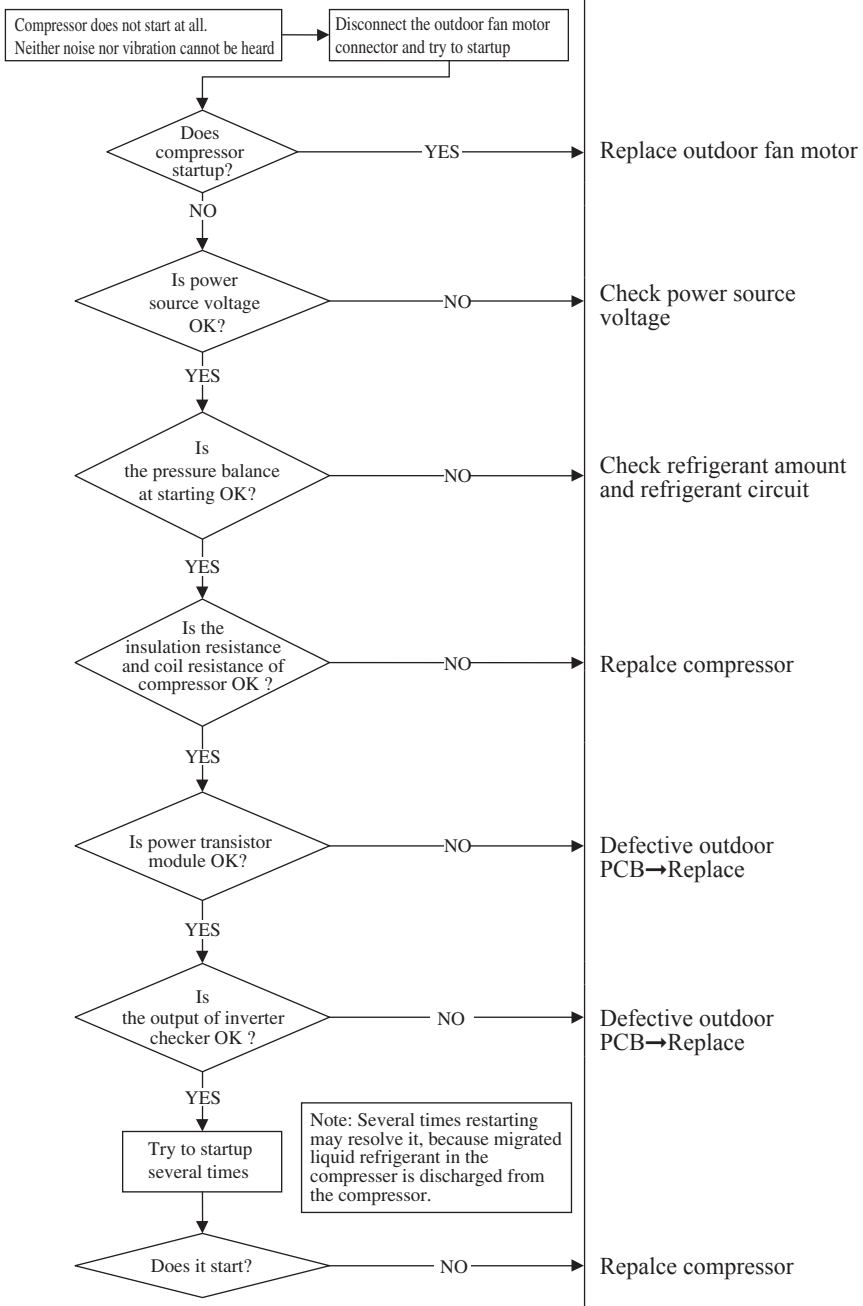
3. Condition of error displayed

If compressor fails to startup for 42 times

4. Presumable cause

- Outdoor fan motor anomaly
- Outdoor PCB anomaly
- Anomalous power source voltage
- Improper refrigerant amount and refrigerant circuit
- Faulty compressor (Motor bearing)

5. Troubleshooting



Note: Insulation resistance
- The unit is left for long period without power source or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor. In such case insulation resistance decreases upto several MΩ or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings.
  ① Check whehter the insulation resistance can recover or not, ater 6 hours has passed since power ON.
  (By energize the crankcase heater, migrated liquid refrigerant in the refrigerant oil in compressor can be evaporated)
  ② Check whether the electric leakage breake conforms to high-hermonic specifications
  (As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

Error code	LED	Green	Red
Remote control: E59	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	5-time flash
	Outdoor inverter PCB	Yellow LED	
		Stays OFF	

Content

Compressor startup failure (1/2)
(Models FDC71-140 only)

1. Applicable model

Models FDC71-140

2. Error detection method

When it fails to change over to the operation for rotor position detection of compressor motor (If the compressor speed cannot increase 11Hz or higher)

3. Condition of error displayed

If the compressor fails to startup for 20 times (10 patterns x2 times) continuously.

4. Presumable cause

- Outdoor fan motor anomaly
- Outdoor control PCB anomaly
- Inverter PCB anomaly
- Anomalous power source voltage
- Insufficient or Excessive refrigerant amount
- Faulty component for refrigerant circuit
- Compressor anomaly (Motor or bearing)

5. Troubleshooting

Diagnosis	Countermeasure
In case that the compressor does not start at all and no sound or vibration exists	
Is power source voltage OK? — NO →	Check the power source voltage and correct it
YES (For FDC100-140VSX 100-140VS / For FDC71-140VNX 100-140VN)	
Note(1) How to check voltage at CN13 ⇒See E51	
Is DC15V detected between ② and ③ on CNI3? (1) (2) — YES →	Replace inverter PCB If not solved yet, replace Noise filter PCB
NO	
Note(2) Under anomalous conditions, the voltage becomes less than DC14V	
Is DC15V detected after disconnecting outdoor fan motor? (2) — YES →	Replace outdoorfan motor.
NO	
Replace outdoor control PCB	
Can compressor startup? — YES →	OK
NO	
Is the pressure equalized at starting OK? — NO →	Check refrigerant amount and refrigerant circuit.
YES	
Is the insulation resistance and coil resistance of compressor OK? — NO →	Replace compressor
YES	
To next page	

Note: Insulation resistance
- The unit is left for long period without power source or soon after installation, insulation resistance may decrease to several MΩ or lower due to the liquid refrigerant migrated in the refrigerant oil in compressor. If the electric leakage breaker is activated due to low insulation resistance, check followings.
  ① Check whether the insulation resistance can recover or not, after 6 hours has passed since power ON.
  (By energize the crankcase heater, liquid refrigerant migrated in the refrigerant oil in compressor can be evaporated)
  ② Check whether the electric leakage breaker conforms to high-harmonic specifications
  (As inverter PAC units has inverter, in order to prevent from improper operation, be sure to use the breaker of high-harmonic type)

Error code	LED	Green	Red
Remote control: E59	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	5-time flash
	Outdoor inverter PCB	Yellow LED	
		Stays OFF	

Content

Compressor startup failure (2/2)
(Models FDC71-140 only)

1. Applicable model

Models FDC71-140

2. Error detection method

3. Condition of error displayed

4. Presumable cause

5. Troubleshooting

Diagnosis	Countermeasure
From previous page	
YES	
Is the power transistor module OK?	
NO (inverter PCB anomaly)	Replace inverter PCB
YES	
After power OFF, turn SW10-4 of inverter PCB ON and connect the inverter checker. Then power ON again.	
Is the inverter output OK? (Check by inverter checker)	
NO	Replace inverter PCB
Note(1) Several times restarting may recover it, because liquid refrigerant migrated in the compressor could be discharged from the compressor.	
YES	
Try to restart several times	
Does it start?	
NO	Replace compressor

Note:

Error code	LED	Green	Red
Remote control: E59	Indoor control PCB	Keeps flashing	Stays OFF
	Outdoor control PCB	Keeps flashing	1-time flash
	Outdoor inverter PCB	Yellow LED	
		4-time flash	

Content

Compressor startup failure (1/2)
(Models FDC200, 250 only)

1. Applicable model

Models FDC200, 250

2. Error detection method

When it fails to change over to the operation for rotor position detection of compressor motor (If the compressor speed cannot increase 11rps or higher)

3. Condition of error displayed

If the compressor fails to startup for 20 times (10 patterns x2 times) continuously.

4. Presumable cause

- Outdoor fan motor anomaly
- Outdoor control PCB anomaly
- Inverter PCB anomaly
- Anomalous power source voltage
- Insufficient or Excessive refrigerant amount
- Faulty component for refrigerant circuit
- Compressor anomaly (Motor or bearing)

5. Troubleshooting

Diagnosis	Countermeasure
In case that the compressor does not start at all and no sound or vibration exists	
Is power source voltage OK? — NO	Check the power source voltage and correct it
YES	
Is the pressure equalized at starting OK? — NO	Check refrigerant amount and refrigerant circuit.
YES	
Is the insulation resistance and coil resistance of compressor OK? — NO	Replace compressor
YES	
To next page	

Note: Insulation resistance
- The unit is left for long period without power source or soon after installation, insulation resistance may decrease to several MΩ or lower due to the liquid refrigerant migrated in the refrigerant oil in compressor. If the electric leakage breaker is activated due to low insulation resistance, check followings.
  ① Check whether the insulation resistance can recover or not, after 6 hours has passed since power ON.
  (By energize the crankcase heater, liquid refrigerant migrated in the refrigerant oil in compressor can be evaporated)
  ② Check whether the electric leakage breaker conforms to high-harmonic specifications
  (As INV PAC units has inverter, in order to prevent from improper operation, be sure to use the breaker of high-harmonic type)

Error code

Remote control: E59

LED	Green	Red
Indoor control PCB	Keeps flashing	Stays OFF
Outdoor control PCB	Keeps flashing	5-time flash
Outdoor inverter PCB	Yellow LED	
	4-time flash	

Content

Compressor startup failure (2/2)

(Models FDC200, 250 only)

1. Applicable model

Models FDC200, 250

2. Error detection method

3. Condition of error displayed

4. Presumable cause

5. Troubleshooting

Diagnosis	Countermeasure
From previous page	
YES	
Is the power transistor module OK?	
(inverter PCB anomaly) NO	Replace inverter PCB *Replace power transistor as well.
YES	
After power OFF, turn JSW10-4 of inverter PCB ON and connect the inverter checker. Then power ON again	
YES	
Is the inverter output OK? (Check by inverter checker)	
NO	Replace inverter PCB *Replace power transistor as well.
Note(1) Several times restarting may recover it, because liquid refrigerant migrated in the compressor could be discharged from the compressor.	
YES	
Try to restart several times	
Does it start?	
NO	Replace compressor

Note:

Error code	LED	Green	Red	Content
Remote control: E60	Indoor	Keeps flashing	Stays OFF	Compressor rotor lock error (Models SRC40-60, FDC71, 90VNP only)
	Outdoor	—	7-time flash	

1. Applicable model

Models SRC40-60, FDC71,90VNP

2. Error detection method

Compressor rotor position

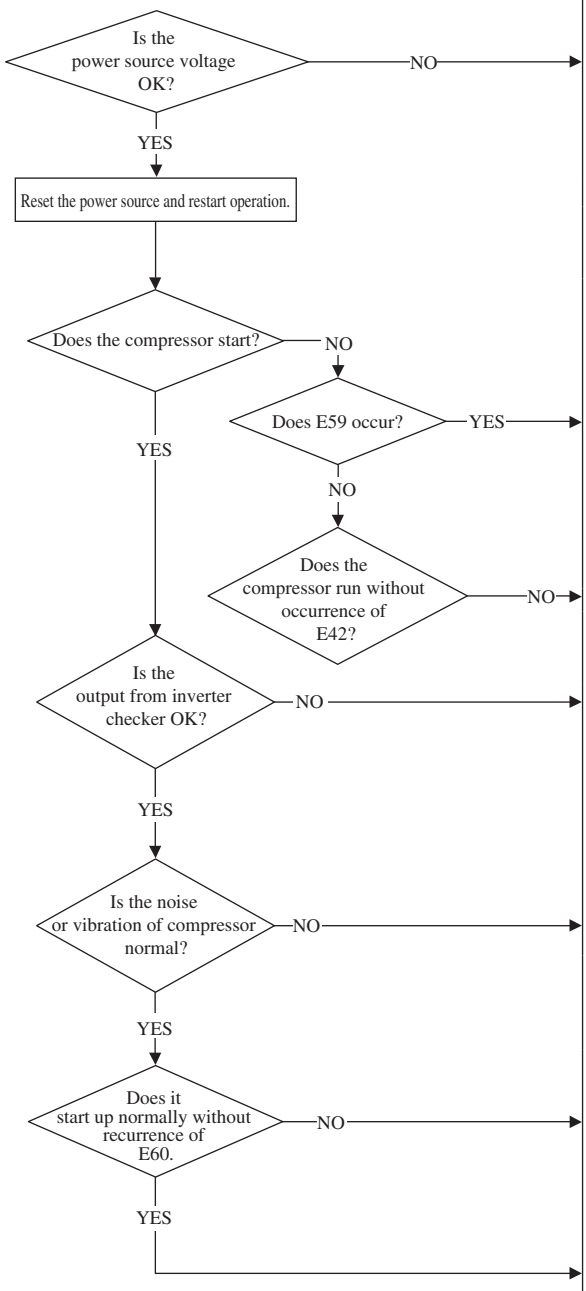
3. Condition of error displayed

If it fails again to detect the rotor position after shifting to the compressor rotor position detection operation, the compressor stops.

4. Presumable cause

- Defective outdoor fan motor
- Defective outdoor PCB
- Anomalous power source voltage
- Improper refrigerant amount and refrigerant circuit
- Defective compressor (motor, bearing)

5. Troubleshooting



Note: Insulation resistance
- The unit is left for long period without power source or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor. In such case insulation resistance decreases upto several MΩ or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings.
  ① Check whehter the insulation resistance can recover or not, ater 6 hours has passed since power ON.
  (By energize the crankcase heater, migrated liquid refrigerant in the refrigerant oil in compressor can be evaporated)
  ② Check whether the electric leakage breake conforms to high-hermonic specifications
  (As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

1.12 TECHNICAL INFORMATION

Model FDE40ZMXVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE40VG
Outdoor unit model name	SRC40ZMX-S

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)		Average(mandatory)	Yes
cooling	Yes	Warmer(if designated)	No
heating	Yes	Colder(if designated)	No

Item	symbol	value	unit
Design load			
cooling	Pdesignc	4.0	kW
heating / Average	Pdesignh	3.0	kW
heating / Warmer	Pdesignh	-	kW
heating / Colder	Pdesignh	-	kW
Declared capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	Pdh	3.0	kW
heating / Warmer (2℃)	Pdh	-	kW
heating / Colder (-22℃)	Pdh	-	kW
Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	4.00	kW
Tj=30℃	Pdc	2.95	kW
Tj=25℃	Pdc	1.90	kW
Tj=20℃	Pdc	1.38	kW
Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	2.66	kW
Tj=2℃	Pdh	1.61	kW
Tj=7℃	Pdh	1.04	kW
Tj=12℃	Pdh	0.77	kW
Tj=bivalent temperature	Pdh	3.00	kW
Tj=operating limit	Pdh	2.47	kW
Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Tj=-15℃	Pdh	-	kW
Bivalent temperature			
heating / Average	Tbiv	-10	℃
heating / Warmer	Tbiv	-	℃
heating / Colder	Tbiv	-	℃
Cycling interval capacity			
for cooling	Pcycc	-	kW
for heating	Pcych	-	kW
Degradation coefficient			
cooling	Cdc	0.25	-
Electric power input in power modes other than 'active mode'			
off mode	Poff	13	W
standby mode	Psb	13	W
thermostat-off mode	Pto	13	W
crankcase heater mode	Pck	0	W

Item	symbol	value	class
Seasonal efficiency and energy efficiency class			
cooling	SEER	6.46	A++
heating / Average	SCOP/A	3.93	A
heating / Warmer	SCOP/W	-	-
heating / Colder	SCOP/C	-	-
			unit
Back up heating capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	elbu	-	kW
Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	EERd	3.92	-
Tj=30℃	EERd	5.67	-
Tj=25℃	EERd	8.26	-
Tj=20℃	EERd	13.14	-
Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	3.09	-
Tj=2℃	COPd	4.20	-
Tj=7℃	COPd	3.92	-
Tj=12℃	COPd	5.13	-
Tj=bivalent temperature	COPd	2.73	-
Tj=operating limit	COPd	2.47	-
Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	-	-
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Tj=-15℃	COPd	-	-
Operating limit temperature			
heating / Average	Tol	-15	℃
heating / Warmer	Tol	-	℃
heating / Colder	Tol	-	℃
Cycling interval efficiency			
for cooling	EERcyc	-	-
for heating	COPcyc	-	-
Degradation coefficient			
heating	Cdh	0.25	-
Annual electricity consumption			
cooling	Qce	217	kWh/a
heating / Average	Qhe	1069	kWh/a
heating / Warmer	Qhe	-	kWh/a
heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)	
fixed	No
staged	No
variable	Yes

Other items			
Sound power level(indoor)	Lwa	60	dB(A)
Sound power level(outdoor)	Lwa	63	dB(A)
Global warming potential	GWP	1975	kgCO2eq.
Rated air flow(indoor)	-	780	m3/h
Rated air flow(outdoor)	-	2160	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

B	PFA004Z024△

Model FDE50ZMXVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE50VG
Outdoor unit model name	SRC50ZMX-S

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	5.0	kW	cooling	SEER	6.10	A++
heating / Average	Pdesignh	3.8	kW	heating / Average	SCOP/A	3.92	A
heating / Warmer	Pdesignh	-	kW	heating / Warmer	SCOP/W	-	-
heating / Colder	Pdesignh	-	kW	heating / Colder	SCOP/C	-	-

Declared capacity at outdoor temperature Tdesignh				Back up heating capacity at outdoor temperature Tdesignh			unit
heating / Average (-10℃)	Pdh	3.8	kW	heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	Pdh	-	kW	heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	Pdh	-	kW	heating / Colder (-22℃)	elbu	-	kW

Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	5.00	kW	Tj=35℃	EERd	3.29	-
Tj=30℃	Pdc	3.69	kW	Tj=30℃	EERd	5.12	-
Tj=25℃	Pdc	2.37	kW	Tj=25℃	EERd	7.18	-
Tj=20℃	Pdc	1.38	kW	Tj=20℃	EERd	13.14	-

Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	3.36	kW	Tj=-7℃	COPd	2.97	-
Tj=2℃	Pdh	2.04	kW	Tj=2℃	COPd	4.32	-
Tj=7℃	Pdh	1.31	kW	Tj=7℃	COPd	3.72	-
Tj=12℃	Pdh	0.77	kW	Tj=12℃	COPd	5.13	-
Tj=bivalent temperature	Pdh	3.80	kW	Tj=bivalent temperature	COPd	2.53	-
Tj=operating limit	Pdh	3.15	kW	Tj=operating limit	COPd	2.22	-

Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-

Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW	Tj=-7℃	COPd	-	-
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-

Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-10	℃	heating / Average	Tol	-15	℃
heating / Warmer	Tbiv	-	℃	heating / Warmer	Tol	-	℃
heating / Colder	Tbiv	-	℃	heating / Colder	Tol	-	℃

Cycling interval capacity				Cycling interval efficiency			
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-

Degradation coefficient				Degradation coefficient			
cooling	Cdc	0.25	-	heating	Cdh	0.25	-

Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode	Poff	13	W	cooling	Qce	288	kWh/a
standby mode	Psb	13	W	heating / Average	Qhe	1358	kWh/a
thermostat-off mode	Pto	13	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	0	W	heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)		Other items			
		Sound power level(indoor)	Lwa	60	dB(A)
		Sound power level(outdoor)	Lwa	63	dB(A)
fixed	No	Global warming potential	GWP	1975	kgCO2eq.
staged	No	Rated air flow(indoor)	-	780	m3/h
variable	Yes	Rated air flow(outdoor)	-	2400	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

B	PFA004Z024

Model FDE60ZMXVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE60VG
Outdoor unit model name	SRC60ZMX-S

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit
Design load			
cooling	Pdesignc	5.6	kW
heating / Average	Pdesignh	4.3	kW
heating / Warmer	Pdesignh	-	kW
heating / Colder	Pdesignh	-	kW
Declared capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	Pdh	4.3	kW
heating / Warmer (2℃)	Pdh	-	kW
heating / Colder (-22℃)	Pdh	-	kW
Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	5.60	kW
Tj=30℃	Pdc	4.13	kW
Tj=25℃	Pdc	2.65	kW
Tj=20℃	Pdc	1.55	kW
Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	3.81	kW
Tj=2℃	Pdh	2.31	kW
Tj=7℃	Pdh	1.49	kW
Tj=12℃	Pdh	0.81	kW
Tj=bivalent temperature	Pdh	4.30	kW
Tj=operating limit	Pdh	3.64	kW
Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Tj=-15℃	Pdh	-	kW
Bivalent temperature			
heating / Average	Tbiv	-10	℃
heating / Warmer	Tbiv	-	℃
heating / Colder	Tbiv	-	℃
Cycling interval capacity			
for cooling	Pcycc	-	kW
for heating	Pcych	-	kW
Degradation coefficient			
cooling	Cdc	0.25	-
Electric power input in power modes other than 'active mode'			
off mode	Poff	13	W
standby mode	Psb	13	W
thermostat-off mode	Pto	20	W
crankcase heater mode	Pck	0	W

Item	symbol	value	class
Seasonal efficiency and energy efficiency class			
cooling	SEER	6.72	A++
heating / Average	SCOP/A	4.08	A+
heating / Warmer	SCOP/W	-	-
heating / Colder	SCOP/C	-	-
			unit
Back up heating capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	elbu	-	kW
Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	EERd	3.20	-
Tj=30℃	EERd	5.74	-
Tj=25℃	EERd	8.55	-
Tj=20℃	EERd	13.48	-
Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	3.00	-
Tj=2℃	COPd	4.44	-
Tj=7℃	COPd	4.12	-
Tj=12℃	COPd	5.06	-
Tj=bivalent temperature	COPd	2.56	-
Tj=operating limit	COPd	2.30	-
Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	-	-
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Tj=-15℃	COPd	-	-
Operating limit temperature			
heating / Average	Tol	-15	℃
heating / Warmer	Tol	-	℃
heating / Colder	Tol	-	℃
Cycling interval efficiency			
for cooling	EERcyc	-	-
for heating	COPcyc	-	-
Degradation coefficient			
heating	Cdh	0.25	-
Annual electricity consumption			
cooling	Qce	292	kWh/a
heating / Average	Qhe	1475	kWh/a
heating / Warmer	Qhe	-	kWh/a
heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)	
fixed	No
staged	No
variable	Yes

Other items			
Sound power level(indoor)	Lwa	60	dB(A)
Sound power level(outdoor)	Lwa	64	dB(A)
Global warming potential	GWP	1975	kgCO2eq.
Rated air flow(indoor)	-	1200	m3/h
Rated air flow(outdoor)	-	2490	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

B	PFA004Z024△

Model FDE71VNXVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE71VG
Outdoor unit model name	FDC71VNX

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	7.1	kW	cooling	SEER	4.87	B
heating / Average	Pdesignh	6.0	kW	heating / Average	SCOP/A	4.00	A+
heating / Warmer	Pdesignh	-	kW	heating / Warmer	SCOP/W	-	-
heating / Colder	Pdesignh	-	kW	heating / Colder	SCOP/C	-	-

Declared capacity at outdoor temperature Tdesignh				Back up heating capacity at outdoor temperature Tdesignh			unit
heating / Average (-10℃)	Pdh	6.0	kW	heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	Pdh	-	kW	heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	Pdh	-	kW	heating / Colder (-22℃)	elbu	-	kW

Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	7.10	kW	Tj=35℃	EERd	3.36	-
Tj=30℃	Pdc	5.23	kW	Tj=30℃	EERd	4.75	-
Tj=25℃	Pdc	3.37	kW	Tj=25℃	EERd	6.95	-
Tj=20℃	Pdc	2.95	kW	Tj=20℃	EERd	10.17	-

Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	5.31	kW	Tj=-7℃	COPd	2.75	-
Tj=2℃	Pdh	3.23	kW	Tj=2℃	COPd	3.89	-
Tj=7℃	Pdh	2.08	kW	Tj=7℃	COPd	5.10	-
Tj=12℃	Pdh	2.42	kW	Tj=12℃	COPd	6.24	-
Tj=bivalent temperature	Pdh	6.00	kW	Tj=bivalent temperature	COPd	2.53	-
Tj=operating limit	Pdh	4.30	kW	Tj=operating limit	COPd	2.10	-

Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-

Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW	Tj=-7℃	COPd	-	-
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-

Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-10	℃	heating / Average	Tol	-20	℃
heating / Warmer	Tbiv	-	℃	heating / Warmer	Tol	-	℃
heating / Colder	Tbiv	-	℃	heating / Colder	Tol	-	℃

Cycling interval capacity				Cycling interval efficiency			
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-

Degradation coefficient				Degradation coefficient			
cooling	Cdc	0.25	-	heating	Cdh	0.25	-

Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode	Poff	18	W	cooling	Qce	511	kWh/a
standby mode	Psb	18	W	heating / Average	Qhe	2102	kWh/a
thermostat-off mode	Pto	20	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	25	W	heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)		Other items			
		Sound power level(indoor)	Lwa	60	dB(A)
		Sound power level(outdoor)	Lwa	66	dB(A)
fixed	No	Global warming potential	GWP	1975	kgCO2eq.
staged	No	Rated air flow(indoor)	-	1200	m3/h
variable	Yes	Rated air flow(outdoor)	-	3600	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

PFA004Z024 A

Model FDE100VNXVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE100VG
Outdoor unit model name	FDC100VNX

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)	
cooling	Yes
heating	Yes

Average(mandatory)	Yes
Warmer(if designated)	No
Colder(if designated)	No

Item	symbol	value	unit
Design load			
cooling	Pdesignc	10.0	kW
heating / Average	Pdesignh	11.2	kW
heating / Warmer	Pdesignh	-	kW
heating / Colder	Pdesignh	-	kW
Declared capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	Pdh	11.2	kW
heating / Warmer (2℃)	Pdh	-	kW
heating / Colder (-22℃)	Pdh	-	kW
Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	10.0	kW
Tj=30℃	Pdc	7.37	kW
Tj=25℃	Pdc	5.50	kW
Tj=20℃	Pdc	5.70	kW
Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	9.91	kW
Tj=2℃	Pdh	6.03	kW
Tj=7℃	Pdh	4.13	kW
Tj=12℃	Pdh	4.90	kW
Tj=bivalent temperature	Pdh	11.2	kW
Tj=operating limit	Pdh	7.80	kW
Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Tj=-15℃	Pdh	-	kW
Bivalent temperature			
heating / Average	Tbiv	-10	℃
heating / Warmer	Tbiv	-	℃
heating / Colder	Tbiv	-	℃
Cycling interval capacity			
for cooling	Pcycc	-	kW
for heating	Pcych	-	kW
Degradation coefficient			
cooling	Cdc	0.25	-
Electric power input in power modes other than 'active mode'			
off mode	Poff	20	W
standby mode	Psb	20	W
thermostat-off mode	Pto	30	W
crankcase heater mode	Pck	25	W

Item	symbol	value	class
Seasonal efficiency and energy efficiency class			
cooling	SEER	5.89	A+
heating / Average	SCOP/A	4.18	A+
heating / Warmer	SCOP/W	-	-
heating / Colder	SCOP/C	-	-
			unit
Back up heating capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	elbu	-	kW
Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	EERd	3.92	-
Tj=30℃	EERd	5.80	-
Tj=25℃	EERd	8.70	-
Tj=20℃	EERd	11.52	-
Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	2.83	-
Tj=2℃	COPd	3.92	-
Tj=7℃	COPd	5.73	-
Tj=12℃	COPd	6.85	-
Tj=bivalent temperature	COPd	2.59	-
Tj=operating limit	COPd	2.26	-
Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	-	-
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Tj=-15℃	COPd	-	-
Operating limit temperature			
heating / Average	Tol	-20	℃
heating / Warmer	Tol	-	℃
heating / Colder	Tol	-	℃
Cycling interval efficiency			
for cooling	EERcyc	-	-
for heating	COPcyc	-	-
Degradation coefficient			
heating	Cdh	0.25	-
Annual electricity consumption			
cooling	Qce	595	kWh/a
heating / Average	Qhe	3754	kWh/a
heating / Warmer	Qhe	-	kWh/a
heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)	
fixed	No
staged	No
variable	Yes

Other items			
Sound power level(indoor)	Lwa	64	dB(A)
Sound power level(outdoor)	Lwa	70	dB(A)
Global warming potential	GWP	1975	kgCO2eq.
Rated air flow(indoor)	-	1920	m3/h
Rated air flow(outdoor)	-	6000	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

A	PFA004Z024

Model FDE100VSXVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE100VG
Outdoor unit model name	FDC100VSX

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit
Design load			
cooling	Pdesignc	10.0	kW
heating / Average	Pdesignh	11.2	kW
heating / Warmer	Pdesignh	-	kW
heating / Colder	Pdesignh	-	kW
Declared capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	Pdh	11.2	kW
heating / Warmer (2℃)	Pdh	-	kW
heating / Colder (-22℃)	Pdh	-	kW
Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	10.0	kW
Tj=30℃	Pdc	7.37	kW
Tj=25℃	Pdc	5.50	kW
Tj=20℃	Pdc	5.70	kW
Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	9.91	kW
Tj=2℃	Pdh	6.03	kW
Tj=7℃	Pdh	4.13	kW
Tj=12℃	Pdh	4.90	kW
Tj=bivalent temperature	Pdh	11.2	kW
Tj=operating limit	Pdh	7.80	kW
Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Tj=-15℃	Pdh	-	kW
Bivalent temperature			
heating / Average	Tbiv	-10	℃
heating / Warmer	Tbiv	-	℃
heating / Colder	Tbiv	-	℃
Cycling interval capacity			
for cooling	Pcycc	-	kW
for heating	Pcych	-	kW
Degradation coefficient			
cooling	Cdc	0.25	-
Electric power input in power modes other than 'active mode'			
off mode	Poff	20	W
standby mode	Psb	20	W
thermostat-off mode	Pto	50	W
crankcase heater mode	Pck	25	W

Item	symbol	value	class
Seasonal efficiency and energy efficiency class			
cooling	SEER	5.84	A+
heating / Average	SCOP/A	4.17	A+
heating / Warmer	SCOP/W	-	-
heating / Colder	SCOP/C	-	-
			unit
Back up heating capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	elbu	-	kW
Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	EERd	3.92	-
Tj=30℃	EERd	5.80	-
Tj=25℃	EERd	8.70	-
Tj=20℃	EERd	11.52	-
Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	2.83	-
Tj=2℃	COPd	3.92	-
Tj=7℃	COPd	5.73	-
Tj=12℃	COPd	6.85	-
Tj=bivalent temperature	COPd	2.59	-
Tj=operating limit	COPd	2.26	-
Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	-	-
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Tj=-15℃	COPd	-	-
Operating limit temperature			
heating / Average	Tol	-20	℃
heating / Warmer	Tol	-	℃
heating / Colder	Tol	-	℃
Cycling interval efficiency			
for cooling	EERcyc	-	-
for heating	COPcyc	-	-
Degradation coefficient			
heating	Cdh	0.25	-
Annual electricity consumption			
cooling	Qce	599	kWh/a
heating / Average	Qhe	3758	kWh/a
heating / Warmer	Qhe	-	kWh/a
heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)	
fixed	No
staged	No
variable	Yes

Other items			
Sound power level(indoor)	Lwa	64	dB(A)
Sound power level(outdoor)	Lwa	70	dB(A)
Global warming potential	GWP	1975	kgCO2eq.
Rated air flow(indoor)	-	1920	m3/h
Rated air flow(outdoor)	-	6000	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

A	PFA004Z024△

Model FDE71VNXPVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE40VGx2
Outdoor unit model name	FDC71VNX

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	7.1	kW	cooling	SEER	5.26	A
heating / Average	Pdesignh	6.0	kW	heating / Average	SCOP/A	4.09	A+
heating / Warmer	Pdesignh	-	kW	heating / Warmer	SCOP/W	-	-
heating / Colder	Pdesignh	-	kW	heating / Colder	SCOP/C	-	-

Declared capacity at outdoor temperature Tdesignh				Back up heating capacity at outdoor temperature Tdesignh			unit
heating / Average (-10℃)	Pdh	6.0	kW	heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	Pdh	-	kW	heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	Pdh	-	kW	heating / Colder (-22℃)	elbu	-	kW

Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	7.10	kW	Tj=35℃	EERd	3.46	-
Tj=30℃	Pdc	5.23	kW	Tj=30℃	EERd	5.30	-
Tj=25℃	Pdc	3.37	kW	Tj=25℃	EERd	7.93	-
Tj=20℃	Pdc	3.15	kW	Tj=20℃	EERd	11.25	-

Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	5.31	kW	Tj=-7℃	COPd	2.95	-
Tj=2℃	Pdh	3.23	kW	Tj=2℃	COPd	3.94	-
Tj=7℃	Pdh	2.08	kW	Tj=7℃	COPd	5.20	-
Tj=12℃	Pdh	2.44	kW	Tj=12℃	COPd	6.39	-
Tj=bivalent temperature	Pdh	6.00	kW	Tj=bivalent temperature	COPd	2.40	-
Tj=operating limit	Pdh	4.38	kW	Tj=operating limit	COPd	2.19	-

Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-

Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW	Tj=-7℃	COPd	-	-
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-

Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-10	℃	heating / Average	Tol	-20	℃
heating / Warmer	Tbiv	-	℃	heating / Warmer	Tol	-	℃
heating / Colder	Tbiv	-	℃	heating / Colder	Tol	-	℃

Cycling interval capacity				Cycling interval efficiency			
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-

Degradation coefficient				Degradation coefficient			
cooling	Cdc	0.25	-	heating	Cdh	0.25	-

Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode	Poff	18	W	cooling	Qce	473	kWh/a
standby mode	Psb	18	W	heating / Average	Qhe	2054	kWh/a
thermostat-off mode	Pto	26	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	25	W	heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)		Other items			
		Sound power level(indoor)	Lwa	60	dB(A)
		Sound power level(outdoor)	Lwa	66	dB(A)
fixed	No	Global warming potential	GWP	1975	kgCO2eq.
staged	No	Rated air flow(indoor)	-	780	m3/h
variable	Yes	Rated air flow(outdoor)	-	3600	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

PFA004Z024

Model FDE100VNXPVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE50VGx2
Outdoor unit model name	FDC100VNX

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)	
cooling	Yes
heating	Yes

Average(mandatory)	Yes
Warmer(if designated)	No
Colder(if designated)	No

Item	symbol	value	unit
Design load			
cooling	Pdesignc	10.0	kW
heating / Average	Pdesignh	10.8	kW
heating / Warmer	Pdesignh	-	kW
heating / Colder	Pdesignh	-	kW
Declared capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	Pdh	10.8	kW
heating / Warmer (2℃)	Pdh	-	kW
heating / Colder (-22℃)	Pdh	-	kW
Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	10.0	kW
Tj=30℃	Pdc	7.37	kW
Tj=25℃	Pdc	5.13	kW
Tj=20℃	Pdc	5.34	kW
Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	9.56	kW
Tj=2℃	Pdh	5.81	kW
Tj=7℃	Pdh	4.06	kW
Tj=12℃	Pdh	4.82	kW
Tj=bivalent temperature	Pdh	10.8	kW
Tj=operating limit	Pdh	7.60	kW
Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Tj=-15℃	Pdh	-	kW
Bivalent temperature			
heating / Average	Tbiv	-10	℃
heating / Warmer	Tbiv	-	℃
heating / Colder	Tbiv	-	℃
Cycling interval capacity			
for cooling	Pcycc	-	kW
for heating	Pcych	-	kW
Degradation coefficient			
cooling	Cdc	0.25	-
Electric power input in power modes other than 'active mode'			
off mode	Poff	20	W
standby mode	Psb	20	W
thermostat-off mode	Pto	26	W
crankcase heater mode	Pck	25	W

Item	symbol	value	class
Seasonal efficiency and energy efficiency class			
cooling	SEER	5.53	A
heating / Average	SCOP/A	3.94	A
heating / Warmer	SCOP/W	-	-
heating / Colder	SCOP/C	-	-
			unit
Back up heating capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	elbu	-	kW
Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	EERd	3.33	-
Tj=30℃	EERd	5.34	-
Tj=25℃	EERd	8.02	-
Tj=20℃	EERd	10.47	-
Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	2.72	-
Tj=2℃	COPd	3.75	-
Tj=7℃	COPd	5.27	-
Tj=12℃	COPd	6.16	-
Tj=bivalent temperature	COPd	2.36	-
Tj=operating limit	COPd	2.05	-
Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	-	-
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Tj=-15℃	COPd	-	-
Operating limit temperature			
heating / Average	Tol	-20	℃
heating / Warmer	Tol	-	℃
heating / Colder	Tol	-	℃
Cycling interval efficiency			
for cooling	EERcyc	-	-
for heating	COPcyc	-	-
Degradation coefficient			
heating	Cdh	0.25	-
Annual electricity consumption			
cooling	Qce	634	kWh/a
heating / Average	Qhe	3836	kWh/a
heating / Warmer	Qhe	-	kWh/a
heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)	
fixed	No
staged	No
variable	Yes

Other items			
Sound power level(indoor)	Lwa	60	dB(A)
Sound power level(outdoor)	Lwa	70	dB(A)
Global warming potential	GWP	1975	kgCO2eq.
Rated air flow(indoor)	-	780	m3/h
Rated air flow(outdoor)	-	6000	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

PFA004Z024

Model FDE100VSXPVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE50VGx2
Outdoor unit model name	FDC100VSX

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	10.0	kW	cooling	SEER	5.49	A
heating / Average	Pdesignh	10.8	kW	heating / Average	SCOP/A	3.94	A
heating / Warmer	Pdesignh	-	kW	heating / Warmer	SCOP/W	-	-
heating / Colder	Pdesignh	-	kW	heating / Colder	SCOP/C	-	-

Declared capacity at outdoor temperature Tdesignh				Back up heating capacity at outdoor temperature Tdesignh			unit
heating / Average (-10℃)	Pdh	10.8	kW	heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	Pdh	-	kW	heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	Pdh	-	kW	heating / Colder (-22℃)	elbu	-	kW

Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	10.0	kW	Tj=35℃	EERd	3.33	-
Tj=30℃	Pdc	7.37	kW	Tj=30℃	EERd	5.34	-
Tj=25℃	Pdc	5.13	kW	Tj=25℃	EERd	8.02	-
Tj=20℃	Pdc	5.34	kW	Tj=20℃	EERd	10.47	-

Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	9.56	kW	Tj=-7℃	COPd	2.72	-
Tj=2℃	Pdh	5.81	kW	Tj=2℃	COPd	3.75	-
Tj=7℃	Pdh	4.06	kW	Tj=7℃	COPd	5.27	-
Tj=12℃	Pdh	4.82	kW	Tj=12℃	COPd	6.16	-
Tj=bivalent temperature	Pdh	10.8	kW	Tj=bivalent temperature	COPd	2.36	-
Tj=operating limit	Pdh	7.60	kW	Tj=operating limit	COPd	2.05	-

Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-

Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW	Tj=-7℃	COPd	-	-
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-

Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-10	℃	heating / Average	Tol	-20	℃
heating / Warmer	Tbiv	-	℃	heating / Warmer	Tol	-	℃
heating / Colder	Tbiv	-	℃	heating / Colder	Tol	-	℃

Cycling interval capacity				Cycling interval efficiency			
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-

Degradation coefficient				Degradation coefficient			
cooling	Cdc	0.25	-	heating	Cdh	0.25	-

Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode	Poff	20	W	cooling	Qce	638	kWh/a
standby mode	Psb	20	W	heating / Average	Qhe	3840	kWh/a
thermostat-off mode	Pto	46	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	25	W	heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)		Other items			
		Sound power level(indoor)	Lwa	60	dB(A)
		Sound power level(outdoor)	Lwa	70	dB(A)
fixed	No	Global warming potential	GWP	1975	kgCO2eq.
staged	No	Rated air flow(indoor)	-	780	m3/h
variable	Yes	Rated air flow(outdoor)	-	6000	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

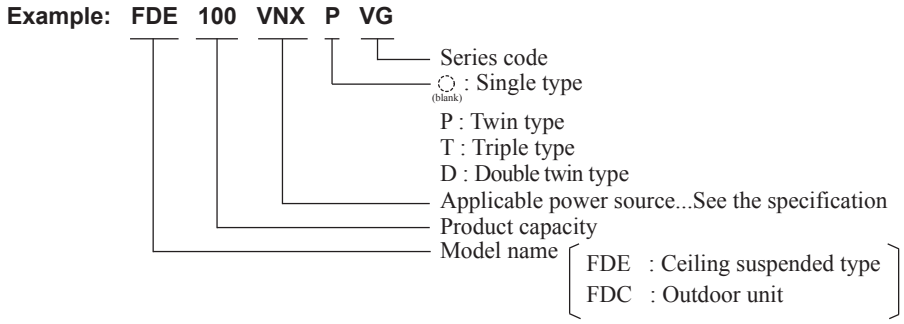
PFA004Z024A

2. MICRO INVERTER PACKAGED AIR-CONDITIONERS

CONTENTS

2.1 SPECIFICATIONS 280
2.2 EXTERIOR DIMENSIONS 301
(1) Indoor units 301
(2) Outdoor units 301
(3) Remote control (Option parts) 305
2.3 ELECTRICAL WIRING 306
(1) Indoor units 306
(2) Outdoor units 306
2.4 NOISE LEVEL 312
2.5 TEMPERATURE AND VELOCITY DISTRIBUTION 315
2.6 PIPING SYSTEM 315
2.7 RANGE OF USAGE & LIMITATIONS 322
2.8 SELECTION CHART 326
2.8.1 Capacity tables 326
2.8.2 Correction of cooling and heating capacity in relation to air flow rate control (fan speed) 342
2.8.3 Correction of cooling and heating capacity in relation to one way length of refrigerant piping 342
2.8.4 Height difference between the indoor unit and outdoor unit 342
2.9 APPLICATION DATA 344
2.9.1 Installation of indoor unit 344
2.9.2 Electric wiring work installation 344
2.9.3 Installation of wired remote control (Option) 344
2.9.4 Installation of outdoor unit 344
(1) Models FDC71, 90VNP 344
(2) Models FDC100－140VN, 100－140VS 351
(3) Models FDC200, 250VSA 359
2.9.5 Method for connecting the accessory pipe 367
2.9.6 Instructions for branching pipe set (DIS-WA1,WB1,TA1,TB1) 371
2.10 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER 374
2.10.1 Remote control 374
2.10.2 Operation control function by the wired remote control 374
2.10.3 Operation control function by the indoor control 374
2.10.4 Operation control function by the outdoor control 374
(Ⅰ) Models FDC71, 90VNP 374
(1) Compressor command speed 374
(2) Compressor protection start 374
(3) Outdoor unit fan control 374
(4) Defrost operation 376
(5) Cooling overload protective control 377
(6) Cooling high pressure control 377
(7) Cooling low outdoor temperature protective control 377

(8) Heating high pressure control 378
(9) Heating overload protective control 378
(10) Heating low outdoor temperature protective control 379
(11) Compressor overheat protection 379
(12) Current safe 379
(13) Current cut 380
(14) Outdoor unit failure 380
(15) Serial signal transmission error protection 380
(16) Rotor lock 380
(17) Refrigeration cycle system protection 380
(18) Silent mode 380
(19) Broken wire detection on temperature sensoe 381
(Ⅱ) Models FDC100－140VN, 100－140VS 382
(1) Determination of comressor speed (Frequency) 382
(2) Compressor start control 382
(3) Compressor soft start control 383
(4) Outdoor unit fan control 383
(5) Defrost operation 386
(6) Protective control/anomalous stop control by compressor's number of revolutions 387
(7) Silent mode 390
(8) Test run 390
(9) Pump-down control 391
(10) Base heater ON/OFF output control (Option) 391
(Ⅲ) Models FDC200, 250VSA 392
(1) Determination of comressor speed (Frequency) 392
(2) Compressor start control 392
(3) Compressor soft start control 393
(4) Outdoor unit fan control 393
(5) Defrost operation 395
(6) Protective control/anomalous stop control by compressor's number of revolutions 396
(7) Silent mode 400
(8) Test run 400
(9) Pump-down control 400
(10) Base heater ON/OFF output control (Option) 401
2.11 MAINTENANCE DATA 401
2.12 TECHNICAL INFORMATION 402



2.1 SPECIFICATIONS

(1) Single type

Item			Model	FDE71VNPVG	
				Indoor unit **FDE71VG**	Outdoor unit **FDC71VNP**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	7.1 [1.4(Min.)-7.1(Max.)]	
	Nominal heating capacity (range)		kW	7.1 [1.0(Min.)-7.1(Max.)]	
	Power consumption	Cooling	kW	2.50	
		Heating		1.96	
	Max power consumption			3.27	
	Running current	Cooling	A	11.3 / 11.8	
		Heating		8.8 / 9.2	
	Inrush current, max current			5 , 14.5	
	Power factor	Cooling	%	96	
		Heating		97	
	EER	Cooling		2.84	
	COP	Heating		3.62	
	Sound power level	Cooling	dB(A)	60	67
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	54
		Heating			
	Silent mode sound pressure level			—	49
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	640×800(+71)×290
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	33	45
Compressor type & Q'ty				—	RMT5113MCE2 (Twin rotary type)×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.45 MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 1.6kg in outdoor unit (incl. the amount for the piping of : 15m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Capillary tubes + Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	50 < Direct line start >	34 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	36
		Heating			
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Compressor overheat protection, Overcurrent protection, Frost protection, Serial signal error protection, Indoor fan motor error protection, Heating overload protection(High pressure control), Cooling overload protection	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ6.35(1/4")x0.8 O/U ϕ6.35 (1/4")	
				Gas line: I/U ϕ15.88 (5/8") Pipe ϕ12.7(1/2")x0.8 O/U ϕ12.7 (1/2")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.30m	
	Vertical height diff. between O.U. and I.U.		m	Max.20m (Outdoor unit is higher)	Max.20m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 5pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			1.5mm^2×4 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IPX4
Standard accessories				Mounting kit, Drain hose	Drain elbow, Drain hole grommet
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

Item			Model	FDE90VNPVG	
				Indoor unit **FDE100VG**	Outdoor unit **FDC90VNP**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	9.0 [1.9(Min.)-9.0(Max.)]	
	Nominal heating capacity (range)		kW	9.0 [1.5(Min.)-9.0(Max.)]	
	Power consumption	Cooling	kW	2.75	
		Heating		2.22	
	Max power consumption			4.19	
	Running current	Cooling	A	12.3 / 12.9	
		Heating		10.0 / 10.4	
	Inrush current, max current			5 , 18.0	
	Power factor	Cooling	%	97	
		Heating		97	
	EER	Cooling		3.27	
	COP	Heating		4.05	
	Sound power level	Cooling	dB(A)	64	69
		Heating			
	Sound pressure level	Cooling		P-Hi : 48 Hi : 43 Me : 38 Lo : 34	57
		Heating			55
	Silent mode sound pressure level			—	Cooling:52 / Heating:50
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	750 x 880(+88) x 340
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	43	57
Compressor type & Q'ty				—	RMT5118MDE2 (Twin rotary type)×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.675 MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 2.1kg in outdoor unit (incl. the amount for the piping of : 15m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Capillary tubes + Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	80 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 26 Me : 21 Lo : 16.5	63
		Heating			49.5
Available external static pressure			Pa	0	0
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve (for fan motor & compressor)
Electric heater			W	—	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Compressor overheat protection, Overcurrent protection, Frost protection, Serial signal error protection, Indoor fan motor error protection, Heating overload protection(High pressure control), Cooling overload protection	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ6.35(1/4")x0.8 O/U ϕ6.35 (1/4")	
				Gas line: I/U ϕ15.88 (5/8") Pipe ϕ15.8851/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.30m	
	Vertical height diff. between O.U. and I.U.		m	Max.20m (Outdoor unit is higher)	Max.20m (Outdoor unit is lower)
	Drain hose			Hose connectable with VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			1.5mm²×4 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IPX4
Standard accessories				Mounting kit, Drain hose	Drain elbow, Drain hole grommet
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

Item			Model	FDE100VNVG	
				Indoor unit **FDE100VG**	Outdoor unit **FDC100VN**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]	
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-12.5(Max.)]	
	Power consumption	Cooling	kW	2.85	
		Heating		2.90	
	Max power consumption			4.16	
	Running current	Cooling	A	12.5 / 13.1	
		Heating		12.7 / 13.3	
	Inrush current, max current			5 , 24	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		3.51	
	COP	Heating		3.86	
	Sound power level	Cooling	dB(A)	64	70
		Heating			
	Sound pressure level	Cooling	dB(A)	P-Hi : 48 Hi : 43 Me : 38 Lo : 34	49
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	43	81
Compressor type & Q'ty				—	RMT5126MDE2 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	80 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 26 Me : 21 Lo : 16.5	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

Item			Model	FDE100VSVG	
				Indoor unit **FDE100VG**	Outdoor unit **FDC100VS**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]	
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-12.5(Max.)]	
	Power consumption	Cooling	kW	2.85	
		Heating		2.90	
	Max power consumption			4.16	
	Running current	Cooling	A	4.2 / 4.4	
		Heating		4.2 / 4.5	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		3.51	
	COP	Heating		3.86	
	Sound power level	Cooling	dB(A)	64	70
		Heating			
	Sound pressure level	Cooling	dB(A)	P-Hi : 48 Hi : 43 Me : 38 Lo : 34	49
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	43	83
Compressor type & Q'ty				—	RMT5126MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	80 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 26 Me : 21 Lo : 16.5	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Operation \ Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

Item			Model	FDE125VNVG	
				Indoor unit **FDE125VG**	Outdoor unit **FDC125VN**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]	
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-16.0(Max.)]	
	Power consumption	Cooling	kW	4.45	
		Heating		4.08	
	Max power consumption			5.79	
	Running current	Cooling	A	19.5 / 20.4	
		Heating		16.6 / 17.4	
	Inrush current, max current			5 , 24	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		2.81	
	COP	Heating		3.43	
	Sound power level	Cooling	dB(A)	64	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 48 Hi : 45 Me : 40 Lo : 35	50
		Heating			51
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	43	81
Compressor type & Q'ty				—	RMT5126MDE2 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	80 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 29 Me : 23 Lo : 17	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Operation \ Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

Item			Model	FDE125VSVG	
				Indoor unit **FDE125VG**	Outdoor unit **FDC125VS**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]	
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-16.0(Max.)]	
	Power consumption	Cooling	kW	4.45	
		Heating		4.08	
	Max power consumption			5.79	
	Running current	Cooling	A	6.5 / 6.8	
		Heating		5.5 / 5.8	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		2.81	
	COP	Heating		3.43	
	Sound power level	Cooling	dB(A)	64	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 48 Hi : 45 Me : 40 Lo : 35	50
		Heating			51
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	43	83
Compressor type & Q'ty				—	RMT5126MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	80 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 29 Me : 23 Lo : 17	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Operation \ Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item			Model	FDE140VNVG	
				Indoor unit **FDE140VG**	Outdoor unit **FDC140VN**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-14.5(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-16.5(Max.)]	
	Power consumption	Cooling	kW	5.80	
		Heating		4.92	
	Max power consumption			7.54	
	Running current	Cooling	A	25.5 / 26.6	
		Heating		20.2 / 21.1	
	Inrush current, max current			5 , 24	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		2.41	
	COP	Heating		3.25	
	Sound power level	Cooling	dB(A)	65	73
		Heating			
	Sound pressure level	Cooling	dB(A)	P-Hi : 49 Hi : 45 Me : 40 Lo : 36	51
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	43	81
Compressor type & Q'ty				—	RMT5126MDE2 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	90 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 34 Hi : 29 Me : 23 Lo : 18	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Operation \ Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

Item			Model	FDE140VSVG	
				Indoor unit **FDE140VG**	Outdoor unit **FDC140VS**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-14.5(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-16.5(Max.)]	
	Power consumption	Cooling	kW	5.80	
		Heating		4.92	
	Max power consumption			7.54	
	Running current	Cooling	A	8.5 / 8.9	
		Heating		6.7 / 7.1	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		2.41	
	COP	Heating		3.25	
	Sound power level	Cooling	dB(A)	65	73
		Heating			
	Sound pressure level	Cooling	dB(A)	P-Hi : 49 Hi : 45 Me : 40 Lo : 36	51
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	43	83
Compressor type & Q'ty				—	RMT5126MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	90 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 34 Hi : 29 Me : 23 Lo : 18	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") Pipe ϕ9.52(3/8")x0.8 O.U. ϕ9.52 (3/8")	
				Gas line: ϕ15.88 (5/8") ϕ15.88(5/8")x1.0 ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(2) Twin type

Item			Model	FDE100VNPVG	
				Indoor unit **FDE50VG (2 units)**	Outdoor unit **FDC100VN**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]	
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-12.5(Max.)]	
	Power consumption	Cooling	kW	3.12	
		Heating		3.49	
	Max power consumption			4.89	
	Running current	Cooling	A	13.7 / 14.3	
		Heating		15.3 / 16.0	
	Inrush current, max current			5 , 24	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		3.21	
	COP	Heating		3.21	
	Sound power level	Cooling	dB(A)	60	70
		Heating			
	Sound pressure level	Cooling	dB(A)	P-Hi : 46 Hi : 38 Me : 36 Lo : 31	49
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	28	81
Compressor type & Q'ty				—	RMT5126MDE2 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×1
Fan motor (Starting method)			W	30 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U

Item			Model	FDE100VSPVG	
				Indoor unit **FDE50VG (2 units)**	Outdoor unit **FDC100VS**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]	
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-12.5(Max.)]	
	Power consumption	Cooling	kW	3.12	
		Heating		3.49	
	Max power consumption			4.89	
	Running current	Cooling	A	4.6 / 4.8	
		Heating		5.1 / 5.4	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		3.21	
	COP	Heating		3.21	
	Sound power level	Cooling	dB(A)	60	70
		Heating			
	Sound pressure level	Cooling	dB(A)	P-Hi : 46 Hi : 38 Me : 36 Lo : 31	49
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	28	83
Compressor type & Q'ty				—	RMT5126MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×1
Fan motor (Starting method)			W	30 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U

Item			Model	FDE125VNPVG	
				Indoor unit **FDE60VG (2 units)**	Outdoor unit **FDC125VN**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]	
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-16.0(Max.)]	
	Power consumption	Cooling	kW	4.16	
		Heating		3.80	
	Max power consumption			5.50	
	Running current	Cooling	A	18.3 / 19.1	
		Heating		16.7 / 17.4	
	Inrush current, max current			5 , 24	
	Power factor	Cooling	%	99	
		Heating		99	
	EER	Cooling		3.00	
	COP	Heating		3.68	
	Sound power level	Cooling	dB(A)	60	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	50
		Heating			51
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	33	81
Compressor type & Q'ty				—	RMT5126MDE2 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	50 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U φ6.35 (1/4") ② φ9.52(3/8")x0.8 ① φ9.52(3/8")x0.8 O/U φ9.52 (3/8")	
				Gas line: I/U φ12.7 (1/2") ② φ12.7(1/2")x0.8 ① φ15.88(5/8")x1.0 O/U φ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size φ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			φ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE125VSPVG	
				Indoor unit **FDE60VG (2 units)**	Outdoor unit **FDC125VS**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]	
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-16.0(Max.)]	
	Power consumption	Cooling	kW	4.16	
		Heating		3.80	
	Max power consumption			5.50	
	Running current	Cooling	A	6.1 / 6.4	
		Heating		5.5 / 5.8	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		3.00	
	COP	Heating		3.68	
	Sound power level	Cooling	dB(A)	60	72
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	50
		Heating			51
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	33	83
Compressor type & Q'ty				—	RMT5126MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	50 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U φ6.35 (1/4") ② φ9.52(3/8")x0.8 ① φ9.52(3/8")x0.8 O/U φ9.52 (3/8")	
				Gas line: I/U φ12.7 (1/2") ② φ12.7(1/2")x0.8 ① φ15.88(5/8")x1.0 O/U φ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size φ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			φ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE140VNPVG	
				Indoor unit **FDE71VG (2 units)**	Outdoor unit **FDC140VN**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-14.5(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-16.5(Max.)]	
	Power consumption	Cooling	kW	4.87	
		Heating		4.59	
	Max power consumption			6.33	
	Running current	Cooling	A	21.6 / 22.6	
		Heating		20.1 / 21.0	
	Inrush current, max current			5 , 24	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		2.87	
	COP	Heating		3.49	
	Sound power level	Cooling	dB(A)	60	73
		Heating			
	Sound pressure level	Cooling	dB(A)	P-Hi : 47 Hi : 41 Me : 37 Lo : 32	51
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	33	81
Compressor type & Q'ty				—	RMT5126MDE2 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	50 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: I/U ϕ15.88 (5/8") ② ϕ15.88(5/8")x1.0 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U

Item			Model	FDE140VSPVG	
				Indoor unit **FDE71VG (2 units)**	Outdoor unit **FDC140VS**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-14.5(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-16.5(Max.)]	
	Power consumption	Cooling	kW	4.87	
		Heating		4.59	
	Max power consumption			6.33	
	Running current	Cooling	A	7.2 / 7.6	
		Heating		6.7 / 7.0	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		2.87	
	COP	Heating		3.49	
	Sound power level	Cooling	dB(A)	60	73
		Heating			
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	51
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	33	83
Compressor type & Q'ty				—	RMT5126MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×1
Fan motor (Starting method)			W	50 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: I/U ϕ15.88 (5/8") ② ϕ15.88(5/8")x1.0 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE200VSAPVG	
				Indoor unit **FDE100VG (2 units)**	Outdoor unit **FDC200VSA**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	19.0 [5.2(Min.)-22.4(Max.)]	
	Nominal heating capacity (range)		kW	22.4 [3.3(Min.)-25.0(Max.)]	
	Power consumption	Cooling	kW	6.34	
		Heating		6.10	
	Max power consumption			12.0	
	Running current	Cooling	A	9.7 / 10.2	
		Heating		9.4 / 9.9	
	Inrush current, max current			5 , 20	
	Power factor	Cooling	%	94	
		Heating		94	
	EER	Cooling		3.00	
	COP	Heating		3.67	
	Sound power level	Cooling	dB(A)	64	72
		Heating			74
	Sound pressure level	Cooling		P-Hi : 48 Hi : 43 Me : 38 Lo : 34	58
		Heating			59
	Silent mode sound pressure level			—	52
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	43	115
Compressor type & Q'ty				—	RMT5134MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9(compressor) + 0.6(unit) M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 5.6kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	80 < Direct line start >	86 x 2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 32 Hi : 26 Me : 21 Lo : 16.5	135
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U φ9.52 (3/8") ② φ9.52(3/8")x0.8 ① φ9.52(3/8")x0.8 or φ12.7(1/2")x0.8 O/U φ9.52 (3/8")	
				Gas line: I/U φ15.88 (5/8") ② φ15.88(5/8")x1.0 ① φ22.22(7/8")x1.0 or φ25.4(1")x1.0 or φ28.58(1 1/8")x1.0 O/U φ22.22 (7/8")	
	Connecting method			Flare piping	Liquid : Flare / Gas : Brazing
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.70m(Liquid piping: φ12.7, Gas piping: φ25.4 or φ28.58), Max.40m(Liquid piping: φ9.52, Max.35m(Gas piping: φ22.22)	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size φ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5/5	
Interconnecting wires	Size x Core number			φ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Connecting pipe, Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U
(9) Use 1/2H pipes having a 1.0mm or thicker wall for φφ19.05 or larger pipes.

Item			Model	FDE250VSAPVG	
				Indoor unit **FDE125VG (2 units)**	Outdoor unit **FDC250VSA**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	24.0 [6.9(Min.)-28.0(Max.)]	
	Nominal heating capacity (range)		kW	27.0 [5.5(Min.)-31.5(Max.)]	
	Power consumption	Cooling	kW	8.52	
		Heating		7.54	
	Max power consumption			13.7	
	Running current	Cooling	A	13.4 / 14.1	
		Heating		11.8 / 12.5	
	Inrush current, max current			5 , 21	
	Power factor	Cooling	%	92	
		Heating		92	
	EER	Cooling		2.82	
	COP	Heating		3.58	
	Sound power level	Cooling	dB(A)	64	73
		Heating			75
	Sound pressure level	Cooling		P-Hi : 48 Hi : 45 Me : 40 Lo : 35	59
		Heating			62
	Silent mode sound pressure level			—	54
Exterior dimensions (Height x Width x Depth)			mm	250 × 1,620 × 690	1,505×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	43	143
Compressor type & Q'ty				—	GTC5150NC40KF ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	1.45 M-MA32R
Refrigerant (Type, amount, pre-charge length)			kg	R410A 7.2kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	80 < Direct line start >	86 x 2 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 29 Me : 23 Lo : 17	143
		Heating			151
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U φ9.52 (3/8") ② φ9.52(3/8")x0.8 ① φ12.7(1/2")x0.8 O/U φ12.7 (1/2")	
				Gas line: I/U φ15.88 (5/8") ② φ15.88(5/8")x1.0 ① φ22.22(7/8")x1.0 or φ25.4(1")x1.0 or φ28.58(1 1/8")x1.0 O/U φ22.22 (7/8")	
	Connecting method			Flare piping	Liquid : Flare / Gas : Brazing
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.70m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size φ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5/5	
Interconnecting wires	Size x Core number			φ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Connecting pipe, Edging
Option parts				—	

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

Operation \ Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are two indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U
(9) Use 1/2H pipes having a 1.0mm or thicker wall for φ9.05 or larger pipes.

(3) Triple type

Item			Model	FDE140VNTVG	
				Indoor unit **FDE50VG (3 units)**	Outdoor unit **FDC140VN**
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-14.5(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-16.5(Max.)]	
	Power consumption	Cooling	kW	4.88	
		Heating		4.57	
	Max power consumption			6.34	
	Running current	Cooling	A	21.7 / 22.6	
		Heating		20.1 / 21.0	
	Inrush current, max current			5 , 24	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		2.87	
	COP	Heating		3.50	
	Sound power level	Cooling	dB(A)	60	73
		Heating			
	Sound pressure level	Cooling	dB(A)	P-Hi : 46 Hi : 38 Me : 36 Lo : 31	51
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	28	81
Compressor type & Q'ty				—	RMT5126MDE2 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×1
Fan motor (Starting method)			W	30 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are three indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U

Item			Model	FDE140VSTVG	
				Indoor unit **FDE50VG (3 units)**	Outdoor unit **FDC140VS**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-14.5(Max.)]	
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-16.5(Max.)]	
	Power consumption	Cooling	kW	4.88	
		Heating		4.57	
	Max power consumption			6.34	
	Running current	Cooling	A	7.2 / 7.6	
		Heating		6.7 / 7.0	
	Inrush current, max current			5 , 15	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		2.87	
	COP	Heating		3.50	
	Sound power level	Cooling	dB(A)	60	73
		Heating			
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31	51
		Heating			
	Silent mode sound pressure level			—	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	845×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	28	83
Compressor type & Q'ty				—	RMT5126MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×1
Fan motor (Starting method)			W	30 < Direct line start >	86 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	75
		Heating			73
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ6.35 (1/4") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ② ϕ12.7(1/2")x0.8 ① ϕ15.88(5/8")x1.0 O/U ϕ15.88 (5/8")	
	Connecting method			Flare piping	Flare piping
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.50m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5.0	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are three indoor units combined and run together.
(8) Branching pipe set "DIS-WA1"×1(option). ① : Pipe of O/U-Branch ② : Pipe of Branch-I/U

PFA004Z024 A

Item			Model	FDE200VSATVG	
				Indoor unit **FDE71VG (3 units)**	Outdoor unit **FDC200VSA**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	19.0 [5.2(Min.)-22.4(Max.)]	
	Nominal heating capacity (range)		kW	22.4 [3.3(Min.)-25.0(Max.)]	
	Power consumption	Cooling	kW	6.33	
		Heating		5.94	
	Max power consumption			12.0	
	Running current	Cooling	A	9.7 / 10.2	
		Heating		9.1 / 9.6	
	Inrush current, max current			5 , 20	
	Power factor	Cooling	%	94	
		Heating		94	
	EER	Cooling		3.00	
	COP	Heating		3.77	
	Sound power level	Cooling	dB(A)	60	72
		Heating			74
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	58
		Heating			59
	Silent mode sound pressure level			—	52
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	33	115
Compressor type & Q'ty				—	RMT5134MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9(compressor) + 0.6(unit) M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 5.6kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	50 < Direct line start >	86 x 2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	135
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ9.52 (3/8") ② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 or ϕ12.7(1/2")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: I/U ϕ15.88 (5/8") ② ϕ15.88(5/8")x1.0 ① ϕ22.22(7/8")x1.0 or ϕ25.4(1")x1.0 or ϕ28.58(1 1/8")x1.0 O/U ϕ22.22 (7/8")	
	Connecting method			Flare piping	Liquid : Flare / Gas : Brazing
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.70m(Liquid piping: ϕ12.7, Gas piping: ϕ25.4 or ϕ28.58), Max.40m(Liquid piping: ϕ9.52, Max.35m(Gas piping: ϕ22.22)	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5/5	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Connecting pipe, Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO5151-T1
Heating	20℃	—	7℃	6℃	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are three indoor units combined and run together.
(8) Branching pipe set "DIS-TB1G"×1(option). ① : Pipe of O/U-Branch. ② : Pipe of Branch-I/U
(9) Use 1/2H pipes having a 1.0mm or thicker wall for ϕ19.05 or larger pipes.

(4) Double twin type

Item			Model	FDE200VSADVG	
				Indoor unit **FDE50VG (4 units)**	Outdoor unit **FDC200VSA**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	19.0 [5.2(Min.)-22.4(Max.)]	
	Nominal heating capacity (range)		kW	22.4 [3.3(Min.)-25.0(Max.)]	
	Power consumption	Cooling	kW	6.90	
		Heating		7.10	
	Max power consumption			12.0	
	Running current	Cooling	A	10.6 / 11.2	
		Heating		10.8 / 11.4	
	Inrush current, max current			5 , 20	
	Power factor	Cooling	%	94	
		Heating		95	
	EER	Cooling		2.75	
	COP	Heating		3.15	
	Sound power level	Cooling	dB(A)	60	72
		Heating			74
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31	58
		Heating			59
	Silent mode sound pressure level			—	52
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690	1,300×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	28	115
Compressor type & Q'ty				—	RMT5134MDE3 ×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	0.9(compressor) + 0.6(unit) M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 5.6kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×2	Propeller fan ×2
Fan motor (Starting method)			W	50 < Direct line start >	86 x 2 < Direct line start >
Air flow		Cooling / Heating	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7	135
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ6.35 (1/4") ③② ϕ9.52(3/8")x0.8 ① ϕ9.52(3/8")x0.8 or ϕ12.7(1/2")x0.8 O/U ϕ9.52 (3/8")	
				Gas line: I/U ϕ12.7 (1/2") ③ ϕ12.7x0.8 ③ ϕ15.88x1.0 ① ϕ22.22(7/8")x1.0 or ϕ25.4(1")x1.0 or ϕ28.58(1 1/8")x1.0 O/U ϕ22.22 (7/8")	
	Connecting method			Flare piping	Liquid : Flare / Gas : Brazing
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.70m(Liquid piping: ϕ12.7, Gas piping: ϕ25.4 or ϕ28.58), Max.40m(Liquid piping: ϕ9.52, Max.35m(Gas piping: ϕ22.22)	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5/5	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Connecting pipe, Edging
Option parts				—	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO5151-T1
Heating	20℃	—	7℃	6℃	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are four indoor units combined and run together.
(8) Branching pipe set "DIS-WB1G"×1,"DIS-WA1G"×2 (option). Pipe ① : O/U-Branch, ② : Branch-Branch, ③ : Branch-I/U
(9) Use 1/2H pipes having a 1.0mm or thicker wall for ϕ19.05 or larger pipes.

Item			Model	FDE250VSADVG	
				Indoor unit **FDE60VG (4 units)**	Outdoor unit **FDC250VSA**
Power source				3 Phase 380-415V 50Hz / 380V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	24.0 [6.9(Min.)-28.0(Max.)]	
	Nominal heating capacity (range)		kW	27.0 [5.5(Min.)-31.5(Max.)]	
	Power consumption	Cooling	kW	8.00	
		Heating		7.02	
	Max power consumption			13.7	
	Running current	Cooling	A	12.2 / 12.8	
		Heating		10.7 / 11.2	
	Inrush current, max current			5 , 21	
	Power factor	Cooling	%	95	
		Heating		95	
	EER	Cooling		3.00	
	COP	Heating		3.85	
	Sound power level	Cooling	dB(A)	60	73
		Heating			75
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32	59
		Heating			62
	Silent mode sound pressure level			—	54
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690	1,505×970×370
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent	Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	33	143
Compressor type & Q'ty				—	GTC5150NC40KF×1
Compressor motor (Starting method)			kW	—	Direct line start
Refrigerant oil (Amount, type)			ℓ	—	1.45 M-MA32R
Refrigerant (Type, amount, pre-charge length)			kg	R410A 7.2kg(Pre-charged up to the piping length of 30m)Outdoor unit	
Heat exchanger				Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Fan type & Q'ty				Centrifugal fan ×4	Propeller fan ×2
Fan motor (Starting method)			W	50 < Direct line start >	86 x 2 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10	143
		Heating			151
Available external static pressure			Pa	0	—
Outside air intake				Not possible	—
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)	—
Shock & vibration absorber				Rubber sleeve(for fan motor)	Rubber sleeve(for compressor)
Electric heater			W	—	20(Crank case heater)
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R	
	Room temperature control			Thermostat by electronics	
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow	
Safety equipments				Internal thermostat for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection.	
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: I/U ϕ6.35 (1/4") ③② ϕ9.52(3/8")x0.8 ① ϕ12.7(1/2")x0.8 O/U ϕ12.7 (1/2")	
				Gas line: I/U ϕ12.7 (1/2") ③ ϕ12.7x0.8 ② ϕ15.88x1.0 ① ϕ22.22(7/8")x1.0 or ϕ25.4(1")x1.0 or ϕ28.58(1 1/8")x1.0 O/U ϕ22.22 (7/8")	
	Connecting method			Flare piping	Liquid : Flare / Gas : Brazing
	Attached length of piping		m	—	—
	Insulation for piping			Necessary (both Liquid & Gas lines)	
	Refrigerant line (one way) length		m	Max.70m	
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher)	Max.15m (Outdoor unit is lower)
	Drain hose			Hose connectable VP20(O.D.26)	Holes size ϕ20 x 3pcs
Drain pump, max lift height			mm	—	—
Recommended breaker size			A	—	
L.R.A. (Locked rotor ampere)			A	5/5	
Interconnecting wires	Size x Core number			ϕ1.6mm×3 cores (Including earth cable) / Termainal block (Screw fixing type)	
IP number				IPX0	IP24
Standard accessories				Mounting kit, Drain hose	Connecting pipe, Edging
Option parts				—	

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

Operation \ Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO5151-T1
Heating	20℃	—	7℃	6℃	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) Select the breaker size according to the own national standard.
(5) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(6) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.
(7) Indoor unit specifications for one unit. Capacity and operation data are four indoor units combined and run together.
(8) Branching pipe set "DIS-WB1"×1,"DIS-WA1"×2 (option). Pipe ① : O/U-Branch, ② : Branch-Branch, ③ : Branch-I/U
(9) Use 1/2H pipes having a 1.0mm or thicker wall for ϕ19.05 or larger pipes.

PFA004Z024 A

2.2 EXTERIOR DIMENSIONS

(1) Indoor units ..... See page 24.

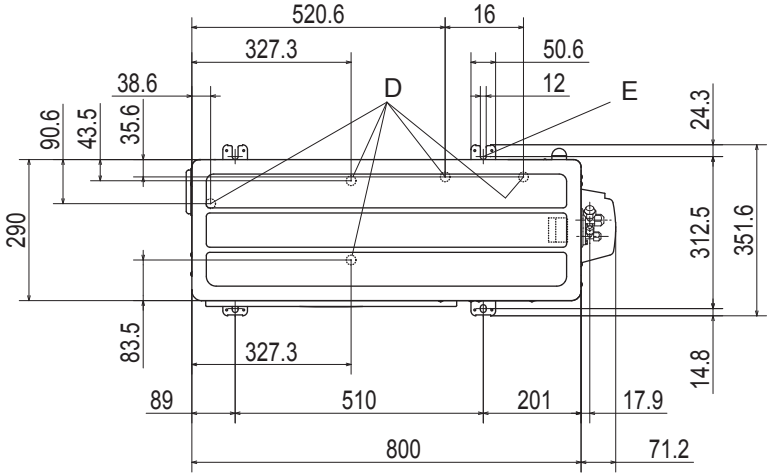
(2) Outdoor units

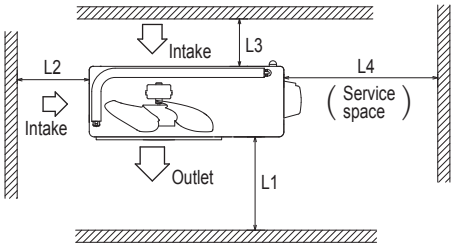
Model FDC71VNP

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

Notes

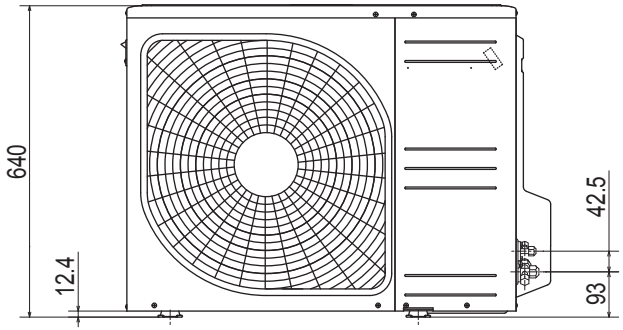
(1) It must not be surrounded by walls on the four sides.
(2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more than 15mm.
(3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.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

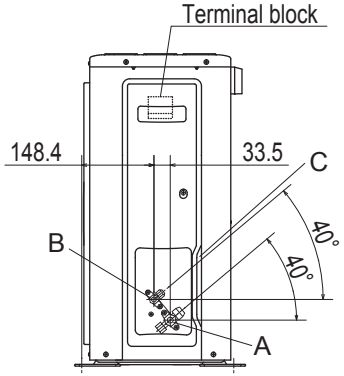




Minimum installation space

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





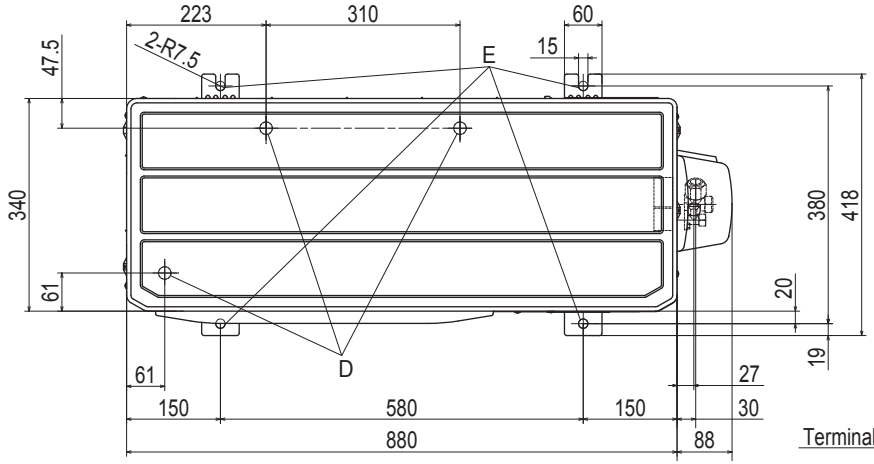
Unit:mm

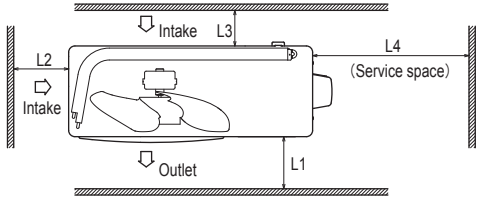
PCA001Z713

Symbol	Content	
A	Service valve connection (gas side)	φ15.88 (5／8") (Flare)
B	Service valve connection (liquid side)	φ6.35 (1／4") (Flare)
C	Pipe／cable draw-out hole	
D	Drain discharge hole	φ20 x 3 places
E	Anchor bolt hole	M10 x 4 places

Note

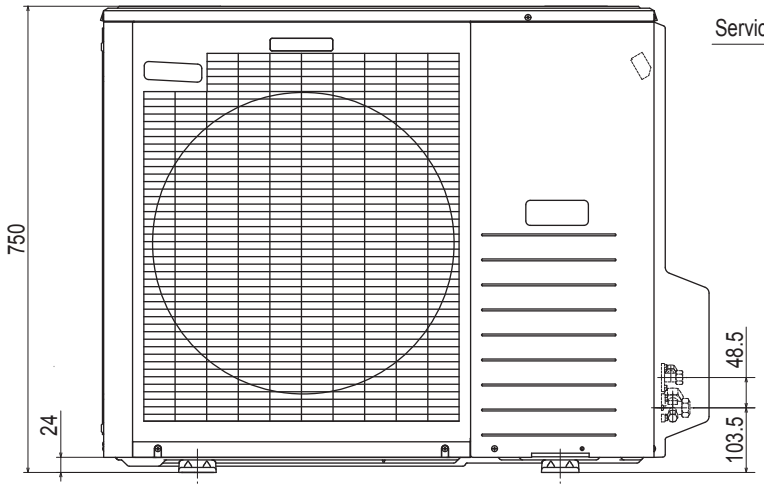
(1) It must not be surrounded by walls on four sides.
(2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more than 15mm.
(3) Where the unit is subjected to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.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

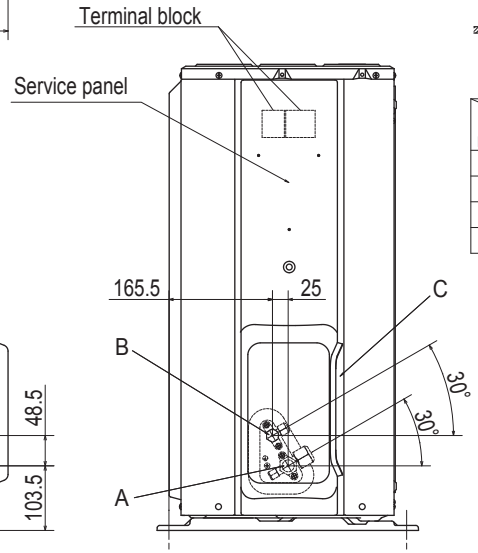




Minimum installation space

Dimensions \ Examples of installation	I	II	III
L1	Open	Open	500
L2	300	250	Open
L3	100	150	100
L4	250	250	250





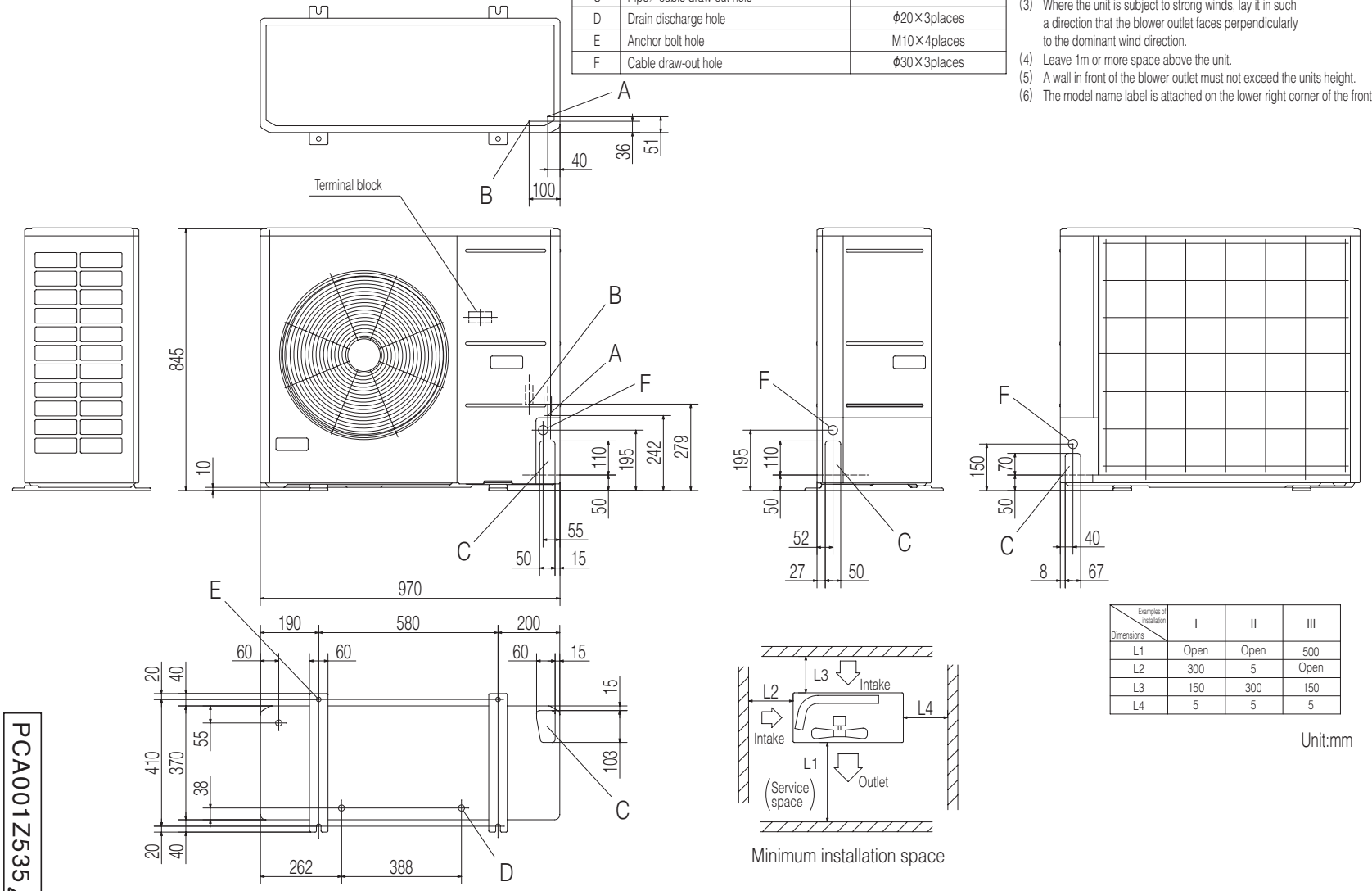
Unit:mm

PCA001Z714

Models FDC100VN, 125VN, 140VN
FDC100VS, 125VS, 140VS

Symbol	Content	
A	Service valve connection (gas side)	ϕ15.88 (5/8") (Flare)
B	Service valve connection (liquid side)	ϕ9.52 (3/8") (Flare)
C	Pipe/cable draw-out hole	
D	Drain discharge hole	ϕ20×3places
E	Anchor bolt hole	M10×4places
F	Cable draw-out hole	ϕ30×3places

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

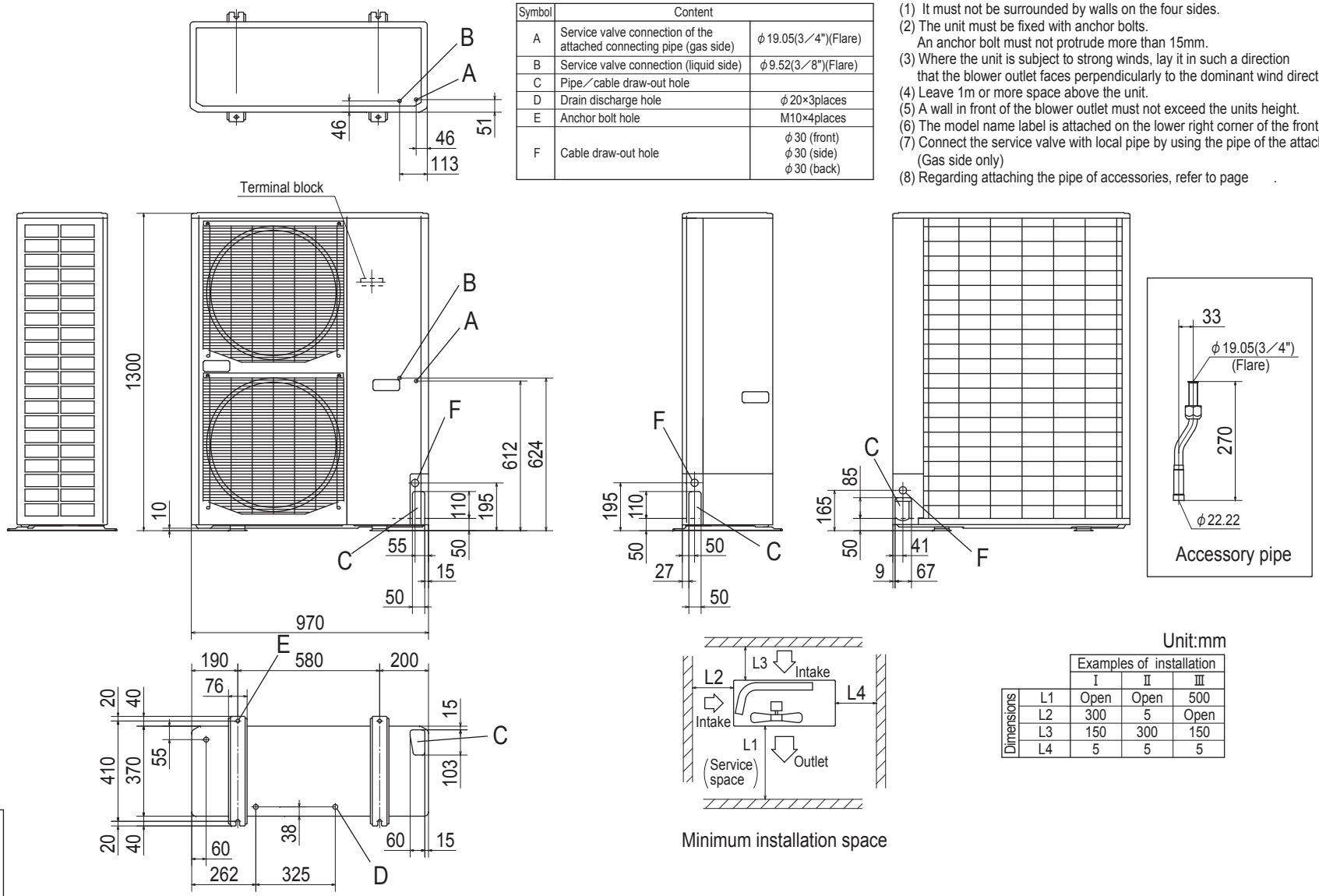


Minimum installation space

Dimensions \ Examples of installation	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

Unit:mm

PCA001Z535 A



Minimum installation space

Symbol	Content	
A	Service valve connection of the attached connecting pipe (gas side)	φ19.05(3／4")(Flare)
B	Service valve connection (liquid side)	φ9.52(3／8")(Flare)
C	Pipe／cable draw-out hole	
D	Drain discharge hole	φ20×3places
E	Anchor bolt hole	M10×4places
F	Cable draw-out hole	φ30 (front) φ30 (side) φ30 (back)

Notes

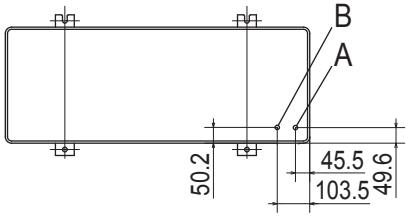
(1) It must not be surrounded by walls on the four sides.
(2) The unit must be fixed with anchor bolts.
An anchor bolt must not protrude more than 15mm.
(3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.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

Unit:mm

		Examples of installation		
		Ⅰ	Ⅱ	Ⅲ
Dimensions	L1	Open	Open	500
	L2	300	5	Open
	L3	150	300	150
	L4	5	5	5

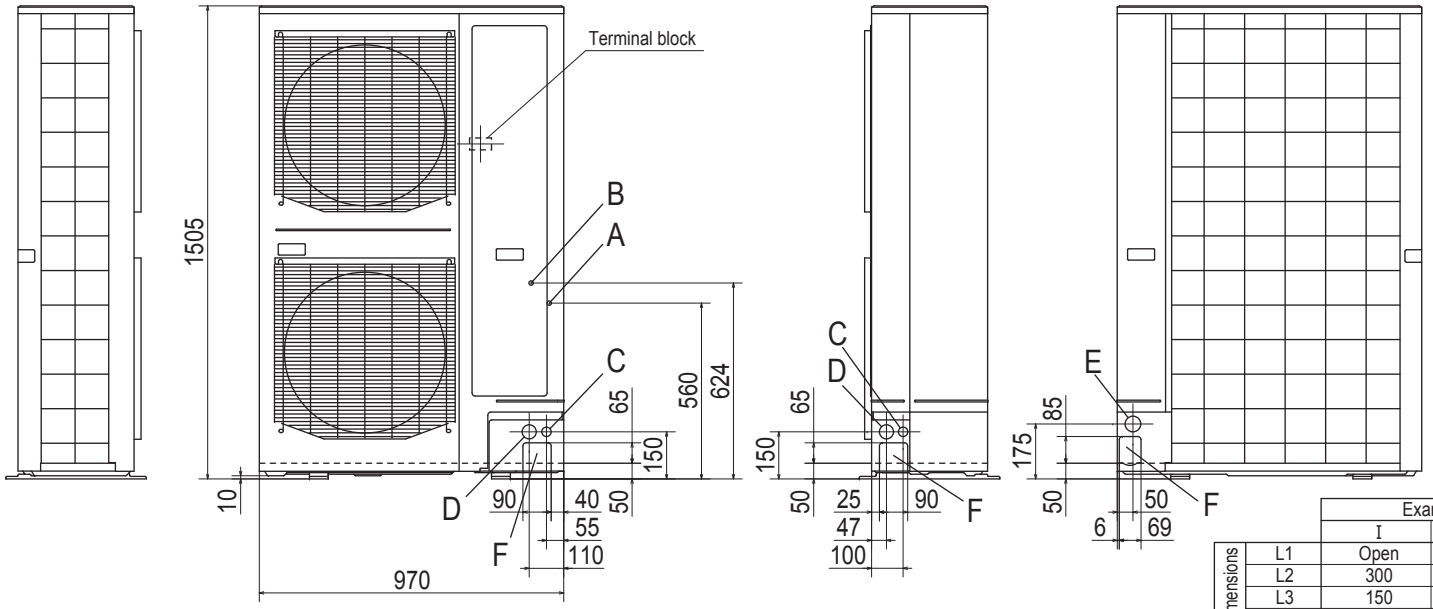
PCA001Z768

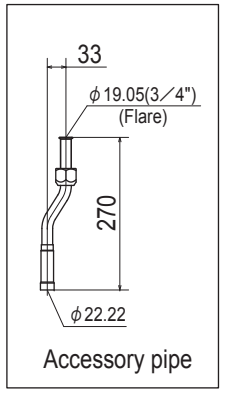
Model FDC250VSA



Symbol	Content	
A	Service valve connection of the attached connecting pipe(gas side)	φ19.05(3／4")(Flare)
B	Service valve connection (liquid side)	φ12.7(1／2")(Flare)
C	Cable draw-out hole (front･side)	φ30x2places
D	Cable draw-out hole (front･side)	φ45x2places
E	Cable draw-out hole (back)	φ50
F	Pipe／cable draw-out hole	4places
G	Drain discharge hole	φ20×3places
H	Anchor bolt hole	M10×4places

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

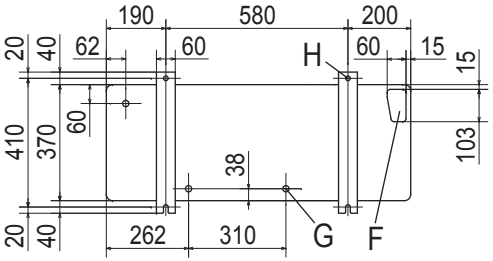


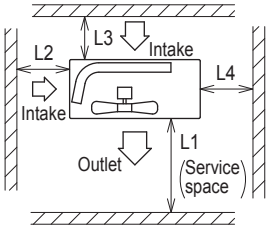


Unit:mm

		Examples of installation		
		Ⅰ	Ⅱ	Ⅲ
Dimensions	L1	Open	Open	500
	L2	300	5	Open
	L3	150	300	150
	L4	250(5) ※1	250(5) ※1	250(5) ※1

※1 At the time of the installation at ( ) dimension, Secure space of 250mm in lateral (L4) by unit movement at the time of the exchange work of the compressor.





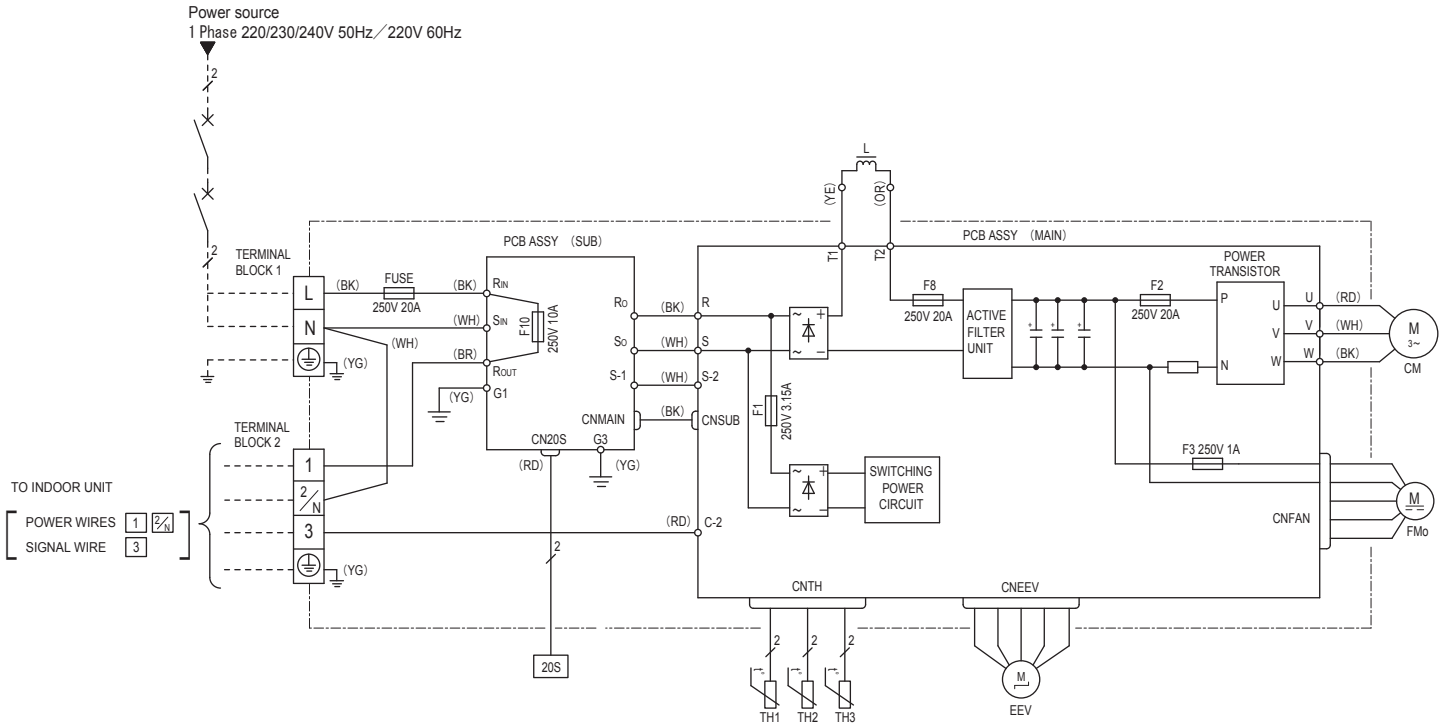
Minimum installation space

(3) Remote control (option parts) ..... **See page 30.**

PCB003Z865

2.3 ELECTRICAL WIRING

(1) Indoor units ..... See page 33.
(2) Outdoor units
Model FDC71VNP



Power cable, indoor-outdoor connecting wires

Model	MAX running current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm^2)
FDC71	14.5	2.0	15	1.5mm^2 x 4	1.5

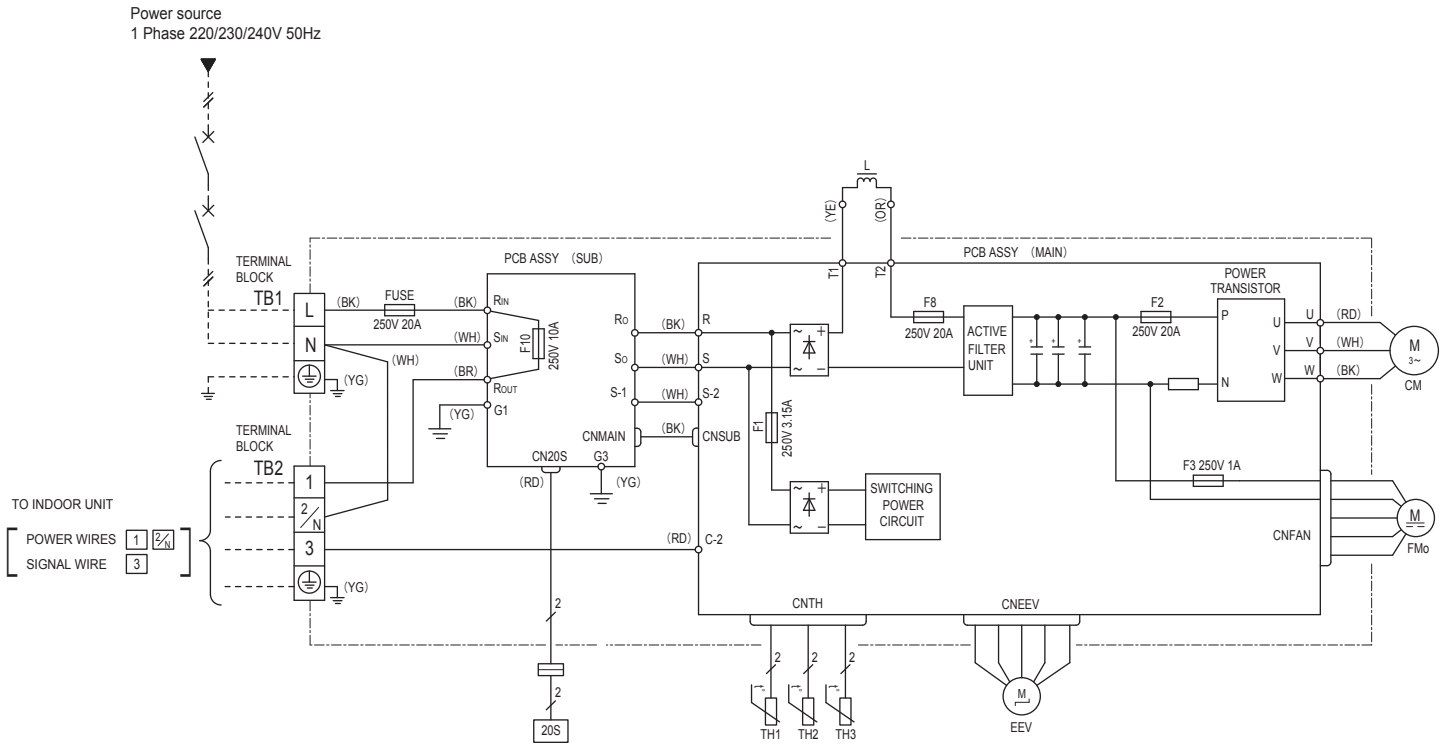
- The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- Switchgear of circuit breaker capacity which is calculated from MAX. over current should be chosen along the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

Meaning of marks

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

Color marks

Mark	Color
BK	Black
BR	Brown
OR	Orange
RD	Red
WH	White
YE	Yellow
YG	Yellow/Green



Power cable, indoor-outdoor connecting wires

Model	MAX running current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm^2)
FDC90	18	2.5	15	1.5mm^2 x 4	1.5

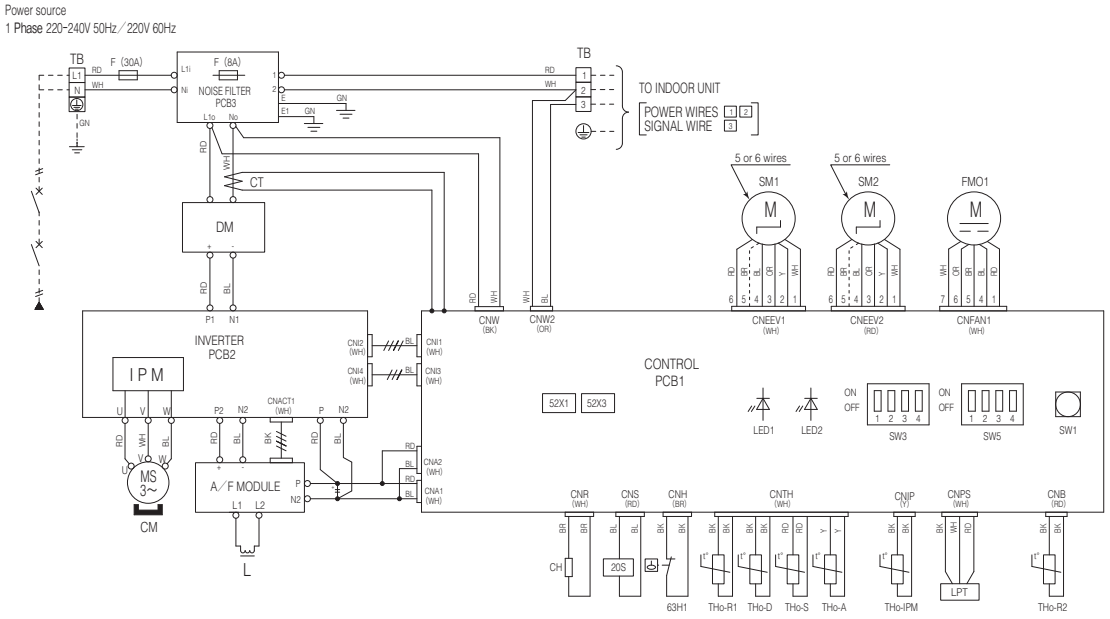
- The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- Switchgear of circuit breaker capacity which is calculated from MAX. over current should be chosen along the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

Meaning of marks

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

Color marks

Mark	Color
BK	Black
BR	Brown
OR	Orange
RD	Red
WH	White
YE	Yellow
YG	Yellow/Green



Meaning of marks

Item	Description
CnA-Z	Connector
CH	Crankcase heater
CM	Compressor motor
CT	Current sensor
DM	Diode module
F	Fuse
FM01	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
LPT	Low pressure sensor
SM1	Expansion valve for cooling
SM2	Expansion valve for heating
SW1	Pump down switch
SW3,5	Local setting switch
TB	Terminal block
THo-A	Thermistor (Outdoor air temp.)
THo-D	Thermistor (Discharge pipe temp.)
THo-IPM	Thermistor (IPM)
THo-R1,2	Thermistor (Heat exchanger pipe temp.)
THo-S	Thermistor (Suction pipe temp.)
20S	Solenoid valve for 4 way valve
52X1	Auxilliary relay (for CH)
52X3	Auxilliary relay (for 20S)
63H1	High pressure switch

Color marks

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

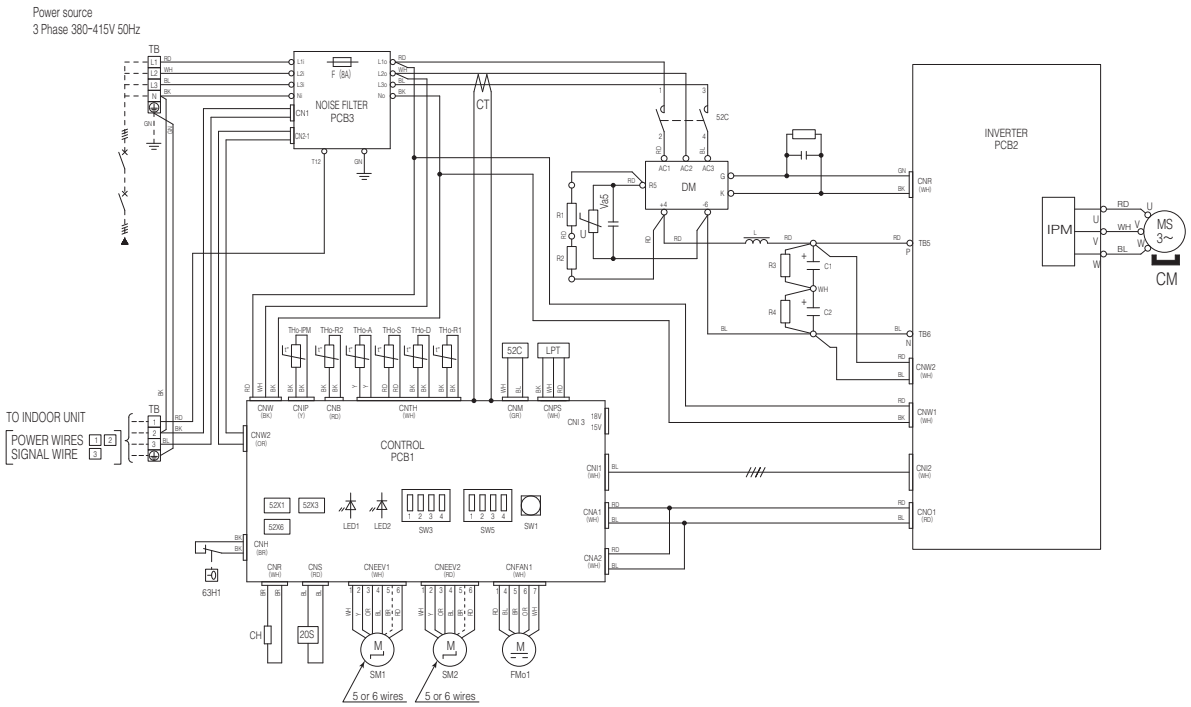
Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm)
FDC100	24	5.5	25	φ1.6mm x 3	φ1.6
FDC125					
FDC140					

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

Local setting switch SW3 (Set up at shipment OFF)

SW3-1	Defrost control change	The defrosting operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature falls to 3℃ or lower and the compressor is not runnning when the unit is used in a very snowy country, set this switch to ON.
SW3-3,4	Trial operation	Method of trial operation ①Trial operation can be performed by using SW3-3,4. ②Compressor will be in the operation when SW3-3 is ON. ③Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON. ④Be sure to turn OFF SW3-3 after the trial operation is finished.



Meaning of marks

Item	Description
CnA-Z	Connector
CH	Crankcase heater
CM	Compressor motor
CT	Current sensor
DM	Diode module
F	Fuse
FM01	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
LPT	Low pressure sensor
SM1	Expansion valve for cooling
SM2	Expansion valve for heating
SW1	Pump down switch
SW3,5	Local setting switch
TB	Terminal block
THo-A	Thermistor (Outdoor air temp.)
THo-D	Thermistor (Discharger pipe temp.)
THo-IPM	Thermistor (IPM)
THo-R1,2	Thermistor (Heat exchanger pipe temp.)
THo-S	Thermistor (Suction pipe temp.)
20S	Solenoid valve for 4 way valve
52X1	Auxilliary relay (for CH)
52X3	Auxilliary relay (for 20S)
52X6	Auxilliary relay (for 52C)
63H1	High pressure switch

Color marks

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

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm)
FDC100	15	3.5	27	Φ1.6mm x 3	Φ1.6
FDC125					
FDC140					

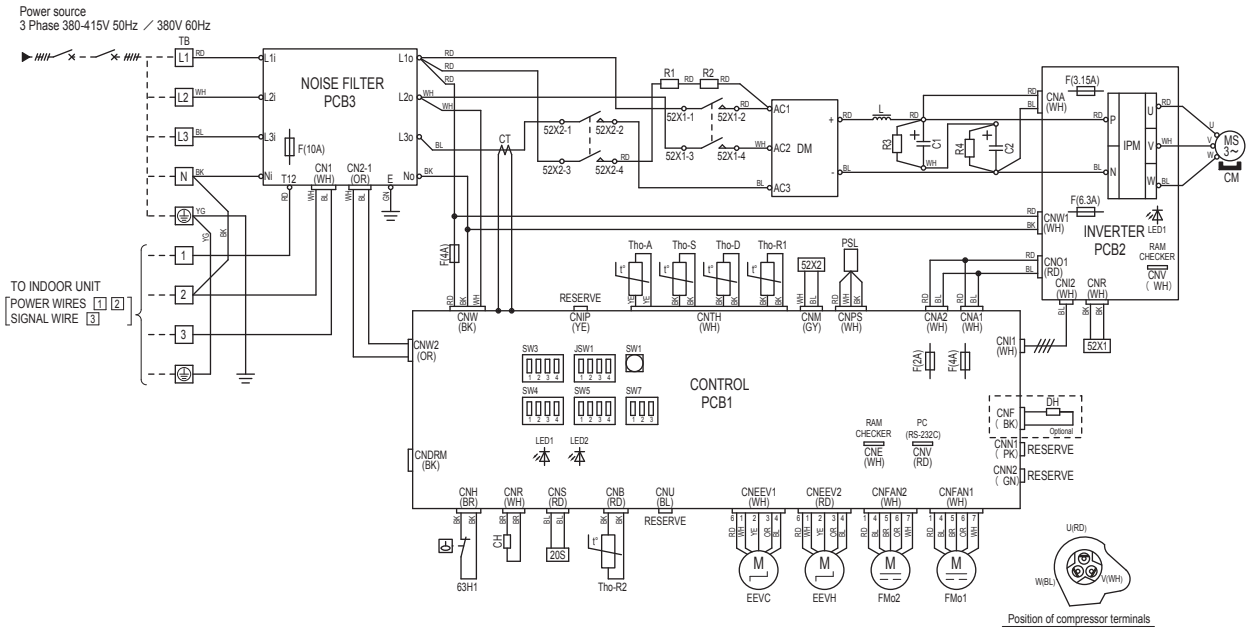
- The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- Switchgear of circuit breaker capacity which is calculated from MAX. over current should be chosen along the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

Local setting switch SW3 (Set up at shipment OFF)

SW3-1	Defrost control change	The defrosting operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature falls to 3℃ or lower and the compressor is not runnning when the unit is used in a very snowy country, set this switch to ON.
SW3-3,4	Trial operation	Method of trial operation ①Trial operation can be performed by using SW3-3,4. ②Compressor will be in the operation when SW3-3 is ON. ③Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON. ④Be sure to turn OFF SW3-3 after the trial operation is finished.

PCA001Z540 A

Model FDC200VSA



Meaning of marks

Mark	Parts name
CH	Crankcase heater
CM	Compressor motor
CNA－Z	Connector
CT	Current sensor
DH	Drain pan heater
DM	Diode module
F	Fuse
FMo1,2	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
PSL	Low pressure sensor
EEVC	Expansion valve for cooling
EEVH	Expansion valve for heating
SW1	Pump down switch
SW3-5, 7	Local setting switch
TB	Terminal block
Tho-A	Thermistor (Outdoor air temp.)
Tho- D	Thermistor (Discharge pipe temp.)
Tho- R1, R2	Thermistor (Heat exchanger temp.)
Tho- S	Thermistor (Suction pipe temp.)
20S	Solenoid coil for 4 way valve
52X1, 2	Relay
63H1	High pressure switch

Power cable, indoor-outdoor connecting wires

MAX over current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size
25	5.5	43	ϕ 1.6mm x 3	ϕ 1.6mm

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

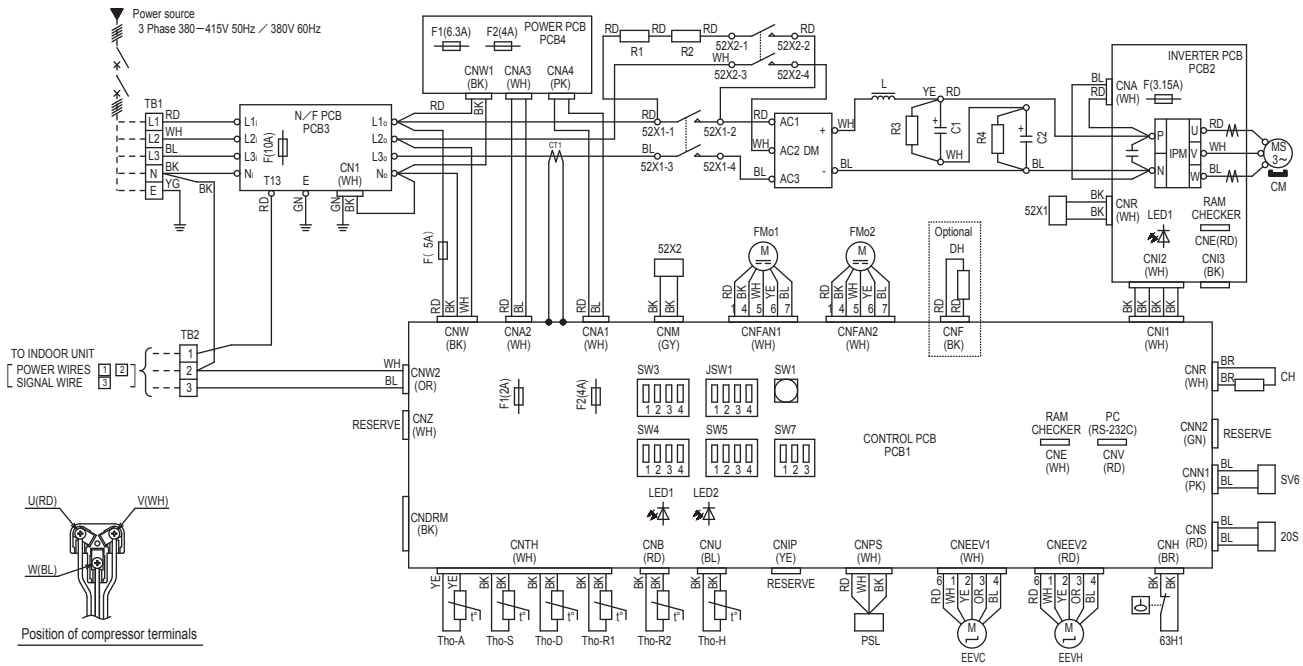
Local setting switch SW3（ Set up at shipment OFF）

SW3-1	Defrost control change	The defrosting operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature falls to 3℃ or lower and the compressor is not running when the unit is used in a very snowy country, set this switch to ON.
SW3-3,4	Trial operation	Method of trial operation ① Trial operation can be performed by using SW3-3,4. ② Compressor will be in the operation when SW3-3 is ON. ③ Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON. ④ Be sure to turn OFF SW3-3 after the trial operation is finished.

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
GN	Green
OR	Orange
RD	Red
WH	White
YE	Yellow
YG	Yellow/Green
GY	Gray
PK	Pink

PCA001Z769



Meaning of marks

Mark	Parts name
CH	Crankcase heater
CM	Compressor motor
CNA—Z	Connector
CT	Current sensor
DH	Drain pan heater
DM	Diode module
F	Fuse
FMo1,2	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
PSL	Low pressure sensor
EEVC	Expansion valve for cooling
EEVH	Expansion valve for heating
SW1	Pump down switch
SW3~5, 7	Local setting switch
TB	Terminal block
Tho-A	Thermistor (Outdoor air temp.)
Tho- D	Thermistor (Discharge pipe temp.)
Tho- R 1,R2	Thermistor (Heat exchanger temp.)
Tho-H	Thermistor (Comp. under dome temp.)
Tho-S	Thermistor (Suction pipe temp.)
20S	Solenoid coil for 4 way valve
SV6	Solenoid coil for 2 way valve
52X1, 2	Relay
63H1	High pressure switch

Power cable, indoor-outdoor connecting wires

MAX over current (A)	Power cable size (mm^2)	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size
27	5.5	40	ϕ1.6mm x 3	ϕ1.6mm

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

Local setting switch SW3（Set up at shipment OFF）

SW3-1	Defrost control change	The defrosting operation interval becomes shorter by turning ON this switch. This switch should be turned ON in the area where outside temperature becomes below the freezing point.
SW3-2	Snow guard fan control	When this switch is turned ON, the outdoor unit fan will run for 30 seconds in every 10 minutes, when outdoor temperature falls to 3℃ or lower and the compressor is not running when the unit is used in a very snowy country, set this switch to ON.
SW3-3,4	Trial operation	Method of trial operation ① Trial operation can be performed by using SW3-3,4. ② Compressor will be in the operation when SW3-3 is ON. ③ Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON. ④ Be sure to turn OFF SW3-3 after the trial operation is finished.

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
GN	Green
OR	Orange
RD	Red
WH	White
YE	Yellow
YG	Yellow／Green
GY	Gray
PK	Pink

2.4 NOISE LEVEL

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

(1) Indoor units ..... **See page 38.**

(2) Outdoor units

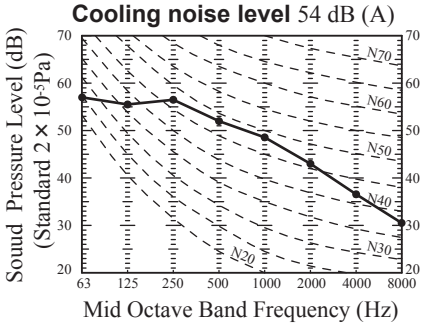
Measured based on ISO-T1, JIS B 8616
Mike position: at highest noise level in position as mentined below
Distance from front side 1m
Height 1m

(a) Models FDC71, 90VNP

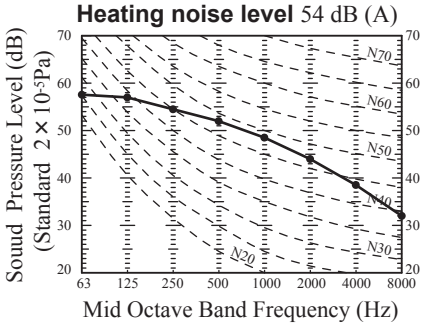
(i) Sound pressure level

Model FDC71VNP

Cooling noise level 54 dB (A)

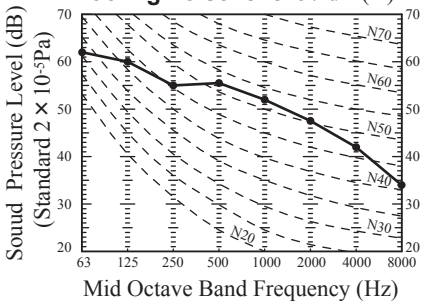


Heating noise level 54 dB (A)

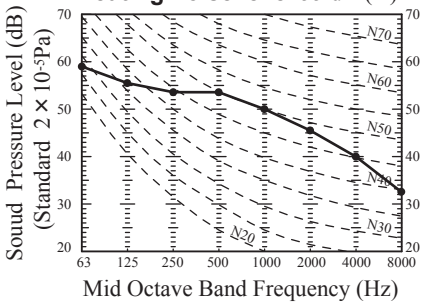


Model FDC90VNP

Cooling noise level 57 dB (A)



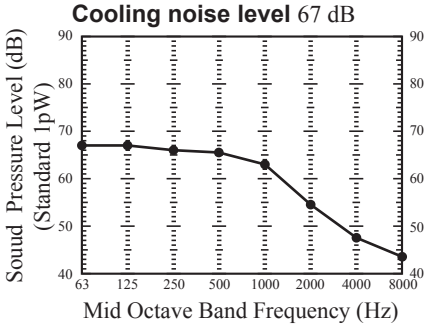
Heating noise level 55 dB (A)



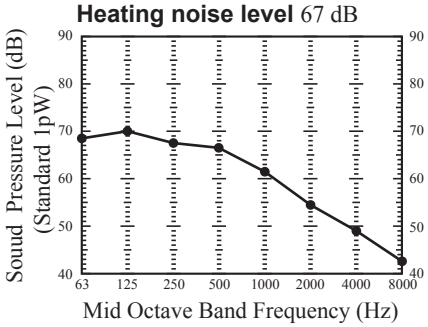
(ii) Sound power level

Model FDC71VNP

Cooling noise level 67 dB

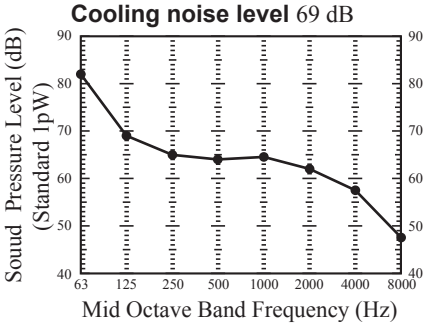


Heating noise level 67 dB

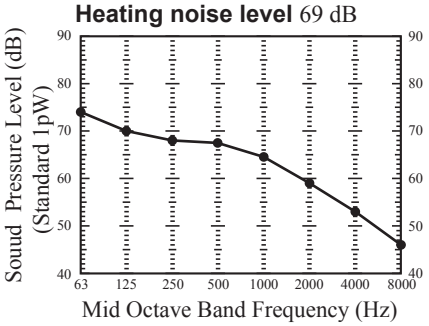


Model FDC90VNP

Cooling noise level 69 dB



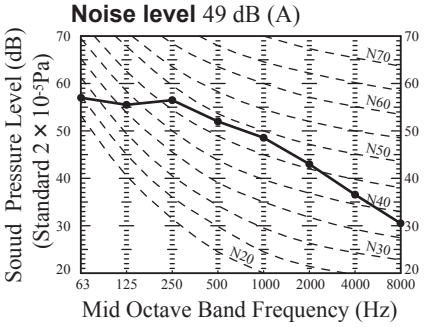
Heating noise level 69 dB



(b) Models FDC100, 125, 140VN, 100, 125, 140VS

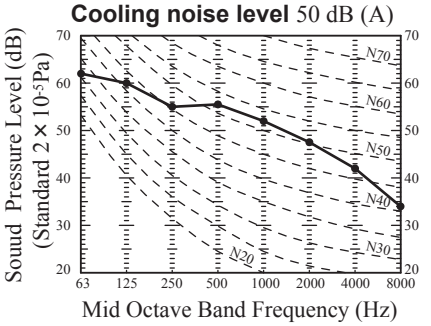
Models FDC100VN, 100VS

Noise level 49 dB (A)

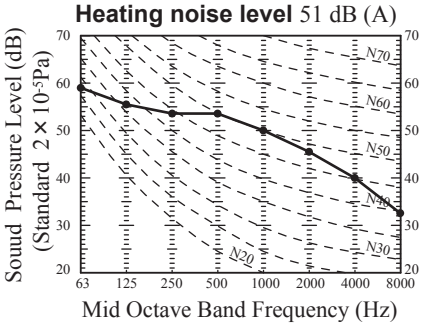


Models FDC125VN, 125VS

Cooling noise level 50 dB (A)

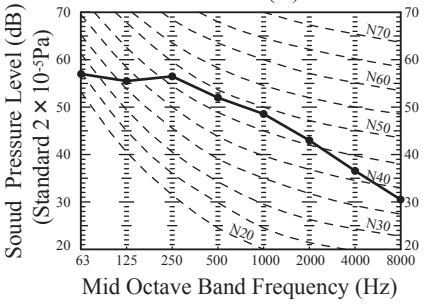


Heating noise level 51 dB (A)



Models FDC140VN, 140VS

Noise level 51 dB (A)

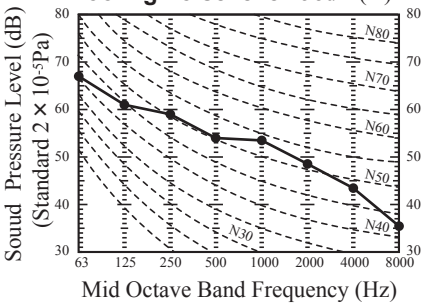


(c) Models FDC200, 250VSA

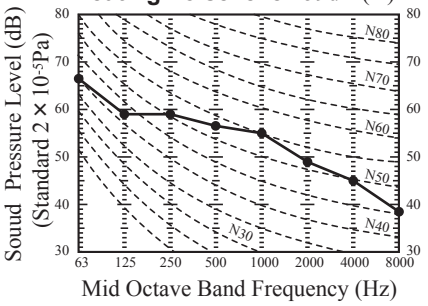
(i) Sound pressure level

Model FDC200VSA

Cooling noise level 58dB (A)

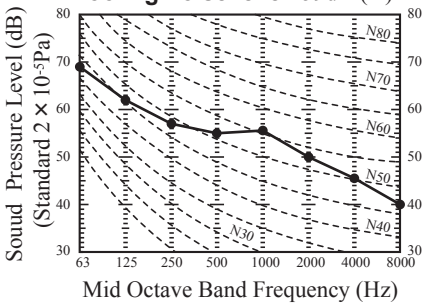


Heating noise level 59dB (A)

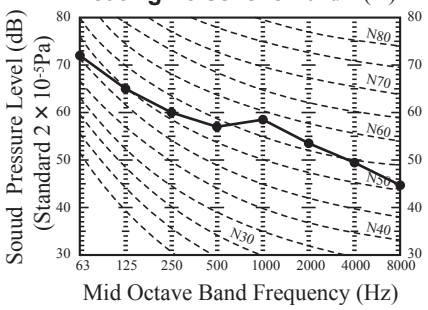


Model FDC250VSA

Cooling noise level 59dB (A)



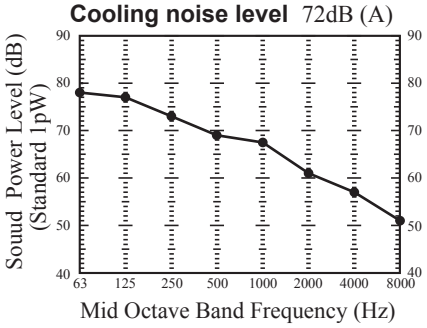
Heating noise level 62dB (A)



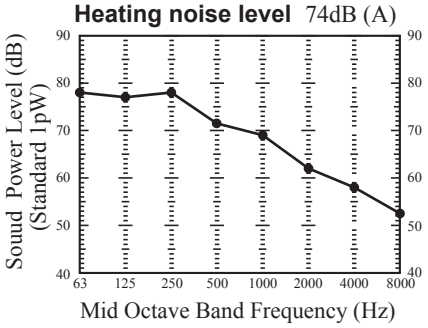
(ii) Sound power level

Model FDC200VSA

Cooling noise level 72dB (A)

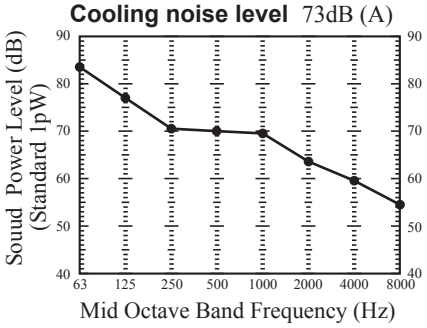


Heating noise level 74dB (A)

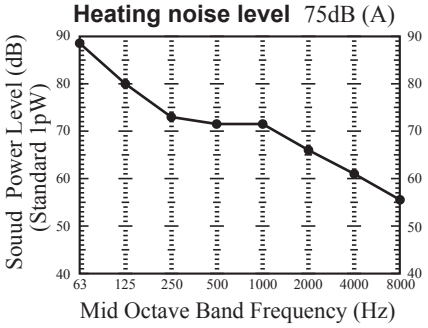


Model FDC250VSA

Cooling noise level 73dB (A)



Heating noise level 75dB (A)



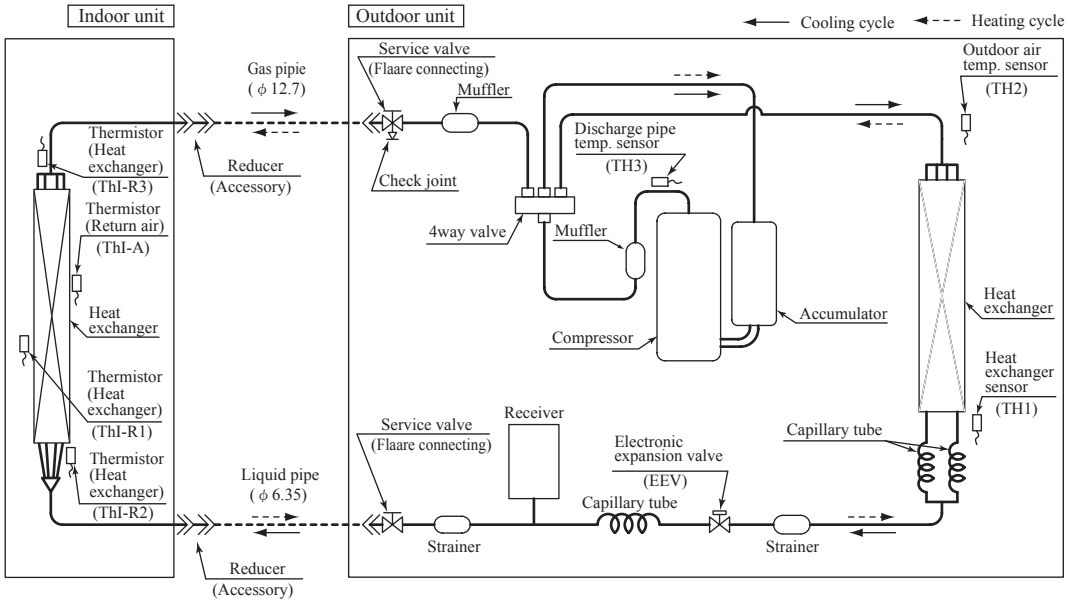
2.5 TEMPERATURE AND VELOCITY DISTRIBUTION

See page 41 of 1.5 chapter.

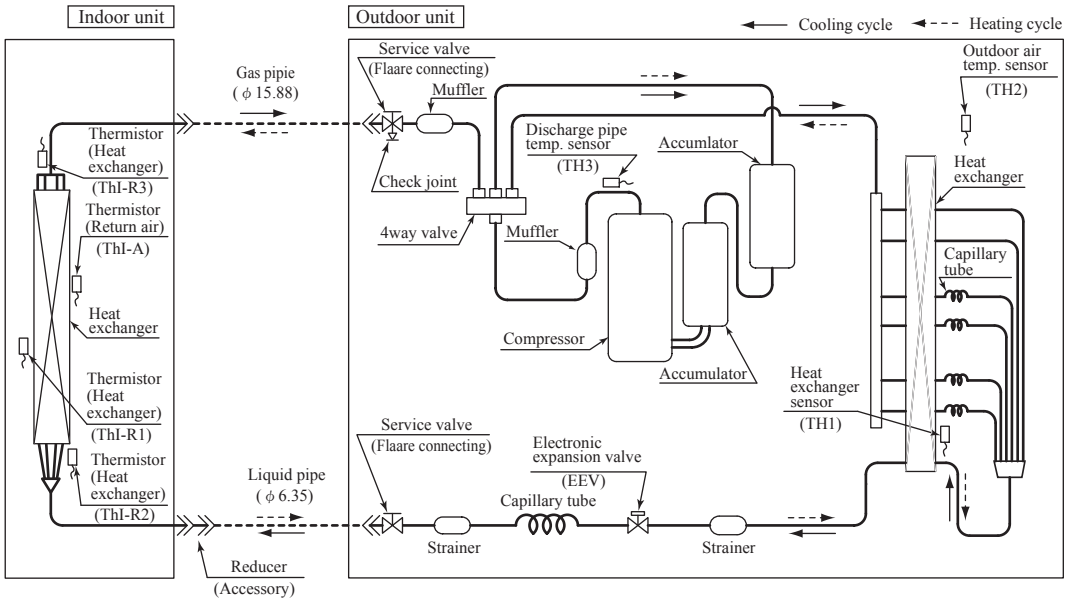
2.6 PIPING SYSTEM

(1) Single type

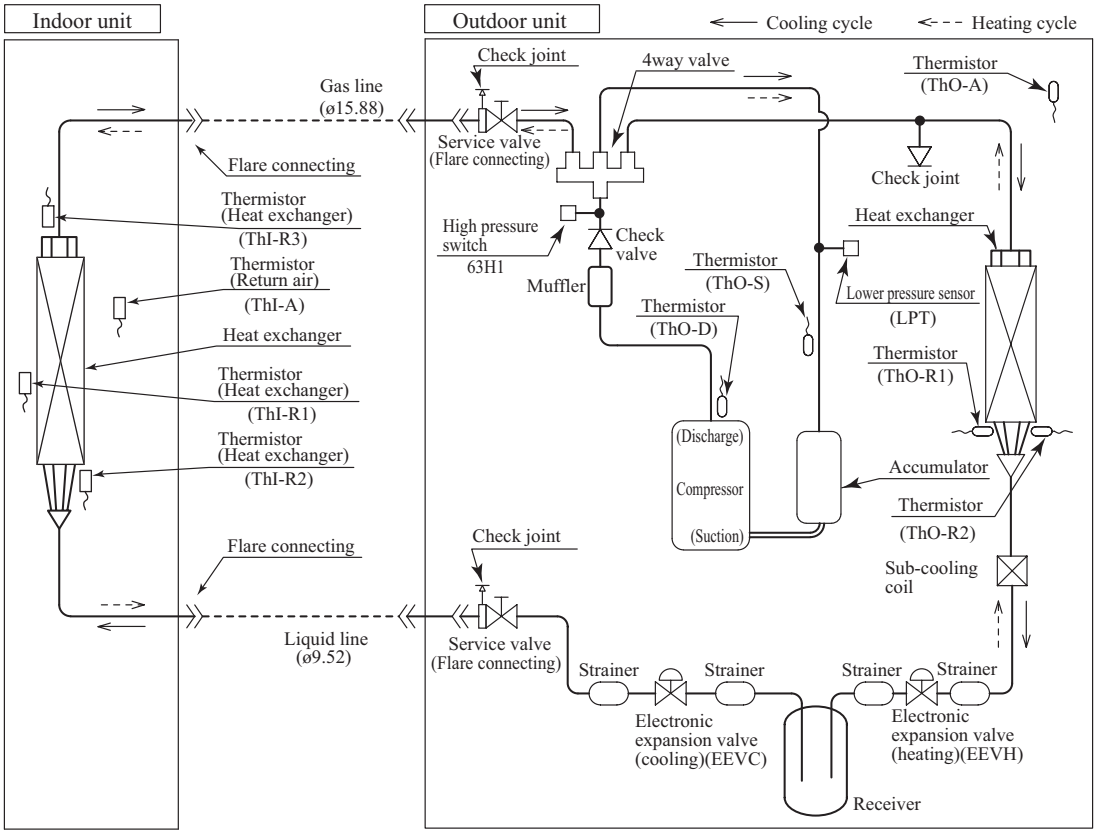
Model FDE71



Model FDE90

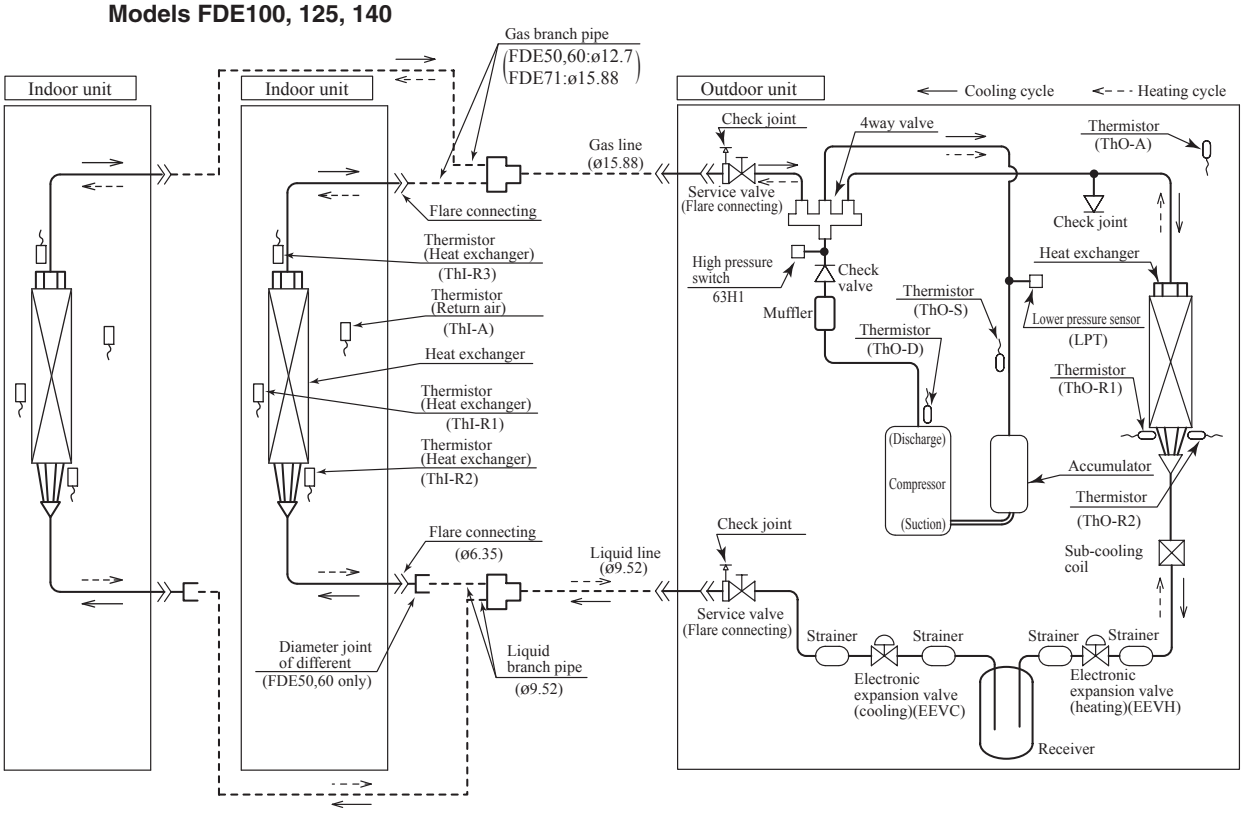


Models FDE100, 125, 140

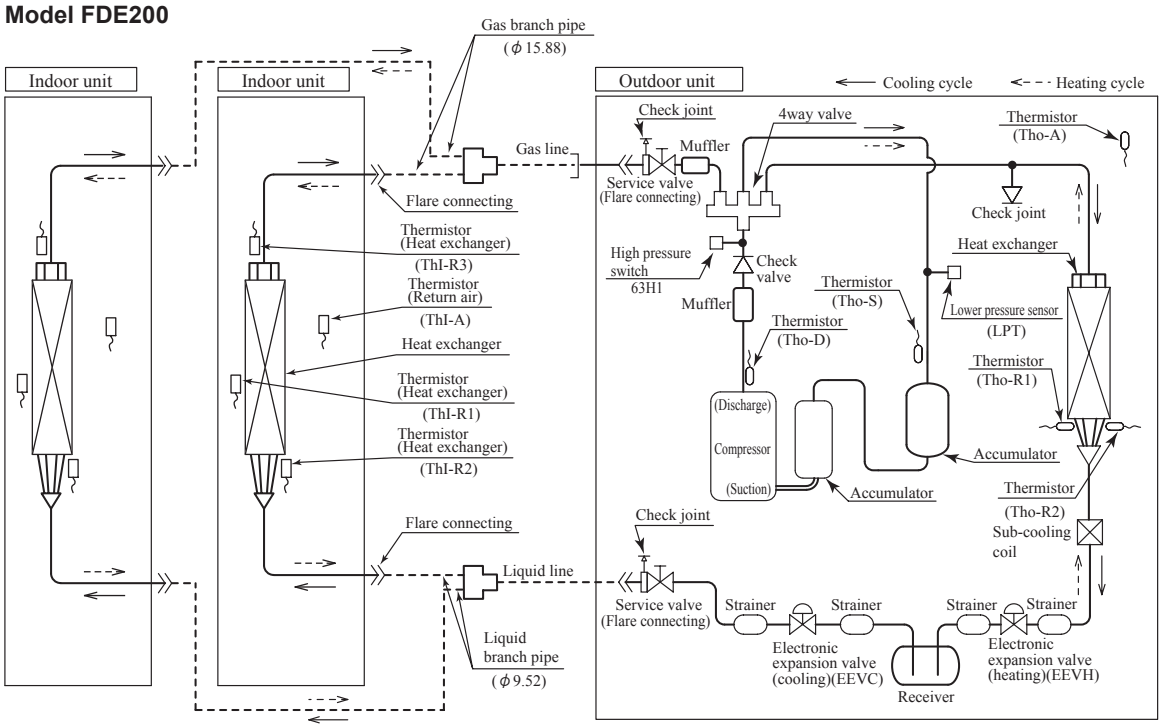


(2) Twin type

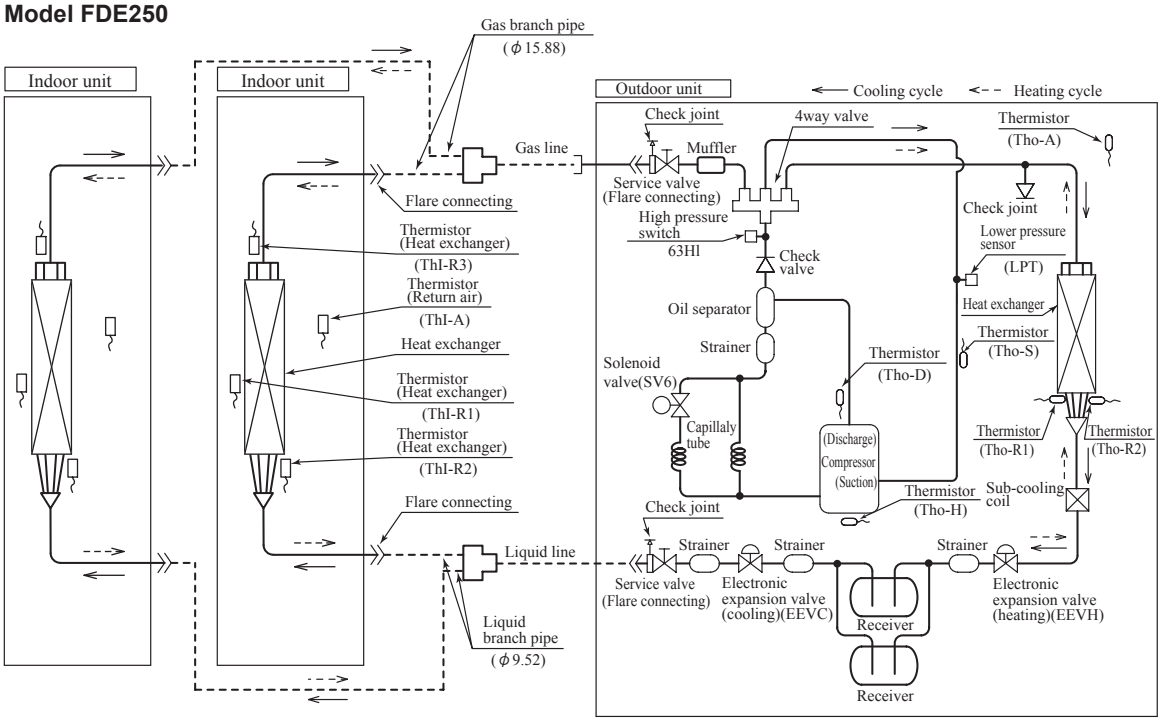
Models FDE100, 125, 140



Model FDE200



Model FDE250

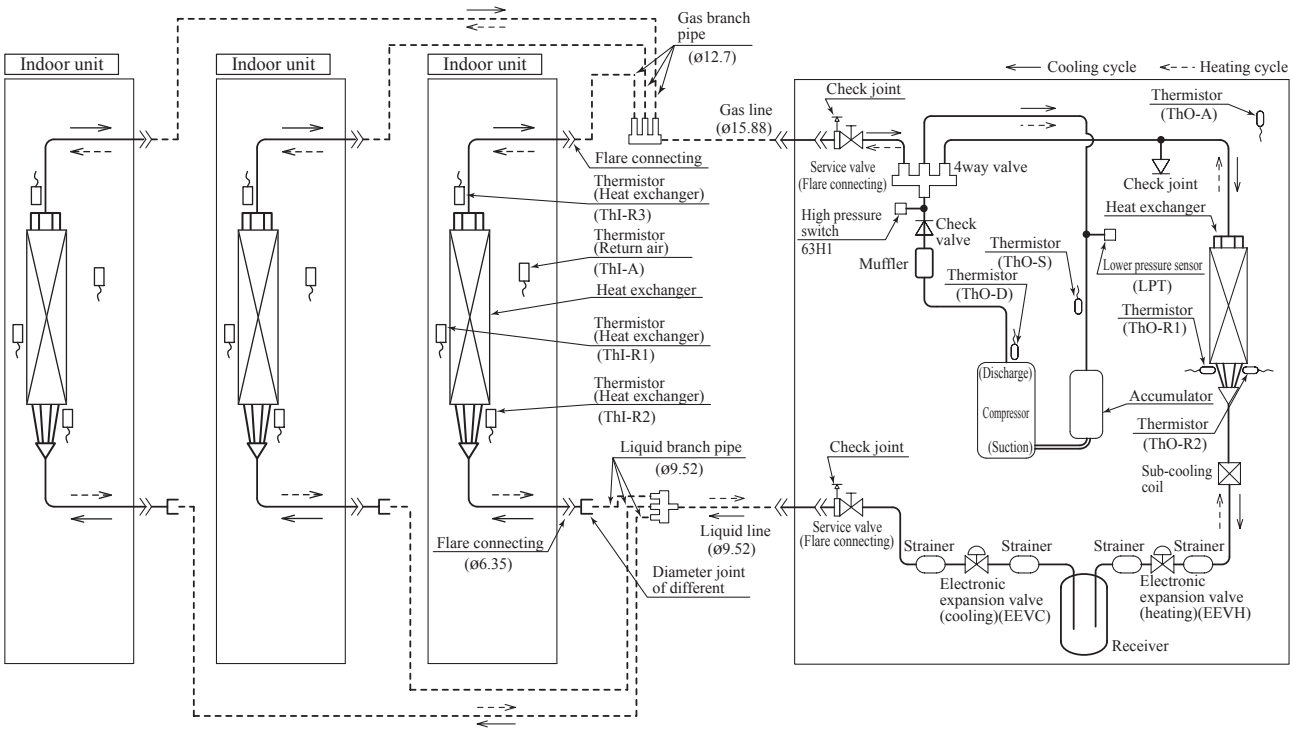


●Refrigerant line (one way) pipe size

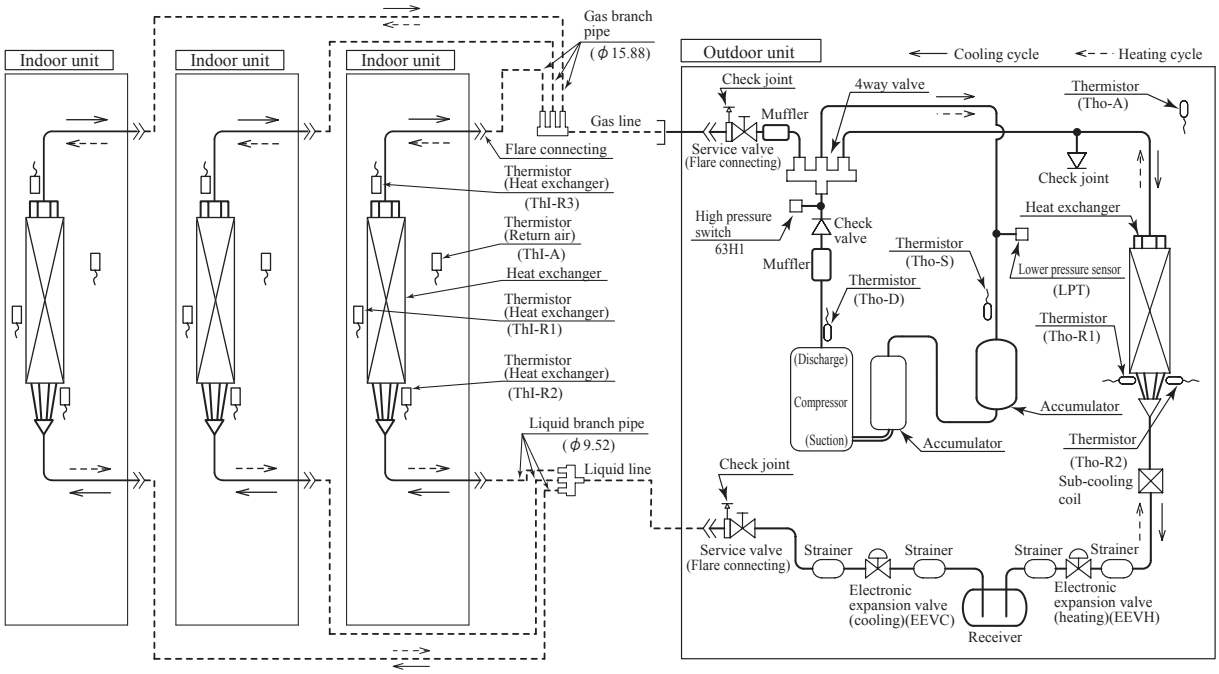
Model	Gas line	Liquid line
FDE200	In case of ϕ22.22 : 35m In case of ϕ25.4 or ϕ28.58 : 70m	In case of ϕ9.52 : 40m In case of ϕ12.7 : 70m
FDE250		In case of ϕ12.7 : 70m

(3) Triple type

Model FDE140



Model FDE200

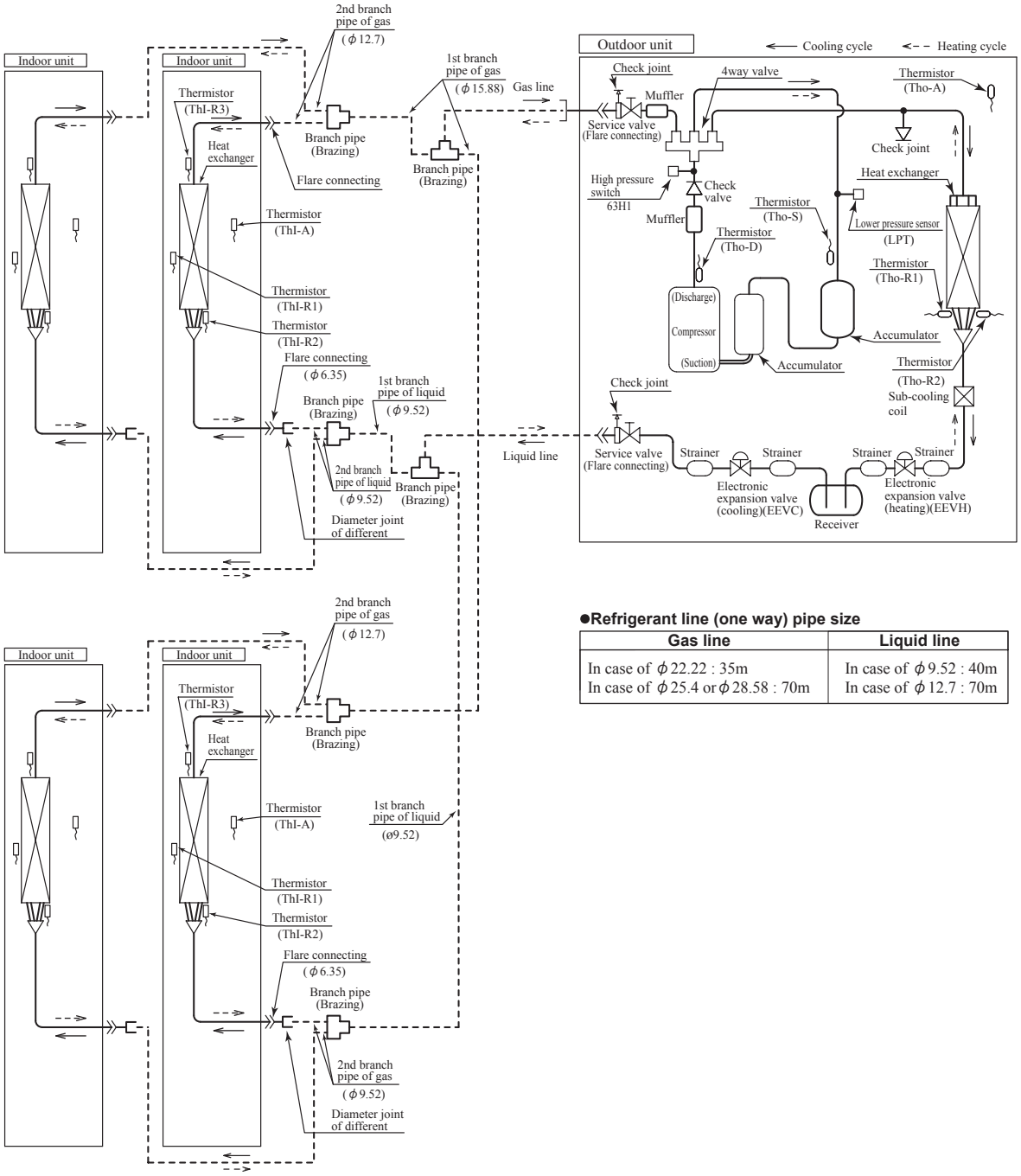


●Refrigerant line (one way) pipe size

Gas line	Liquid line
In case of ϕ22.22 : 35m In case of ϕ25.4 or ϕ28.58 : 70m	In case of ϕ9.52 : 40m In case of ϕ12.7 : 70m

(4) Double twin type

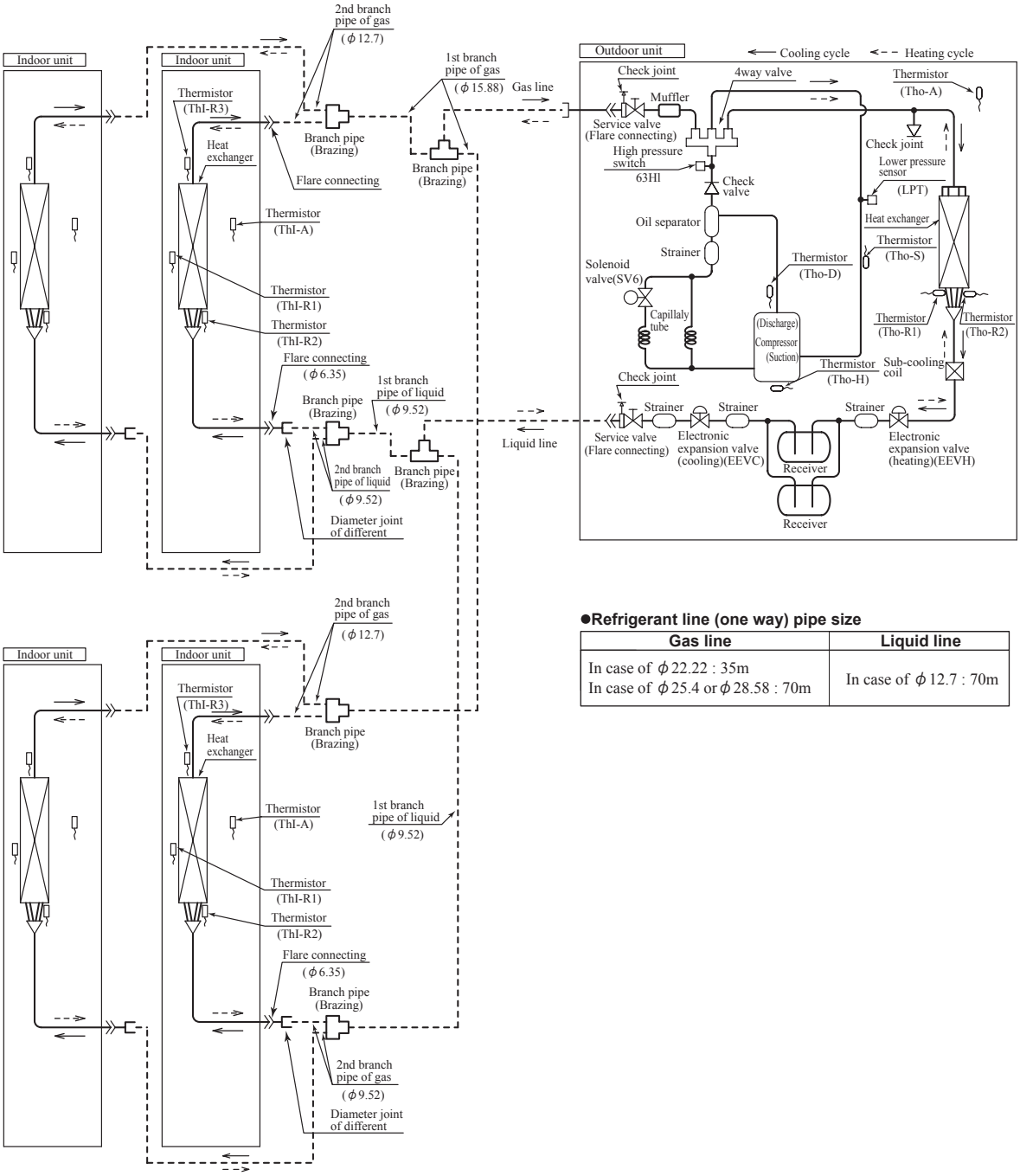
Model FDE200



●Refrigerant line (one way) pipe size

Gas line	Liquid line
In case of φ22.22 : 35m In case of φ25.4 or φ28.58 : 70m	In case of φ9.52 : 40m In case of φ12.7 : 70m

Model FDE250



●Refrigerant line (one way) pipe size

Gas line	Liquid line
In case of φ22.22 : 35m In case of φ25.4 or φ28.58 : 70m	In case of φ12.7 : 70m

Preset point of the protective devices

Parts name	Mark	Equipped unit	FDE71, 90 models	FDE100, 125, 140 models	FDE200, 250 models
Thermistor (for protection over-loading in heating)	ThI-R	Indoor unit	OFF 63˚C ON 56˚C		
Thermistor (for frost prevention)	ThI-R		OFF 1.0˚C ON 10˚C		
Thermistor (for protection high pressure in cooling.)	Tho-R (TH1)	Outdoor unit	OFF 63˚C ON 53˚C	OFF 51˚C ON 65˚C	
Thermistor (for detecting dis-charge pipe temp.)	Tho-D (TH3)	Outdoor unit	OFF 115˚C ON 95˚C	OFF 115˚C ON 85˚C	OFF 135˚C ON 90˚C
High pressure switch (for protection)	63H1	Outdoor unit	–	OFF 4.15MPa ON 3.15MPa	
Low pressure sensor (for protection)	LPT	Outdoor unit	–	OFF 0.227MPa ON 0.079MPa	

Note (1) Values in ( ) are for the FDE71, 90 models.

2.7 RANGE OF USAGE & LIMITATIONS

Operating temperature range		See next page.
		When used below -5˚C, install a snow hood (FDC100-250 only).
Recommendable area to install		Considering to get sufficient heating capacity, the area where the averaged lowest ambient air temperature in day time during winter is above 0˚C, and it has no accumulation of snow.
Installation site		The limitations of installation space are shown in the page for exterior dimensions. Install the indoor unit at least 2.5m higher than the floor surface.
Temperature and humidity conditions surrounding the indoor unit in the ceiling (Note 2)		Dew point temperature : 23˚C or less, relative hummdity : 80% or less
Limitations on unit and piping installation		See pages 324 and 325
Compressor ON-OFF cycling	Cycle Time	7 minutes or more (from OFF to OFF) or (from ON to ON)
	Stop Time	3 minutes or more
Power source	Voltage range	Rating ±10%
	Voltage drop at start-up	Min.85% of rating
	Phase-to-phase umbalance	3% or less

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

Note 2. If ambient temperature and humidity exceed the above conditions, add polyurethane foam insulation on the outer plate (10mm or thicker) of indoor unit.
Both gas and liquid pipes need to be coverd with 20mm or thicker heat insulation materials at the place where humidity exceeds 70%.

Note 3. When used below -5˚C, install a snow hood on site.
Regarding outline of a snow hood, refer to our technical maunal.

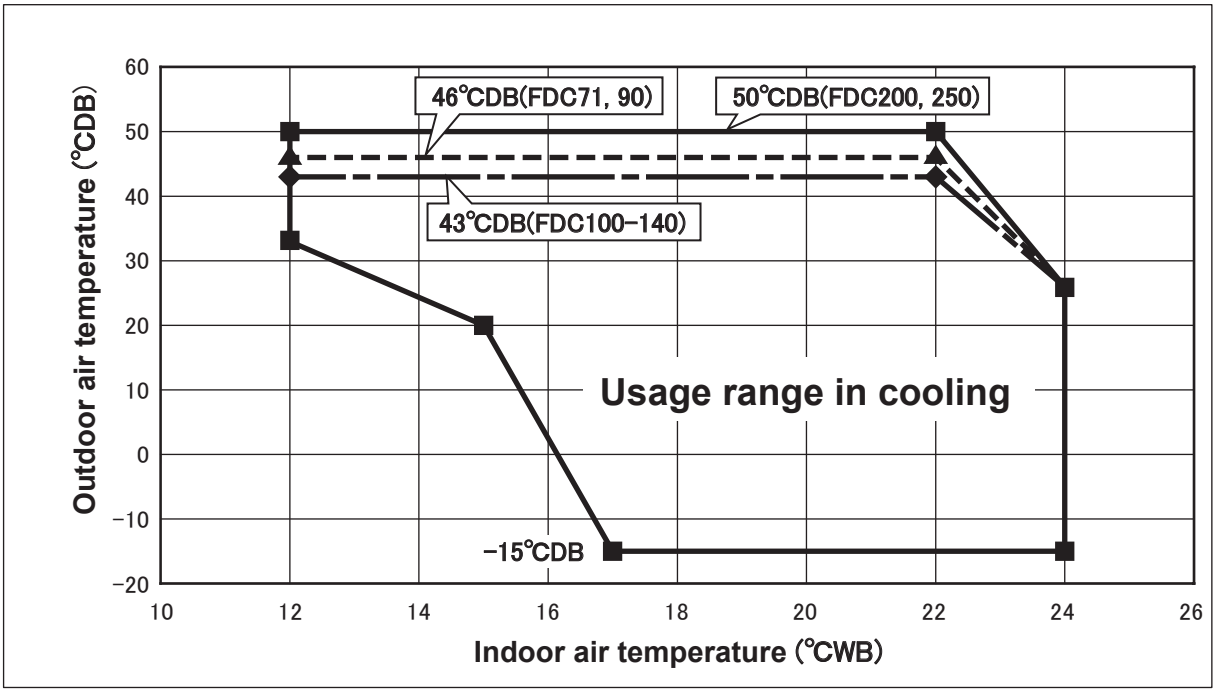
PFA004Z050

PFA004Z051

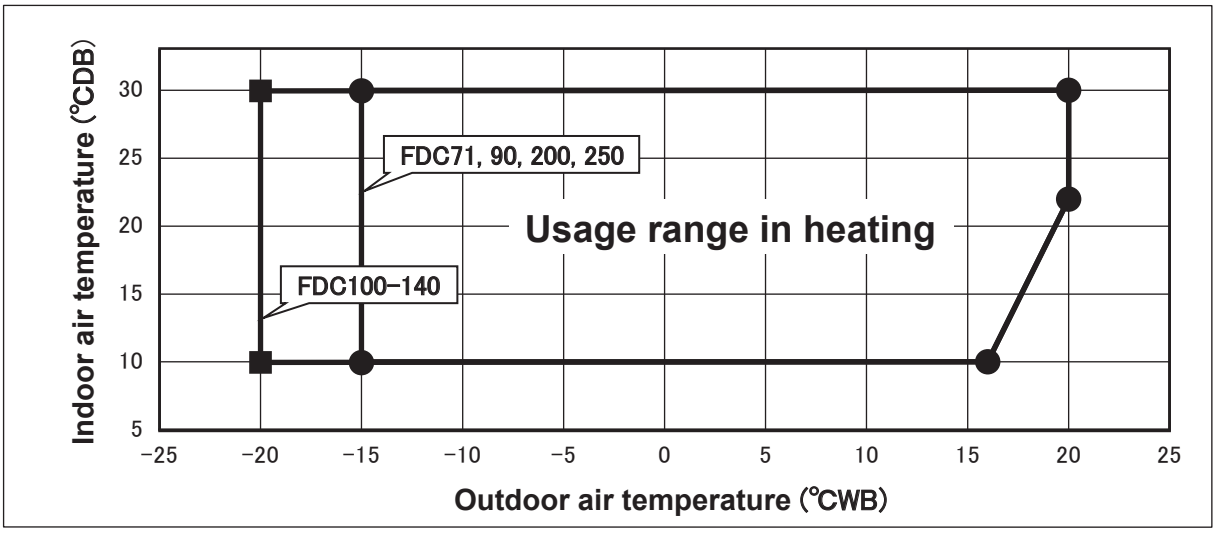
PCA001Z779

Operating temperature range

■ Cooling



■ Heating



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

"CAUTION" Cooling operation under low outdoor air temperature conditions

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

[Precaution]

In case of severely low temperature condition

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

[Reason]

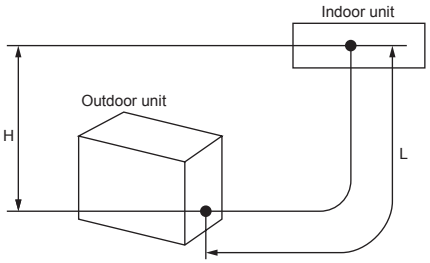
Under the low outdoor air temperature conditions of -5℃ or lower, the outdoor fan is controlled at lower or lowest speed by outdoor fan control, but if strong wind directly blow into the outdoor unit, the outdoor heat exchanger temperature will drop more.

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

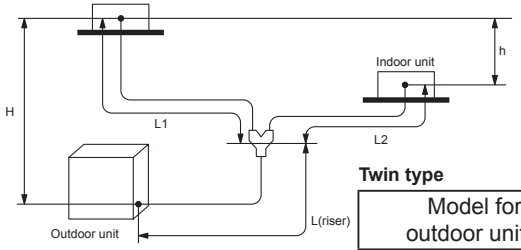
Limitation on unit and piping installation - single,twin,Double twin.

Descriptions	Model for outdoor units			Dimensional limitations	Marks appearing in the drawing: Single type	Twin type	Double twin type
One-way pipe length	FDC71・90			≦ 30m	L		
	FDC100・125・140			≦ 50m		L+L1+L2	
	FDC200	Liquid piping	ϕ9.52	≦ 40m		L+L1 L+L2	L+La+L1 L+La+L2 L+Lb+L3 L+Lb+L4
			ϕ12.7	≦ 40m L ≦ 70m			
	FDC250		ϕ12.7	≦ 70m			
	FDC200・250	Cas piping	ϕ22.22	≦ 35m			
			ϕ25.4 or ϕ28.58	≦ 35m L ≦ 70m			
Main pipe length	FDC100・125・140			≦ 50m		L	
	FDC200	Liquid piping	ϕ9.52	≦ 40m			L
			ϕ12.7	≦ 40m L ≦ 70m			
	FDC250		ϕ12.7	≦ 70m			
	FDC200・250	Cas piping	ϕ22.22	≦ 35m			
			ϕ25.4 or ϕ28.58	≦ 35m L ≦ 70m			
One-way pipe length after the first branching point	FDC100・125・140			≦ 30m		L1, L2	
	FDC200・250						La+L1, La+L2, Lb+L3, Lb+L4
Difference of pipe length after the first branching point				≦ 10m		L1-L2 L2-L1	L1-L2, L2-L1, L3-L4, L4-L3 (L1+La)-(L3+Lb), (L1+La)-(L4+Lb) (L2+La)-(L3+Lb), (L2+La)-(L4+Lb)
Total pipe length after the second branching point				≦ 15m			L1+L2, L3+L4
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher	FDC71・90		≦ 20m	H	H	H
		FDC100 - 250		≦ 30m			
	When the outdoor unit is positioned lower	FDC71・90		≦ 20m			
		FDC100 - 250		≦ 15m			
Elevation difference among indoor units				≦0.5m		h	h1, h2, h3, h4, h5, h6

Single type



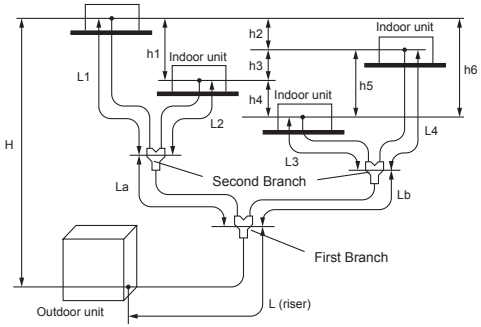
Twin type



Twin type

Model for outdoor units	Branch piping set(option)
FDC100・125・140	DIS-WA1
FDC200・250	DIS-WB1

Double twin type



(1) A riser pipe must be part of the main.
A branching pipe set should be installed horizontally at a point as close to an indoor unit as possible.

(2) Reduce refrigerant amount by according to table below from factory charge when refrigerant piping is shorter than 3m.

Model for outdoor units	Refrigerant to be reduced
FDC100・125・140・200・250	-1.0kg

Double twin type

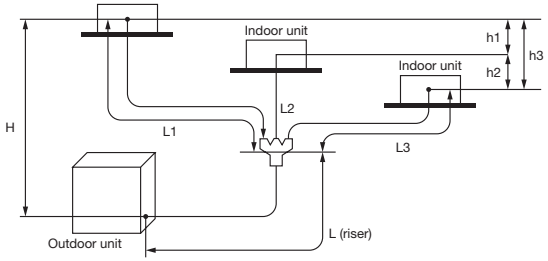
Model for outdoor units	Branch piping set(option)	
	First branch	Second branch
FDC200・250	DIS-WB1	DIS-WA1×2

Limitation on unit and piping installation - triple.

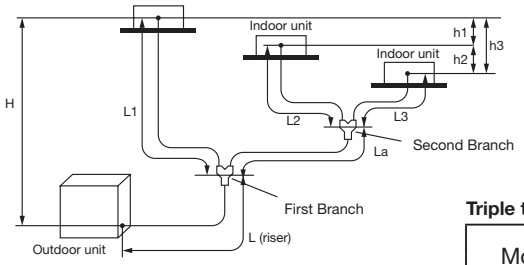
Triple type (In case of FDC140・200)	One-way pipe length difference from the first branching point to the indoor unit				Marks appearing in the drawing	
					< 3m	≧ 3m
Descriptions	Model for outdoor units			Dimensional limitations	Triple type A	Triple type B
One-way pipe length	FDC140			≦ 50m	L+L1+L2+L3	L+La+L1+L2+L3 ※1
	FDC200	Liquid piping	φ9.52	≦ 40m	L+L1, L+L2, L+L3	L+L1 ※1
			φ12.7	≦ 70m		
		Gas piping	φ25.4 or φ28.58			
			φ22.22	≦ 35m		
Main pipe length	FDC140			≦ 50m	L	L
	FDC200	Liquid piping	φ9.52	≦ 40m		
			φ12.7	≦ 70m		
		Gas piping	φ25.4 or φ28.58			
			φ22.22	≦ 35m		
Piping length between the first branching point and the second branching point				≦ 5m		La
One-way pipe length between the first branching point and indoor units				≦ 30m	L1, L2, L3	L1 ※1
One-way pipe length from the first branching point to indoor units through the second branching point				≦ 27m		La+L2, La+L3 ※1
Piping length difference from the first branching point to indoor unit				< 3m	L1-L2, L1-L3, L2-L3	
				3m ≦ , ≦ 10m		L1-(La+L2), L1-(La+L3) ※1
One-way pipe length difference from the second branching point to indoor unit				≦ 10m		L2-L3, L3-L2
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher			≦ 30m	H	H
	When the outdoor unit is positioned lower			≦ 15m		
Elevation difference among indoor units				≦ 0.5m	h1, h2, h3	h1, h2, h3

Triple type (incase of FDC250)	One-way pipe length difference from the first branching point to the indoor unit				Marks appearing in the drawing	
					< 3m	≧ 3m
Restrictions	Model for outdoor units			Dimensional restrictions	Triple type B	Prohiblion of use
One-way pipe length		Gas piping	φ22.22	≦ 35m	L+L1, L+La+L2, L+La+L3 ※2	
			φ25.4 or φ28.58	≦ 70m		
Main pipe length		Gas piping	φ22.22	≦ 35m	L	
			φ25.4 or φ28.58	≦ 70m		
One-way pipe length between the first branching point from to the second branching point				≦ 5m	La	
One-way pipe length between the first branching point and indoor units				≦ 30m	L1, La+L2, La+L3 ※2	
Piping length difference from the first branching point to indoor unit				< 3m	L1-(La+L2), L1-(La+L3) L2-L3, L3-L2 ※2	
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher			≦ 30m	H	
	When the outdoor unit is positioned lower			≦ 15m		
Elevation difference among indoor units				≦ 0.5m	h1, h2, h3	

Triple type A



Triple type B



※1 Install the indoor units so that L+L1 becomes the longest one-way pipe. Keep the pipe length difference between L1 and (La+L2) or (La+L3) within 10m.

※2 Connect the unit that is the maximum capacity with L1.

Triple type

Model for outdoor units	Branch piping set(option)		
	Type A	Type B	
	Branch pipe	First branch	Second branch
FDC140	DIS-TA1	DIS-WA1	DIS-WA1
FDC200・250	DIS-TB1	DIS-WB1	DIS-WA1

(1) A riser pipe must be part of the main.
A branching pipe set should be installed horizontally at a point as close to an indoor unit as possible.

(2) Reduce refrigerant amount by 1.0kg from the factory charge when refrigerant piping is shorter than 3m.

2.8 SELECTION CHART

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

Net capacity = Capacity shown in the capacity tables (2.8.1) × Correction factors shown in the table (2.8.2) (2.8.3) (2.8.4).

Caution: In case that the cooling operation during low outdoor air temperature below -5°C is expected, install the outdoor unit where it is not influenced by natural wind. Otherwise protection control by low pressure will be activated much more frequently and it will cause insufficient capacity or breakdown of the compressor in worst case.

2.8.1 Capacity tables

(1) Single type

Model FDE71VNPVG Indoor unit FDE71VG Outdoor unit FDC71VNP

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.71	4.37	5.34	4.89	5.65	4.90	5.78	4.85	6.04	5.12	6.30	5.00
13					5.00	4.48	5.58	4.98	5.87	4.98	5.99	4.92	6.23	5.18	6.48	5.05
15					5.30	4.59	5.83	5.06	6.09	5.05	6.20	4.99	6.43	5.24	6.66	5.10
17					5.59	4.71	6.07	5.15	6.31	5.13	6.41	5.06	6.62	5.29	6.83	5.14
19					5.73	4.76	6.13	5.17	6.34	5.14	6.48	5.08	6.76	5.33	7.04	5.20
21					5.80	4.79	6.20	5.20	6.36	5.15	6.54	5.10	6.89	5.37	7.25	5.25
23					6.23	4.96	6.63	5.36	6.81	5.30	6.96	5.24	7.26	5.49	7.56	5.34
25			6.26	5.28	6.67	5.14	7.07	5.52	7.26	5.47	7.38	5.38	7.63	5.60	7.88	5.43
27			6.72	5.49	7.11	5.33	7.51	5.69	7.71	5.63	7.91	5.57	8.31	5.82		
29			6.60	5.44	6.98	5.27	7.36	5.64	7.56	5.57	7.75	5.51	8.13	5.76		
31			6.47	5.38	6.85	5.22	7.22	5.58	7.40	5.52	7.59	5.45	7.95	5.70		
33	6.01	5.00	6.27	5.29	6.72	5.16	7.08	5.53	7.25	5.46	7.43	5.40	7.77	5.65		
35	5.89	4.94	6.15	5.23	6.59	5.11	6.94	5.47	7.10	5.41	7.26	5.34	7.59	5.59		
37	5.62	4.81	5.86	5.11	6.27	4.98	6.59	5.34	6.75	5.28	6.91	5.22	7.23	5.48		
39	5.35	4.69	5.57	4.98	5.95	4.85	6.25	5.22	6.40	5.16	6.55	5.10	6.86	5.37		
41	5.08	4.56	5.29	4.86	5.62	4.72	5.90	5.09	6.05	5.04	6.20	4.98	6.50	5.26		
43	4.99	4.52	5.18	4.81	5.47	4.66	5.73	5.03	5.88	4.98	6.04	4.93	6.35	5.21		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-14.5	-15	4.17	4.15	4.13	4.11	4.09
-13.5	-14	4.23	4.21	4.19	4.17	4.14
-11.5	-12	4.35	4.33	4.31	4.29	4.26
-9.5	-10	4.47	4.45	4.43	4.40	4.38
-7.5	-8	4.59	4.57	4.55	4.52	4.50
-5.5	-6	4.94	4.92	4.89	4.87	4.84
-3.0	-4	5.29	5.26	5.24	5.21	5.18
-1.0	-2	5.64	5.61	5.58	5.55	5.52
1.0	0	5.99	5.96	5.93	5.89	5.86
2.0	1	6.16	6.13	6.10	6.06	6.03
3.0	2	6.37	6.33	6.30	6.26	6.22
5.0	4	6.77	6.74	6.70	6.66	6.62
7.0	6	7.18	7.14	7.10	7.05	7.01
9.0	8	7.28	7.24	7.19	7.14	7.09
11.5	10	7.38	7.33	7.29	7.23	7.17
13.5	12	7.34	7.29	7.24	7.18	7.12
15.5	14	7.30	7.25	7.19	7.13	7.07
16.5	16	7.28	7.23	7.17	7.10	7.04

PFA004Z049

Model FDE90VNPVG Indoor unit FDE100VG Outdoor unit FDC90VNP

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					8.35	7.46	8.93	8.14	9.21	8.09	9.59	8.07	10.34	8.62	11.09	8.52
13					8.42	7.49	8.94	8.14	9.20	8.09	9.55	8.06	10.25	8.59	10.96	8.48
15					8.48	7.51	8.96	8.15	9.19	8.08	9.52	8.04	10.17	8.57	10.83	8.45
17					8.54	7.54	8.97	8.15	9.18	8.08	9.49	8.03	10.09	8.54	10.70	8.41
19					8.51	7.52	8.96	8.15	9.19	8.08	9.48	8.03	10.06	8.53	10.63	8.39
21					8.32	7.45	8.96	8.15	9.20	8.09	9.47	8.03	10.02	8.52	10.57	8.37
23					8.52	7.53	9.04	8.18	9.21	8.09	9.47	8.03	10.00	8.51	10.52	8.36
25			8.10	7.77	8.72	7.61	9.13	8.22	9.23	8.10	9.48	8.03	9.97	8.51	10.47	8.35
27			8.38	7.89	8.92	7.69	9.22	8.25	9.24	8.10	9.27	7.96	9.31	8.30		
29			8.25	7.83	8.77	7.63	9.11	8.21	9.18	8.08	9.26	7.96	9.41	8.33		
31			8.11	7.77	8.62	7.57	9.00	8.16	9.12	8.06	9.25	7.95	9.50	8.36		
33	7.53	7.16	7.88	7.67	8.46	7.51	8.88	8.12	9.06	8.04	9.24	7.95	9.59	8.39		
35	7.41	7.10	7.74	7.59	8.31	7.44	8.77	8.08	9.00	8.02	9.23	7.95	9.68	8.41		
37	7.15	6.98	7.47	7.32	8.00	7.32	8.44	7.96	8.66	7.90	8.88	7.83	9.33	8.30		
39	6.89	6.75	7.20	7.05	7.70	7.20	8.11	7.84	8.32	7.78	8.54	7.71	8.97	8.20		
41	6.63	6.49	6.92	6.78	7.39	7.08	7.77	7.62	7.98	7.66	8.20	7.60	8.62	8.09		
43	6.36	6.24	6.65	6.52	7.08	6.94	7.44	7.29	7.65	7.49	7.85	7.48	8.26	7.98		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-14.5	-15	5.26	5.24	5.21	5.18	5.15
-13.5	-14	5.38	5.35	5.32	5.29	5.26
-11.5	-12	5.61	5.58	5.55	5.52	5.49
-9.5	-10	5.84	5.81	5.78	5.74	5.71
-7.5	-8	6.07	6.04	6.00	5.97	5.93
-5.5	-6	6.25	6.21	6.17	6.13	6.09
-3.0	-4	6.42	6.37	6.33	6.29	6.25
-1.0	-2	6.59	6.54	6.50	6.45	6.41
1.0	0	6.76	6.71	6.66	6.61	6.56
2.0	1	6.84	6.79	6.74	6.69	6.64
3.0	2	7.30	7.25	7.19	7.14	7.08
5.0	4	8.22	8.16	8.10	8.04	7.97
7.0	6	9.13	9.07	9.00	8.93	8.86
9.0	8	9.61	9.54	9.47	9.39	9.32
11.5	10	10.09	10.01	9.93	9.85	9.77
13.5	12	10.26	10.18	10.10	10.01	9.93
15.5	14	10.42	10.34	10.26	10.17	10.08
16.5	16	10.51	10.42	10.34	10.25	10.16

PFA004Z049

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

Model FDE100VNVG Indoor unit FDE100VG Outdoor unit FDC100VN

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					8.12	7.37	8.59	8.01	8.82	7.95	9.07	7.89	9.56	8.38	10.06	8.23
13					8.50	7.52	9.00	8.17	9.26	8.11	9.52	7.36	10.06	8.53	10.60	8.38
15					8.88	7.67	9.42	8.32	9.69	8.26	9.98	8.20	10.56	8.69	11.14	8.54
17					9.26	7.83	9.84	8.48	10.12	8.42	10.43	7.56	11.05	8.85	11.67	8.69
19					9.46	7.91	10.05	8.56	10.34	8.50	10.65	8.44	11.29	8.92	11.92	8.77
21					9.65	7.99	10.25	8.64	10.56	8.58	10.88	8.52	11.52	8.06	12.16	8.84
23					9.65	7.99	10.28	8.65	10.59	8.59	10.91	8.53	11.56	9.01	12.21	8.85
25			8.93	8.14	9.64	7.99	10.31	8.66	10.62	8.60	10.95	8.54	11.61	9.03	12.27	8.87
27			8.86	7.62	9.64	7.99	10.34	8.68	10.65	8.61	10.96	8.55	11.57	9.01		
29			8.80	8.08	9.50	7.29	10.17	8.61	10.49	8.56	10.81	8.49	11.45	8.98		
31			8.73	8.05	9.35	7.87	9.99	8.54	10.32	8.49	10.66	8.44	11.32	8.93		
33	8.22	7.48	8.58	7.98	9.21	7.81	9.82	8.48	10.16	8.43	10.51	8.39	11.19	8.89		
35	8.05	7.40	8.44	7.92	9.06	7.75	9.64	8.41	10.00	8.38	10.36	8.34	11.07	8.85		
37	7.92	7.34	8.30	7.86	8.91	7.69	9.46	8.34	9.79	8.30	10.13	8.26	10.80	8.77		
39	7.78	7.27	8.16	7.80	8.75	7.62	9.28	8.27	9.59	8.23	9.90	8.18	10.53	8.68		
41	7.64	7.21	8.02	7.74	8.60	7.56	9.09	8.20	9.38	8.15	9.68	8.10	10.26	8.60		
43	7.50	7.14	7.88	7.67	8.45	7.50	8.91	8.13	9.18	8.08	9.45	8.02	9.99	8.51		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃WB	16	18	20	22	24
-19.8	-20	5.64	5.62	5.60	5.58	5.56
-17.7	-18	5.97	5.95	5.92	5.90	5.87
-15.7	-16	6.30	6.27	6.25	6.22	6.19
-13.5	-14	6.66	6.63	6.60	6.57	6.54
-11.5	-12	7.03	6.99	6.96	6.93	6.90
-9.5	-10	7.39	7.36	7.32	7.29	7.25
-7.5	-8	7.75	7.72	7.68	7.64	7.60
-5.5	-6	7.92	7.88	7.85	7.80	7.76
-3.0	-4	8.10	8.05	8.01	7.97	7.92
-1.0	-2	8.27	8.22	8.18	8.13	8.08
1.0	0	8.44	8.39	8.34	8.29	8.24
2.0	1	8.52	8.47	8.42	8.37	8.32
3.0	2	9.08	9.03	8.98	8.94	8.90
5.0	4	10.21	10.15	10.09	10.08	10.07
7.0	6	11.33	11.27	11.20	11.22	11.23
9.0	8	11.78	11.71	11.64	11.62	11.59
11.5	10	12.23	12.16	12.09	12.02	11.94
13.5	12	12.91	12.83	12.75	12.65	12.60
15.5	14	13.59	13.50	13.42	13.29	13.26
16.5	16	13.93	13.84	13.75	13.61	13.59

PFA004Z048

Model FDE100VSVG Indoor unit FDE100VG Outdoor unit FDC100VS

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					8.12	7.37	8.59	8.01	8.82	7.95	9.07	7.89	9.56	8.38	10.06	8.23
13					8.50	7.52	9.00	8.17	9.26	8.11	9.52	7.36	10.06	8.53	10.60	8.38
15					8.88	7.67	9.42	8.32	9.69	8.26	9.98	8.20	10.56	8.69	11.14	8.54
17					9.26	7.83	9.84	8.48	10.12	8.42	10.43	7.56	11.05	8.85	11.67	8.69
19					9.46	7.91	10.05	8.56	10.34	8.50	10.65	8.44	11.29	8.92	11.92	8.77
21					9.65	7.99	10.25	8.64	10.56	8.58	10.88	8.52	11.52	8.06	12.16	8.84
23					9.65	7.99	10.28	8.65	10.59	8.59	10.91	8.53	11.56	9.01	12.21	8.85
25			8.93	8.14	9.64	7.99	10.31	8.66	10.62	8.60	10.95	8.54	11.61	9.03	12.27	8.87
27			8.86	7.62	9.64	7.99	10.34	8.68	10.65	8.61	10.96	8.55	11.57	9.01		
29			8.80	8.08	9.50	7.29	10.17	8.61	10.49	8.56	10.81	8.49	11.45	8.98		
31			8.73	8.05	9.35	7.87	9.99	8.54	10.32	8.49	10.66	8.44	11.32	8.93		
33	8.22	7.48	8.58	7.98	9.21	7.81	9.82	8.48	10.16	8.43	10.51	8.39	11.19	8.89		
35	8.05	7.40	8.44	7.92	9.06	7.75	9.64	8.41	10.00	8.38	10.36	8.34	11.07	8.85		
37	7.92	7.34	8.30	7.86	8.91	7.69	9.46	8.34	9.79	8.30	10.13	8.26	10.80	8.77		
39	7.78	7.27	8.16	7.80	8.75	7.62	9.28	8.27	9.59	8.23	9.90	8.18	10.53	8.68		
41	7.64	7.21	8.02	7.74	8.60	7.56	9.09	8.20	9.38	8.15	9.68	8.10	10.26	8.60		
43	7.50	7.14	7.88	7.67	8.45	7.50	8.91	8.13	9.18	8.08	9.45	8.02	9.99	8.51		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃WB	16	18	20	22	24
-19.8	-20	5.64	5.62	5.60	5.58	5.56
-17.7	-18	5.97	5.95	5.92	5.90	5.87
-15.7	-16	6.30	6.27	6.25	6.22	6.19
-13.5	-14	6.66	6.63	6.60	6.57	6.54
-11.5	-12	7.03	6.99	6.96	6.93	6.90
-9.5	-10	7.39	7.36	7.32	7.29	7.25
-7.5	-8	7.75	7.72	7.68	7.64	7.60
-5.5	-6	7.92	7.88	7.85	7.80	7.76
-3.0	-4	8.10	8.05	8.01	7.97	7.92
-1.0	-2	8.27	8.22	8.18	8.13	8.08
1.0	0	8.44	8.39	8.34	8.29	8.24
2.0	1	8.52	8.47	8.42	8.37	8.32
3.0	2	9.08	9.03	8.98	8.94	8.90
5.0	4	10.21	10.15	10.09	10.08	10.07
7.0	6	11.33	11.27	11.20	11.22	11.23
9.0	8	11.78	11.71	11.64	11.62	11.59
11.5	10	12.23	12.16	12.09	12.02	11.94
13.5	12	12.91	12.83	12.75	12.65	12.60
15.5	14	13.59	13.50	13.42	13.29	13.26
16.5	16	13.93	13.84	13.75	13.61	13.59

PFA004Z048

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

Model FDE125VNVG Indoor unit FDE125VG Outdoor unit FDC125VN

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					10.15	8.20	10.74	8.83	11.03	8.76	11.34	8.68	11.96	9.14	12.57	8.96
13					10.63	8.41	11.26	9.03	11.57	8.96	11.91	7.36	12.58	9.35	13.25	9.16
15					11.10	8.61	11.78	9.24	12.11	9.17	12.47	9.10	13.20	9.56	13.92	9.37
17					11.58	8.82	12.29	9.45	12.65	9.38	13.04	7.56	13.82	9.77	14.59	9.58
19					11.82	8.92	12.56	9.56	12.92	9.48	13.32	9.41	14.11	9.87	14.90	9.68
21					12.06	9.03	12.82	9.66	13.19	9.59	13.60	9.52	14.40	8.06	15.20	9.77
23					12.06	9.03	12.85	9.68	13.23	9.60	13.64	9.53	14.45	9.99	15.27	9.79
25			11.16	9.16	12.06	9.03	12.89	9.69	13.27	9.62	13.68	9.55	14.51	10.01	15.34	9.82
27			11.08	7.62	12.05	9.02	12.92	9.71	13.31	9.64	13.69	9.55	14.47	9.99		
29			11.00	9.09	11.87	7.29	12.71	9.62	13.11	9.56	13.51	9.48	14.31	9.94		
31			10.92	9.05	11.69	8.87	12.49	9.53	12.90	9.47	13.32	9.41	14.15	9.88		
33	10.27	8.49	10.72	8.96	11.51	8.79	12.27	9.44	12.70	9.40	13.13	9.34	13.99	9.83		
35	10.07	8.39	10.55	8.88	11.33	8.71	12.06	9.35	12.50	9.32	12.94	9.27	13.83	9.77		
37	9.90	8.30	10.38	8.80	11.13	8.62	11.83	9.26	12.24	9.22	12.66	9.17	13.50	9.66		
39	9.72	8.21	10.20	8.71	10.94	8.54	11.60	9.17	11.99	9.12	12.38	9.06	13.16	9.54		
41	9.55	8.13	10.02	8.63	10.75	8.46	11.37	9.08	11.73	9.02	12.09	8.96	12.82	9.43		
43	9.38	8.04	9.85	8.55	10.56	8.38	11.14	8.99	11.47	8.92	11.81	8.85	12.48	9.31		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20	7.06	7.03	7.00	6.97	6.95
-17.7	-18	7.46	7.43	7.41	7.37	7.34
-15.7	-16	7.87	7.84	7.81	7.77	7.74
-13.5	-14	8.33	8.29	8.26	8.22	8.18
-11.5	-12	8.78	8.74	8.70	8.66	8.62
-9.5	-10	9.24	9.19	9.15	9.11	9.06
-7.5	-8	9.69	9.65	9.60	9.55	9.50
-5.5	-6	9.91	9.86	9.81	9.75	9.70
-3.0	-4	10.12	10.07	10.01	9.96	9.90
-1.0	-2	10.33	10.28	10.22	10.16	10.10
1.0	0	10.55	10.49	10.43	10.36	10.30
2.0	1	10.65	10.59	10.53	10.47	10.40
3.0	2	11.36	11.29	11.22	11.18	11.13
5.0	4	12.76	12.69	12.61	12.60	12.58
7.0	6	14.16	14.08	14.00	14.02	14.04
9.0	8	14.72	14.64	14.56	14.52	14.49
11.5	10	15.28	15.20	15.11	15.02	14.93
13.5	12	16.13	16.04	15.94	15.82	15.75
15.5	14	16.98	16.88	16.77	16.62	16.58
16.5	16	17.41	17.30	17.19	17.02	16.99

PFA004Z048

Model FDE125VSVG Indoor unit FDE125VG Outdoor unit FDC125VS

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					10.15	8.20	10.74	8.83	11.03	8.76	11.34	8.68	11.96	9.14	12.57	8.96
13					10.63	8.41	11.26	9.03	11.57	8.96	11.91	7.36	12.58	9.35	13.25	9.16
15					11.10	8.61	11.78	9.24	12.11	9.17	12.47	9.10	13.20	9.56	13.92	9.37
17					11.58	8.82	12.29	9.45	12.65	9.38	13.04	7.56	13.82	9.77	14.59	9.58
19					11.82	8.92	12.56	9.56	12.92	9.48	13.32	9.41	14.11	9.87	14.90	9.68
21					12.06	9.03	12.82	9.66	13.19	9.59	13.60	9.52	14.40	8.06	15.20	9.77
23					12.06	9.03	12.85	9.68	13.23	9.60	13.64	9.53	14.45	9.99	15.27	9.79
25			11.16	9.16	12.06	9.03	12.89	9.69	13.27	9.62	13.68	9.55	14.51	10.01	15.34	9.82
27			11.08	7.62	12.05	9.02	12.92	9.71	13.31	9.64	13.69	9.55	14.47	9.99		
29			11.00	9.09	11.87	7.29	12.71	9.62	13.11	9.56	13.51	9.48	14.31	9.94		
31			10.92	9.05	11.69	8.87	12.49	9.53	12.90	9.47	13.32	9.41	14.15	9.88		
33	10.27	8.49	10.72	8.96	11.51	8.79	12.27	9.44	12.70	9.40	13.13	9.34	13.99	9.83		
35	10.07	8.39	10.55	8.88	11.33	8.71	12.06	9.35	12.50	9.32	12.94	9.27	13.83	9.77		
37	9.90	8.30	10.38	8.80	11.13	8.62	11.83	9.26	12.24	9.22	12.66	9.17	13.50	9.66		
39	9.72	8.21	10.20	8.71	10.94	8.54	11.60	9.17	11.99	9.12	12.38	9.06	13.16	9.54		
41	9.55	8.13	10.02	8.63	10.75	8.46	11.37	9.08	11.73	9.02	12.09	8.96	12.82	9.43		
43	9.38	8.04	9.85	8.55	10.56	8.38	11.14	8.99	11.47	8.92	11.81	8.85	12.48	9.31		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20	7.06	7.03	7.00	6.97	6.95
-17.7	-18	7.46	7.43	7.41	7.37	7.34
-15.7	-16	7.87	7.84	7.81	7.77	7.74
-13.5	-14	8.33	8.29	8.26	8.22	8.18
-11.5	-12	8.78	8.74	8.70	8.66	8.62
-9.5	-10	9.24	9.19	9.15	9.11	9.06
-7.5	-8	9.69	9.65	9.60	9.55	9.50
-5.5	-6	9.91	9.86	9.81	9.75	9.70
-3.0	-4	10.12	10.07	10.01	9.96	9.90
-1.0	-2	10.33	10.28	10.22	10.16	10.10
1.0	0	10.55	10.49	10.43	10.36	10.30
2.0	1	10.65	10.59	10.53	10.47	10.40
3.0	2	11.36	11.29	11.22	11.18	11.13
5.0	4	12.76	12.69	12.61	12.60	12.58
7.0	6	14.16	14.08	14.00	14.02	14.04
9.0	8	14.72	14.64	14.56	14.52	14.49
11.5	10	15.28	15.20	15.11	15.02	14.93
13.5	12	16.13	16.04	15.94	15.82	15.75
15.5	14	16.98	16.88	16.77	16.62	16.58
16.5	16	17.41	17.30	17.19	17.02	16.99

PFA004Z048

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

Model FDE140VNVG Indoor unit FDE140VG Outdoor unit FDC140VN

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.37	8.96	12.02	9.62	12.35	9.54	12.70	9.46	13.39	9.94	14.08	9.74
13					11.90	9.19	12.61	9.86	12.96	9.77	13.33	7.36	14.09	10.18	14.84	9.97
15					12.43	9.42	13.19	10.09	13.57	10.01	13.97	9.93	14.78	10.41	15.59	10.21
17					12.96	9.66	13.77	10.33	14.17	10.25	14.61	7.56	15.48	10.66	16.34	10.44
19					13.24	9.78	14.06	10.45	14.48	10.37	14.92	10.29	15.80	10.77	16.68	10.55
21					13.51	9.91	14.36	10.58	14.78	10.49	15.23	10.41	16.12	8.06	17.02	10.66
23					13.51	9.91	14.40	10.59	14.82	10.51	15.28	10.43	16.19	10.91	17.10	10.69
25			12.50	10.04	13.50	9.90	14.43	10.61	14.86	10.53	15.33	10.45	16.25	10.93	17.18	10.72
27			12.41	7.62	13.50	9.90	14.47	10.62	14.91	10.55	15.34	10.46	16.20	10.91		
29			12.32	9.96	13.29	7.29	14.23	10.52	14.68	10.45	15.13	10.37	16.02	10.85		
31			12.23	9.91	13.09	9.72	13.99	10.42	14.45	10.36	14.92	10.29	15.85	10.79		
33	11.51	9.32	12.01	9.81	12.89	9.63	13.75	10.32	14.23	10.27	14.71	10.21	15.67	10.72		
35	11.28	9.20	11.82	9.72	12.68	9.53	13.50	10.22	14.00	10.18	14.50	10.13	15.49	10.66		
37	11.08	9.10	11.62	9.62	12.47	9.44	13.25	10.12	13.71	10.07	14.18	10.01	15.12	10.53		
39	10.89	9.00	11.43	9.53	12.26	9.35	12.99	10.01	13.43	9.96	13.86	9.89	14.74	10.40		
41	10.70	8.91	11.23	9.44	12.04	9.25	12.73	9.91	13.14	9.84	13.55	9.78	14.36	10.27		
43	10.51	8.81	11.03	9.35	11.83	9.16	12.47	9.80	12.85	9.73	13.23	9.66	13.98	10.14		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20	8.06	8.03	8.00	7.97	7.94
-17.7	-18	8.53	8.50	8.46	8.43	8.39
-15.7	-16	9.00	8.96	8.92	8.88	8.85
-13.5	-14	9.52	9.48	9.43	9.39	9.35
-11.5	-12	10.04	9.99	9.95	9.90	9.85
-9.5	-10	10.56	10.51	10.46	10.41	10.36
-7.5	-8	11.08	11.02	10.97	10.91	10.86
-5.5	-6	11.32	11.26	11.21	11.15	11.09
-3.0	-4	11.56	11.50	11.44	11.38	11.31
-1.0	-2	11.81	11.75	11.68	11.61	11.54
1.0	0	12.05	11.99	11.92	11.84	11.77
2.0	1	12.18	12.11	12.04	11.96	11.89
3.0	2	12.98	12.90	12.83	12.77	12.72
5.0	4	14.58	14.50	14.41	14.40	14.38
7.0	6	16.19	16.09	16.00	16.02	16.05
9.0	8	16.83	16.73	16.63	16.59	16.55
11.5	10	17.46	17.37	17.27	17.17	17.06
13.5	12	18.44	18.33	18.22	18.08	18.00
15.5	14	19.41	19.29	19.17	18.99	18.95
16.5	16	19.90	19.77	19.64	19.45	19.42

PFA004Z048

Model FDE140VSVG Indoor unit FDE140VG Outdoor unit FDC140VS

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.37	8.96	12.02	9.62	12.35	9.54	12.70	9.46	13.39	9.94	14.08	9.74
13					11.90	9.19	12.61	9.86	12.96	9.77	13.33	7.36	14.09	10.18	14.84	9.97
15					12.43	9.42	13.19	10.09	13.57	10.01	13.97	9.93	14.78	10.41	15.59	10.21
17					12.96	9.66	13.77	10.33	14.17	10.25	14.61	7.56	15.48	10.66	16.34	10.44
19					13.24	9.78	14.06	10.45	14.48	10.37	14.92	10.29	15.80	10.77	16.68	10.55
21					13.51	9.91	14.36	10.58	14.78	10.49	15.23	10.41	16.12	8.06	17.02	10.66
23					13.51	9.91	14.40	10.59	14.82	10.51	15.28	10.43	16.19	10.91	17.10	10.69
25			12.50	10.04	13.50	9.90	14.43	10.61	14.86	10.53	15.33	10.45	16.25	10.93	17.18	10.72
27			12.41	7.62	13.50	9.90	14.47	10.62	14.91	10.55	15.34	10.46	16.20	10.91		
29			12.32	9.96	13.29	7.29	14.23	10.52	14.68	10.45	15.13	10.37	16.02	10.85		
31			12.23	9.91	13.09	9.72	13.99	10.42	14.45	10.36	14.92	10.29	15.85	10.79		
33	11.51	9.32	12.01	9.81	12.89	9.63	13.75	10.32	14.23	10.27	14.71	10.21	15.67	10.72		
35	11.28	9.20	11.82	9.72	12.68	9.53	13.50	10.22	14.00	10.18	14.50	10.13	15.49	10.66		
37	11.08	9.10	11.62	9.62	12.47	9.44	13.25	10.12	13.71	10.07	14.18	10.01	15.12	10.53		
39	10.89	9.00	11.43	9.53	12.26	9.35	12.99	10.01	13.43	9.96	13.86	9.89	14.74	10.40		
41	10.70	8.91	11.23	9.44	12.04	9.25	12.73	9.91	13.14	9.84	13.55	9.78	14.36	10.27		
43	10.51	8.81	11.03	9.35	11.83	9.16	12.47	9.80	12.85	9.73	13.23	9.66	13.98	10.14		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20	8.06	8.03	8.00	7.97	7.94
-17.7	-18	8.53	8.50	8.46	8.43	8.39
-15.7	-16	9.00	8.96	8.92	8.88	8.85
-13.5	-14	9.52	9.48	9.43	9.39	9.35
-11.5	-12	10.04	9.99	9.95	9.90	9.85
-9.5	-10	10.56	10.51	10.46	10.41	10.36
-7.5	-8	11.08	11.02	10.97	10.91	10.86
-5.5	-6	11.32	11.26	11.21	11.15	11.09
-3.0	-4	11.56	11.50	11.44	11.38	11.31
-1.0	-2	11.81	11.75	11.68	11.61	11.54
1.0	0	12.05	11.99	11.92	11.84	11.77
2.0	1	12.18	12.11	12.04	11.96	11.89
3.0	2	12.98	12.90	12.83	12.77	12.72
5.0	4	14.58	14.50	14.41	14.40	14.38
7.0	6	16.19	16.09	16.00	16.02	16.05
9.0	8	16.83	16.73	16.63	16.59	16.55
11.5	10	17.46	17.37	17.27	17.17	17.06
13.5	12	18.44	18.33	18.22	18.08	18.00
15.5	14	19.41	19.29	19.17	18.99	18.95
16.5	16	19.90	19.77	19.64	19.45	19.42

PFA004Z048

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

(2) Twin type

Model FDE100VNPVG Indoor unit FDE50VG (2 uints) Outdoor unit FDC100VN

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					8.12	6.61	8.59	7.12	8.82	7.06	9.07	7.00	9.56	7.38	10.06	7.23
13					8.50	6.77	9.00	7.28	9.26	7.23	9.52	7.36	10.06	7.54	10.60	7.40
15					8.88	6.93	9.42	7.45	9.69	7.39	9.98	7.33	10.56	7.71	11.14	7.56
17					9.26	7.10	9.84	7.62	10.12	7.56	10.43	7.56	11.05	7.88	11.67	7.73
19					9.46	7.19	10.05	7.70	10.34	7.64	10.65	7.58	11.29	7.96	11.92	7.80
21					9.65	7.27	10.25	7.78	10.56	7.73	10.88	7.67	11.52	8.06	12.16	7.88
23					9.65	7.27	10.28	7.80	10.59	7.74	10.91	7.68	11.56	8.05	12.21	7.90
25			8.93	7.38	9.64	7.27	10.31	7.81	10.62	7.75	10.95	7.70	11.61	8.07	12.27	7.91
27			8.86	7.62	9.64	7.27	10.34	7.82	10.65	7.76	10.96	7.70	11.57	8.05		
29			8.80	7.32	9.50	7.29	10.17	7.75	10.49	7.70	10.81	7.64	11.45	8.01		
31			8.73	7.29	9.35	7.14	9.99	7.68	10.32	7.63	10.66	7.59	11.32	7.97		
33	8.22	6.83	8.58	7.22	9.21	7.08	9.82	7.61	10.16	7.57	10.51	7.53	11.19	7.92		
35	8.05	6.75	8.44	7.15	9.06	7.01	9.64	7.54	10.00	7.51	10.36	7.47	11.07	7.88		
37	7.92	6.68	8.30	7.09	8.91	6.95	9.46	7.46	9.79	7.43	10.13	7.39	10.80	7.79		
39	7.78	6.61	8.16	7.02	8.75	6.88	9.28	7.39	9.59	7.35	9.90	7.30	10.53	7.70		
41	7.64	6.54	8.02	6.96	8.60	6.81	9.09	7.32	9.38	7.27	9.68	7.22	10.26	7.61		
43	7.50	6.48	7.88	6.89	8.45	6.75	8.91	7.25	9.18	7.20	9.45	7.14	9.99	7.52		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature				
		℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20	5.64	5.62	5.60	5.58	5.56
-17.7	-18	5.97	5.95	5.92	5.90	5.87
-15.7	-16	6.30	6.27	6.25	6.22	6.19
-13.5	-14	6.66	6.63	6.60	6.57	6.54
-11.5	-12	7.03	6.99	6.96	6.93	6.90
-9.5	-10	7.39	7.36	7.32	7.29	7.25
-7.5	-8	7.75	7.72	7.68	7.64	7.60
-5.5	-6	7.92	7.88	7.85	7.80	7.76
-3.0	-4	8.10	8.05	8.01	7.97	7.92
-1.0	-2	8.27	8.22	8.18	8.13	8.08
1.0	0	8.44	8.39	8.34	8.29	8.24
2.0	1	8.52	8.47	8.42	8.37	8.32
3.0	2	9.08	9.03	8.98	8.94	8.90
5.0	4	10.21	10.15	10.09	10.08	10.07
7.0	6	11.33	11.27	11.20	11.22	11.23
9.0	8	11.78	11.71	11.64	11.62	11.59
11.5	10	12.23	12.16	12.09	12.02	11.94
13.5	12	12.91	12.83	12.75	12.65	12.60
15.5	14	13.59	13.50	13.42	13.29	13.26
16.5	16	13.93	13.84	13.75	13.61	13.59

PFA004Z048

Model FDE100VSPVG Indoor unit FDE50VG (2 uints) Outdoor unit FDC100VS

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					8.12	6.61	8.59	7.12	8.82	7.06	9.07	7.00	9.56	7.38	10.06	7.23
13					8.50	6.77	9.00	7.28	9.26	7.23	9.52	7.36	10.06	7.54	10.60	7.40
15					8.88	6.93	9.42	7.45	9.69	7.39	9.98	7.33	10.56	7.71	11.14	7.56
17					9.26	7.10	9.84	7.62	10.12	7.56	10.43	7.56	11.05	7.88	11.67	7.73
19					9.46	7.19	10.05	7.70	10.34	7.64	10.65	7.58	11.29	7.96	11.92	7.80
21					9.65	7.27	10.25	7.78	10.56	7.73	10.88	7.67	11.52	8.06	12.16	7.88
23					9.65	7.27	10.28	7.80	10.59	7.74	10.91	7.68	11.56	8.05	12.21	7.90
25			8.93	7.38	9.64	7.27	10.31	7.81	10.62	7.75	10.95	7.70	11.61	8.07	12.27	7.91
27			8.86	7.62	9.64	7.27	10.34	7.82	10.65	7.76	10.96	7.70	11.57	8.05		
29			8.80	7.32	9.50	7.29	10.17	7.75	10.49	7.70	10.81	7.64	11.45	8.01		
31			8.73	7.29	9.35	7.14	9.99	7.68	10.32	7.63	10.66	7.59	11.32	7.97		
33	8.22	6.83	8.58	7.22	9.21	7.08	9.82	7.61	10.16	7.57	10.51	7.53	11.19	7.92		
35	8.05	6.75	8.44	7.15	9.06	7.01	9.64	7.54	10.00	7.51	10.36	7.47	11.07	7.88		
37	7.92	6.68	8.30	7.09	8.91	6.95	9.46	7.46	9.79	7.43	10.13	7.39	10.80	7.79		
39	7.78	6.61	8.16	7.02	8.75	6.88	9.28	7.39	9.59	7.35	9.90	7.30	10.53	7.70		
41	7.64	6.54	8.02	6.96	8.60	6.81	9.09	7.32	9.38	7.27	9.68	7.22	10.26	7.61		
43	7.50	6.48	7.88	6.89	8.45	6.75	8.91	7.25	9.18	7.20	9.45	7.14	9.99	7.52		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature				
		℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20	5.64	5.62	5.60	5.58	5.56
-17.7	-18	5.97	5.95	5.92	5.90	5.87
-15.7	-16	6.30	6.27	6.25	6.22	6.19
-13.5	-14	6.66	6.63	6.60	6.57	6.54
-11.5	-12	7.03	6.99	6.96	6.93	6.90
-9.5	-10	7.39	7.36	7.32	7.29	7.25
-7.5	-8	7.75	7.72	7.68	7.64	7.60
-5.5	-6	7.92	7.88	7.85	7.80	7.76
-3.0	-4	8.10	8.05	8.01	7.97	7.92
-1.0	-2	8.27	8.22	8.18	8.13	8.08
1.0	0	8.44	8.39	8.34	8.29	8.24
2.0	1	8.52	8.47	8.42	8.37	8.32
3.0	2	9.08	9.03	8.98	8.94	8.90
5.0	4	10.21	10.15	10.09	10.08	10.07
7.0	6	11.33	11.27	11.20	11.22	11.23
9.0	8	11.78	11.71	11.64	11.62	11.59
11.5	10	12.23	12.16	12.09	12.02	11.94
13.5	12	12.91	12.83	12.75	12.65	12.60
15.5	14	13.59	13.50	13.42	13.29	13.26
16.5	16	13.93	13.84	13.75	13.61	13.59

PFA004Z048

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

Model FDE125VNPVG Indoor unit FDE60VG (2 uints) Outdoor unit FDC125VN

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					10.15	9.21	10.74	10.02	11.03	9.94	11.34	9.87	11.96	10.47	12.57	10.29
13					10.63	9.40	11.26	10.21	11.57	10.13	11.91	7.36	12.58	10.67	13.25	10.48
15					11.10	9.59	11.78	10.41	12.11	10.33	12.47	10.25	13.20	10.86	13.92	10.67
17					11.58	9.79	12.29	10.60	12.65	10.52	13.04	7.56	13.82	11.06	14.59	10.87
19					11.82	9.89	12.56	10.70	12.92	10.62	13.32	10.55	14.11	11.15	14.90	10.96
21					12.06	9.99	12.82	10.80	13.19	10.72	13.60	10.65	14.40	8.06	15.20	11.05
23					12.06	9.99	12.85	10.81	13.23	10.74	13.64	10.66	14.45	11.26	15.27	11.07
25			11.16	10.17	12.06	9.99	12.89	10.83	13.27	10.75	13.68	10.68	14.51	11.28	15.34	11.09
27			11.08	7.62	12.05	9.99	12.92	10.84	13.31	10.77	13.69	10.68	14.47	11.27		
29			11.00	10.10	11.87	7.29	12.71	10.76	13.11	10.69	13.51	10.62	14.31	11.22		
31			10.92	10.06	11.69	9.84	12.49	10.68	12.90	10.62	13.32	10.55	14.15	11.17		
33	10.27	9.35	10.72	9.97	11.51	9.76	12.27	10.59	12.70	10.54	13.13	10.48	13.99	11.12		
35	10.07	9.25	10.55	9.90	11.33	9.69	12.06	10.51	12.50	10.47	12.94	10.42	13.83	11.06		
37	9.90	9.17	10.38	9.82	11.13	9.61	11.83	10.43	12.24	10.37	12.66	10.32	13.50	10.96		
39	9.72	9.09	10.20	9.75	10.94	9.53	11.60	10.34	11.99	10.28	12.38	10.22	13.16	10.85		
41	9.55	9.01	10.02	9.67	10.75	9.45	11.37	10.25	11.73	10.19	12.09	10.12	12.82	10.74		
43	9.38	8.93	9.85	9.59	10.56	9.37	11.14	10.17	11.47	10.10	11.81	10.03	12.48	10.64		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	7.06	7.03	7.00	6.97	6.95
-17.7	-18	7.46	7.43	7.41	7.37	7.34
-15.7	-16	7.87	7.84	7.81	7.77	7.74
-13.5	-14	8.33	8.29	8.26	8.22	8.18
-11.5	-12	8.78	8.74	8.70	8.66	8.62
-9.5	-10	9.24	9.19	9.15	9.11	9.06
-7.5	-8	9.69	9.65	9.60	9.55	9.50
-5.5	-6	9.91	9.86	9.81	9.75	9.70
-3.0	-4	10.12	10.07	10.01	9.96	9.90
-1.0	-2	10.33	10.28	10.22	10.16	10.10
1.0	0	10.55	10.49	10.43	10.36	10.30
2.0	1	10.65	10.59	10.53	10.47	10.40
3.0	2	11.36	11.29	11.22	11.18	11.13
5.0	4	12.76	12.69	12.61	12.60	12.58
7.0	6	14.16	14.08	14.00	14.02	14.04
9.0	8	14.72	14.64	14.56	14.52	14.49
11.5	10	15.28	15.20	15.11	15.02	14.93
13.5	12	16.13	16.04	15.94	15.82	15.75
15.5	14	16.98	16.88	16.77	16.62	16.58
16.5	16	17.41	17.30	17.19	17.02	16.99

PFA004Z048

Model FDE125VSPVG Indoor unit FDE60VG (2 uints) Outdoor unit FDC125VS

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					10.15	9.21	10.74	10.02	11.03	9.94	11.34	9.87	11.96	10.47	12.57	10.29
13					10.63	9.40	11.26	10.21	11.57	10.13	11.91	7.36	12.58	10.67	13.25	10.48
15					11.10	9.59	11.78	10.41	12.11	10.33	12.47	10.25	13.20	10.86	13.92	10.67
17					11.58	9.79	12.29	10.60	12.65	10.52	13.04	7.56	13.82	11.06	14.59	10.87
19					11.82	9.89	12.56	10.70	12.92	10.62	13.32	10.55	14.11	11.15	14.90	10.96
21					12.06	9.99	12.82	10.80	13.19	10.72	13.60	10.65	14.40	8.06	15.20	11.05
23					12.06	9.99	12.85	10.81	13.23	10.74	13.64	10.66	14.45	11.26	15.27	11.07
25			11.16	10.17	12.06	9.99	12.89	10.83	13.27	10.75	13.68	10.68	14.51	11.28	15.34	11.09
27			11.08	7.62	12.05	9.99	12.92	10.84	13.31	10.77	13.69	10.68	14.47	11.27		
29			11.00	10.10	11.87	7.29	12.71	10.76	13.11	10.69	13.51	10.62	14.31	11.22		
31			10.92	10.06	11.69	9.84	12.49	10.68	12.90	10.62	13.32	10.55	14.15	11.17		
33	10.27	9.35	10.72	9.97	11.51	9.76	12.27	10.59	12.70	10.54	13.13	10.48	13.99	11.12		
35	10.07	9.25	10.55	9.90	11.33	9.69	12.06	10.51	12.50	10.47	12.94	10.42	13.83	11.06		
37	9.90	9.17	10.38	9.82	11.13	9.61	11.83	10.43	12.24	10.37	12.66	10.32	13.50	10.96		
39	9.72	9.09	10.20	9.75	10.94	9.53	11.60	10.34	11.99	10.28	12.38	10.22	13.16	10.85		
41	9.55	9.01	10.02	9.67	10.75	9.45	11.37	10.25	11.73	10.19	12.09	10.12	12.82	10.74		
43	9.38	8.93	9.85	9.59	10.56	9.37	11.14	10.17	11.47	10.10	11.81	10.03	12.48	10.64		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	7.06	7.03	7.00	6.97	6.95
-17.7	-18	7.46	7.43	7.41	7.37	7.34
-15.7	-16	7.87	7.84	7.81	7.77	7.74
-13.5	-14	8.33	8.29	8.26	8.22	8.18
-11.5	-12	8.78	8.74	8.70	8.66	8.62
-9.5	-10	9.24	9.19	9.15	9.11	9.06
-7.5	-8	9.69	9.65	9.60	9.55	9.50
-5.5	-6	9.91	9.86	9.81	9.75	9.70
-3.0	-4	10.12	10.07	10.01	9.96	9.90
-1.0	-2	10.33	10.28	10.22	10.16	10.10
1.0	0	10.55	10.49	10.43	10.36	10.30
2.0	1	10.65	10.59	10.53	10.47	10.40
3.0	2	11.36	11.29	11.22	11.18	11.13
5.0	4	12.76	12.69	12.61	12.60	12.58
7.0	6	14.16	14.08	14.00	14.02	14.04
9.0	8	14.72	14.64	14.56	14.52	14.49
11.5	10	15.28	15.20	15.11	15.02	14.93
13.5	12	16.13	16.04	15.94	15.82	15.75
15.5	14	16.98	16.88	16.77	16.62	16.58
16.5	16	17.41	17.30	17.19	17.02	16.99

PFA004Z048

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

Model FDE140VNPVG Indoor unit FDE71VG (2 uints) Outdoor unit FDC140VN

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.37	9.70	12.02	10.50	12.35	10.41	12.70	10.33	13.39	10.92	14.08	10.72
13					11.90	9.92	12.61	10.72	12.96	10.64	13.33	7.36	14.09	11.15	14.84	10.94
15					12.43	10.14	13.19	10.95	13.57	10.86	13.97	10.78	14.78	11.37	15.59	11.16
17					12.96	10.37	13.77	11.17	14.17	11.09	14.61	7.56	15.48	11.60	16.34	11.39
19					13.24	10.49	14.06	11.29	14.48	11.21	14.92	11.12	15.80	11.71	16.68	11.49
21					13.51	10.60	14.36	11.41	14.78	11.32	15.23	11.24	16.12	8.06	17.02	11.60
23					13.51	10.60	14.40	11.42	14.82	11.34	15.28	11.26	16.19	11.84	17.10	11.62
25			12.50	10.78	13.50	10.60	14.43	11.43	14.86	11.35	15.33	11.27	16.25	11.86	17.18	11.64
27			12.41	7.62	13.50	10.60	14.47	11.45	14.91	11.37	15.34	11.28	16.20	11.84		
29			12.32	10.69	13.29	7.29	14.23	11.35	14.68	11.28	15.13	11.20	16.02	11.78		
31			12.23	10.65	13.09	10.42	13.99	11.26	14.45	11.19	14.92	11.12	15.85	11.73		
33	11.51	9.95	12.01	10.55	12.89	10.34	13.75	11.17	14.23	11.11	14.71	11.05	15.67	11.67		
35	11.28	9.84	11.82	10.47	12.68	10.25	13.50	11.07	14.00	11.02	14.50	10.97	15.49	11.61		
37	11.08	9.74	11.62	10.38	12.47	10.16	13.25	10.97	13.71	10.92	14.18	10.86	15.12	11.48		
39	10.89	9.65	11.43	10.29	12.26	10.07	12.99	10.87	13.43	10.81	13.86	10.74	14.74	11.36		
41	10.70	9.56	11.23	10.20	12.04	9.98	12.73	10.77	13.14	10.70	13.55	10.63	14.36	11.24		
43	10.51	9.46	11.03	10.11	11.83	9.89	12.47	10.67	12.85	10.60	13.23	10.52	13.98	11.11		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃WB	16	18	20	22	24
-19.8	-20	8.06	8.03	8.00	7.97	7.94
-17.7	-18	8.53	8.50	8.46	8.43	8.39
-15.7	-16	9.00	8.96	8.92	8.88	8.85
-13.5	-14	9.52	9.48	9.43	9.39	9.35
-11.5	-12	10.04	9.99	9.95	9.90	9.85
-9.5	-10	10.56	10.51	10.46	10.41	10.36
-7.5	-8	11.08	11.02	10.97	10.91	10.86
-5.5	-6	11.32	11.26	11.21	11.15	11.09
-3.0	-4	11.56	11.50	11.44	11.38	11.31
-1.0	-2	11.81	11.75	11.68	11.61	11.54
1.0	0	12.05	11.99	11.92	11.84	11.77
2.0	1	12.18	12.11	12.04	11.96	11.89
3.0	2	12.98	12.90	12.83	12.77	12.72
5.0	4	14.58	14.50	14.41	14.40	14.38
7.0	6	16.19	16.09	16.00	16.02	16.05
9.0	8	16.83	16.73	16.63	16.59	16.55
11.5	10	17.46	17.37	17.27	17.17	17.06
13.5	12	18.44	18.33	18.22	18.08	18.00
15.5	14	19.41	19.29	19.17	18.99	18.95
16.5	16	19.90	19.77	19.64	19.45	19.42

PFA004Z048

Model FDE140VSPVG Indoor unit FDE71VG (2 uints) Outdoor unit FDC140VS

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.37	9.70	12.02	10.50	12.35	10.41	12.70	10.33	13.39	10.92	14.08	10.72
13					11.90	9.92	12.61	10.72	12.96	10.64	13.33	7.36	14.09	11.15	14.84	10.94
15					12.43	10.14	13.19	10.95	13.57	10.86	13.97	10.78	14.78	11.37	15.59	11.16
17					12.96	10.37	13.77	11.17	14.17	11.09	14.61	7.56	15.48	11.60	16.34	11.39
19					13.24	10.49	14.06	11.29	14.48	11.21	14.92	11.12	15.80	11.71	16.68	11.49
21					13.51	10.60	14.36	11.41	14.78	11.32	15.23	11.24	16.12	8.06	17.02	11.60
23					13.51	10.60	14.40	11.42	14.82	11.34	15.28	11.26	16.19	11.84	17.10	11.62
25			12.50	10.78	13.50	10.60	14.43	11.43	14.86	11.35	15.33	11.27	16.25	11.86	17.18	11.64
27			12.41	7.62	13.50	10.60	14.47	11.45	14.91	11.37	15.34	11.28	16.20	11.84		
29			12.32	10.69	13.29	7.29	14.23	11.35	14.68	11.28	15.13	11.20	16.02	11.78		
31			12.23	10.65	13.09	10.42	13.99	11.26	14.45	11.19	14.92	11.12	15.85	11.73		
33	11.51	9.95	12.01	10.55	12.89	10.34	13.75	11.17	14.23	11.11	14.71	11.05	15.67	11.67		
35	11.28	9.84	11.82	10.47	12.68	10.25	13.50	11.07	14.00	11.02	14.50	10.97	15.49	11.61		
37	11.08	9.74	11.62	10.38	12.47	10.16	13.25	10.97	13.71	10.92	14.18	10.86	15.12	11.48		
39	10.89	9.65	11.43	10.29	12.26	10.07	12.99	10.87	13.43	10.81	13.86	10.74	14.74	11.36		
41	10.70	9.56	11.23	10.20	12.04	9.98	12.73	10.77	13.14	10.70	13.55	10.63	14.36	11.24		
43	10.51	9.46	11.03	10.11	11.83	9.89	12.47	10.67	12.85	10.60	13.23	10.52	13.98	11.11		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃WB	16	18	20	22	24
-19.8	-20	8.06	8.03	8.00	7.97	7.94
-17.7	-18	8.53	8.50	8.46	8.43	8.39
-15.7	-16	9.00	8.96	8.92	8.88	8.85
-13.5	-14	9.52	9.48	9.43	9.39	9.35
-11.5	-12	10.04	9.99	9.95	9.90	9.85
-9.5	-10	10.56	10.51	10.46	10.41	10.36
-7.5	-8	11.08	11.02	10.97	10.91	10.86
-5.5	-6	11.32	11.26	11.21	11.15	11.09
-3.0	-4	11.56	11.50	11.44	11.38	11.31
-1.0	-2	11.81	11.75	11.68	11.61	11.54
1.0	0	12.05	11.99	11.92	11.84	11.77
2.0	1	12.18	12.11	12.04	11.96	11.89
3.0	2	12.98	12.90	12.83	12.77	12.72
5.0	4	14.58	14.50	14.41	14.40	14.38
7.0	6	16.19	16.09	16.00	16.02	16.05
9.0	8	16.83	16.73	16.63	16.59	16.55
11.5	10	17.46	17.37	17.27	17.17	17.06
13.5	12	18.44	18.33	18.22	18.08	18.00
15.5	14	19.41	19.29	19.17	18.99	18.95
16.5	16	19.90	19.77	19.64	19.45	19.42

PFA004Z048

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

Model FDE200VSAPVG Indoor unit FDE100VG (2 uints) Outdoor unit FDC200VSA

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					19.36	14.50	20.45	15.58	20.99	15.34	21.67	15.13	23.02	15.91	24.37	15.39
13					19.46	14.54	20.57	15.62	21.13	15.38	21.78	15.17	23.09	15.93	24.40	15.40
15					19.55	14.57	20.69	15.66	21.26	15.42	21.90	15.20	23.16	15.94	24.43	15.40
17					19.56	14.57	20.77	15.68	21.37	15.46	21.99	15.23	23.23	15.96	24.47	15.41
19					19.64	14.60	20.84	15.70	21.48	15.49	22.09	15.25	23.30	15.98	24.51	15.42
21					19.34	14.49	20.50	15.60	21.11	15.38	21.72	15.15	22.92	15.88	24.13	15.34
23					19.04	14.39	20.16	15.49	20.74	15.27	21.35	15.04	22.55	15.79	23.76	15.26
25			17.82	14.94	18.89	14.33	19.99	15.43	20.56	15.21	21.16	14.99	22.37	15.75	23.57	15.22
27			17.68	14.89	18.74	14.28	19.82	15.38	20.38	15.16	21.25	15.02	22.13	15.69		
29			17.40	14.78	18.43	14.17	19.49	15.28	20.03	15.06	20.93	14.93	21.83	15.62		
31			17.11	14.67	18.11	14.07	19.15	15.17	19.69	14.96	20.60	14.84	21.52	15.54		
33	15.84	13.56	16.58	14.46	17.80	13.96	18.82	15.07	19.34	14.86	20.28	14.75	21.21	15.47		
35	15.73	13.52	16.37	14.39	17.49	13.85	18.49	14.97	19.00	14.76	19.95	14.66	20.91	15.40		
37	15.52	13.43	16.13	14.30	17.14	13.73	18.05	14.84	18.57	14.63	19.48	14.53	20.39	15.27		
39	15.31	13.34	15.89	14.20	16.78	13.61	17.61	14.70	18.13	14.51	19.00	14.40	19.87	15.15		
41	15.10	13.26	15.65	14.12	16.43	13.49	17.18	14.57	17.70	14.39	18.53	14.28	19.36	15.03		
43	14.89	13.17	15.41	14.03	16.07	13.38	16.74	14.45	17.26	14.27	18.05	14.15	18.84	14.92		
46	14.58	13.04	15.05	13.89	15.54	13.20	16.09	14.25	16.61	14.09	17.34	13.97	18.06	14.74		
50	11.25	11.02	11.78	11.54	12.39	12.14	12.68	12.42	12.88	12.62	13.08	12.82	13.28	13.01		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	11.10	10.98	10.86	10.73	10.60
-11.5	-12	11.93	11.80	11.67	11.54	11.40
-9.5	-10	12.75	12.61	12.48	12.34	12.20
-7.5	-8	13.57	13.43	13.29	13.14	13.00
-5.5	-6	13.78	13.64	13.51	13.37	13.24
-3.0	-4	13.99	13.86	13.73	13.60	13.47
-1.0	-2	14.20	14.08	13.95	13.83	13.71
1.0	0	14.41	14.29	14.18	14.06	13.94
2.0	1	14.51	14.40	14.29	14.17	14.06
3.0	2	16.19	16.05	15.91	15.79	15.67
5.0	4	19.54	19.35	19.15	19.02	18.89
7.0	6	22.89	22.64	22.40	22.25	22.11
9.0	8	23.99	23.78	23.58	23.42	23.25
11.5	10	25.09	24.92	24.75	24.58	24.40
13.5	12	25.95	25.79	25.63	25.45	25.27
15.5	14	26.82	26.66	26.50	26.32	26.14
16.5	16	27.25	27.10	26.94	26.76	26.57

PFA004Z048

Model FDE250VSAPVG Indoor unit FDE125VG (2 uints) Outdoor unit FDC250VSA

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					24.64	16.48	26.08	17.48	26.80	17.20	27.60	16.92	29.20	17.55	30.80	16.88
13					24.67	16.49	26.11	17.49	26.83	17.21	27.63	16.93	29.23	17.56	30.83	16.88
15					24.69	16.50	26.14	17.50	26.86	17.22	27.66	16.94	29.26	17.57	30.86	16.89
17					24.70	16.51	26.23	17.53	26.99	17.26	27.78	16.98	29.34	17.59	30.91	16.90
19					24.81	16.55	26.33	17.57	27.13	17.31	27.90	17.02	29.43	17.62	30.96	16.92
21					24.43	16.40	25.90	17.41	26.67	17.15	27.43	16.87	28.96	17.48	30.48	16.80
23					24.05	16.25	25.47	17.26	26.20	16.99	26.96	16.72	28.49	17.35	30.01	16.68
25			22.51	16.85	23.86	16.17	25.25	17.19	25.97	16.92	26.73	16.64	28.25	17.28	29.77	16.62
27			22.33	16.77	23.67	16.10	25.04	17.11	25.74	16.84	26.85	16.68	27.96	17.20		
29			21.97	16.62	23.27	15.95	24.61	16.96	25.30	16.70	26.44	16.55	27.57	17.10		
31			21.61	16.47	22.88	15.80	24.19	16.82	24.87	16.55	26.03	16.42	27.18	16.99		
33	20.01	15.38	20.94	16.19	22.49	15.65	23.77	16.67	24.44	16.41	25.62	16.30	26.80	16.89		
35	19.87	15.31	20.68	16.08	22.10	15.50	23.35	16.53	24.00	16.27	25.21	16.17	26.41	16.78		
37	19.61	15.20	20.42	15.98	21.78	15.38	22.94	16.39	23.56	16.13	24.66	16.01	25.76	16.61		
39	19.51	15.15	20.33	15.94	21.65	15.33	22.72	16.32	23.30	16.05	24.30	15.90	25.30	16.49		
41	20.09	15.41	20.57	16.04	21.47	15.27	22.44	16.23	22.98	15.95	23.88	15.77	24.77	16.35		
43	19.02	14.93	19.85	15.74	21.05	15.11	21.92	16.05	22.41	15.77	23.19	15.57	23.96	16.14		
46	17.16	14.12	17.71	14.90	18.29	14.13	18.93	15.11	19.55	14.92	20.41	14.78	21.26	15.48		
50	11.31	11.08	11.84	11.60	12.45	12.20	12.74	12.49	12.94	12.69	13.14	12.88	13.35	13.08		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	13.22	13.07	12.93	12.78	12.63
-11.5	-12	13.88	13.73	13.58	13.43	13.28
-9.5	-10	14.55	14.39	14.24	14.08	13.93
-7.5	-8	15.21	15.05	14.89	14.73	14.58
-5.5	-6	15.48	15.32	15.17	15.02	14.87
-3.0	-4	15.74	15.59	15.45	15.30	15.16
-1.0	-2	16.00	15.87	15.73	15.59	15.45
1.0	0	16.27	16.14	16.01	15.87	15.74
2.0	1	16.40	16.27	16.14	16.01	15.88
3.0	2	18.64	18.48	18.32	18.18	18.04
5.0	4	23.11	22.89	22.66	22.50	22.34
7.0	6	27.59	27.29	27.00	26.82	26.65
9.0	8	28.92	28.67	28.42	28.22	28.03
11.5	10	30.24	30.04	29.84	29.63	29.41
13.5	12	31.28	31.09	30.89	30.68	30.46
15.5	14	32.32	32.14	31.95	31.73	31.51
16.5	16	32.85	32.66	32.47	32.25	32.03

PFA004Z048

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

(3) Triple type

Model FDE140VNTVG Indoor unit FDE50VG (3 uints) Outdoor unit FDC140VN

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.37	9.58	12.02	10.35	12.35	10.27	12.70	10.19	13.39	10.76	14.08	10.55
13					11.90	9.80	12.61	10.58	12.96	10.49	13.33	7.36	14.09	10.98	14.84	10.78
15					12.43	10.02	13.19	10.80	13.57	10.72	13.97	10.64	14.78	11.21	15.59	11.00
17					12.96	10.25	13.77	11.03	14.17	10.95	14.61	7.56	15.48	11.44	16.34	11.23
19					13.24	10.37	14.06	11.14	14.48	11.06	14.92	10.98	15.80	11.55	16.68	11.33
21					13.51	10.48	14.36	11.26	14.78	11.18	15.23	11.10	16.12	8.06	17.02	11.44
23					13.51	10.48	14.40	11.28	14.82	11.19	15.28	11.12	16.19	11.68	17.10	11.46
25			12.50	10.65	13.50	10.48	14.43	11.29	14.86	11.21	15.33	11.13	16.25	11.70	17.18	11.49
27			12.41	7.62	13.50	10.48	14.47	11.31	14.91	11.23	15.34	11.14	16.20	11.69		
29			12.32	10.57	13.29	7.29	14.23	11.21	14.68	11.14	15.13	11.06	16.02	11.62		
31			12.23	10.53	13.09	10.30	13.99	11.12	14.45	11.05	14.92	10.98	15.85	11.57		
33	11.51	9.84	12.01	10.43	12.89	10.22	13.75	11.02	14.23	10.97	14.71	10.91	15.67	11.51		
35	11.28	9.73	11.82	10.34	12.68	10.13	13.50	10.92	14.00	10.88	14.50	10.83	15.49	11.45		
37	11.08	9.63	11.62	10.25	12.47	10.04	13.25	10.82	13.71	10.77	14.18	10.71	15.12	11.32		
39	10.89	9.54	11.43	10.16	12.26	9.95	12.99	10.72	13.43	10.67	13.86	10.60	14.74	11.20		
41	10.70	9.45	11.23	10.07	12.04	9.86	12.73	10.62	13.14	10.56	13.55	10.49	14.36	11.07		
43	10.51	9.35	11.03	9.98	11.83	9.77	12.47	10.52	12.85	10.45	13.23	10.37	13.98	10.95		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature				
		℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	8.06	8.03	8.00	7.97	7.94
-17.7	-18	8.53	8.50	8.46	8.43	8.39
-15.7	-16	9.00	8.96	8.92	8.88	8.85
-13.5	-14	9.52	9.48	9.43	9.39	9.35
-11.5	-12	10.04	9.99	9.95	9.90	9.85
-9.5	-10	10.56	10.51	10.46	10.41	10.36
-7.5	-8	11.08	11.02	10.97	10.91	10.86
-5.5	-6	11.32	11.26	11.21	11.15	11.09
-3.0	-4	11.56	11.50	11.44	11.38	11.31
-1.0	-2	11.81	11.75	11.68	11.61	11.54
1.0	0	12.05	11.99	11.92	11.84	11.77
2.0	1	12.18	12.11	12.04	11.96	11.89
3.0	2	12.98	12.90	12.83	12.77	12.72
5.0	4	14.58	14.50	14.41	14.40	14.38
7.0	6	16.19	16.09	16.00	16.02	16.05
9.0	8	16.83	16.73	16.63	16.59	16.55
11.5	10	17.46	17.37	17.27	17.17	17.06
13.5	12	18.44	18.33	18.22	18.08	18.00
15.5	14	19.41	19.29	19.17	18.99	18.95
16.5	16	19.90	19.77	19.64	19.45	19.42

PFA004Z048

Model FDE140VSTVG Indoor unit FDE50VG (3 uints) Outdoor unit FDC140VS

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃DB		21℃DB		23℃DB		26℃DB		27℃DB		28℃DB		31℃DB		33℃DB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃DB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					11.37	9.58	12.02	10.35	12.35	10.27	12.70	10.19	13.39	10.76	14.08	10.55
13					11.90	9.80	12.61	10.58	12.96	10.49	13.33	7.36	14.09	10.98	14.84	10.78
15					12.43	10.02	13.19	10.80	13.57	10.72	13.97	10.64	14.78	11.21	15.59	11.00
17					12.96	10.25	13.77	11.03	14.17	10.95	14.61	7.56	15.48	11.44	16.34	11.23
19					13.24	10.37	14.06	11.14	14.48	11.06	14.92	10.98	15.80	11.55	16.68	11.33
21					13.51	10.48	14.36	11.26	14.78	11.18	15.23	11.10	16.12	8.06	17.02	11.44
23					13.51	10.48	14.40	11.28	14.82	11.19	15.28	11.12	16.19	11.68	17.10	11.46
25			12.50	10.65	13.50	10.48	14.43	11.29	14.86	11.21	15.33	11.13	16.25	11.70	17.18	11.49
27			12.41	7.62	13.50	10.48	14.47	11.31	14.91	11.23	15.34	11.14	16.20	11.69		
29			12.32	10.57	13.29	7.29	14.23	11.21	14.68	11.14	15.13	11.06	16.02	11.62		
31			12.23	10.53	13.09	10.30	13.99	11.12	14.45	11.05	14.92	10.98	15.85	11.57		
33	11.51	9.84	12.01	10.43	12.89	10.22	13.75	11.02	14.23	10.97	14.71	10.91	15.67	11.51		
35	11.28	9.73	11.82	10.34	12.68	10.13	13.50	10.92	14.00	10.88	14.50	10.83	15.49	11.45		
37	11.08	9.63	11.62	10.25	12.47	10.04	13.25	10.82	13.71	10.77	14.18	10.71	15.12	11.32		
39	10.89	9.54	11.43	10.16	12.26	9.95	12.99	10.72	13.43	10.67	13.86	10.60	14.74	11.20		
41	10.70	9.45	11.23	10.07	12.04	9.86	12.73	10.62	13.14	10.56	13.55	10.49	14.36	11.07		
43	10.51	9.35	11.03	9.98	11.83	9.77	12.47	10.52	12.85	10.45	13.23	10.37	13.98	10.95		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature				
		℃DB				
℃DB	℃WB	16	18	20	22	24
-19.8	-20	8.06	8.03	8.00	7.97	7.94
-17.7	-18	8.53	8.50	8.46	8.43	8.39
-15.7	-16	9.00	8.96	8.92	8.88	8.85
-13.5	-14	9.52	9.48	9.43	9.39	9.35
-11.5	-12	10.04	9.99	9.95	9.90	9.85
-9.5	-10	10.56	10.51	10.46	10.41	10.36
-7.5	-8	11.08	11.02	10.97	10.91	10.86
-5.5	-6	11.32	11.26	11.21	11.15	11.09
-3.0	-4	11.56	11.50	11.44	11.38	11.31
-1.0	-2	11.81	11.75	11.68	11.61	11.54
1.0	0	12.05	11.99	11.92	11.84	11.77
2.0	1	12.18	12.11	12.04	11.96	11.89
3.0	2	12.98	12.90	12.83	12.77	12.72
5.0	4	14.58	14.50	14.41	14.40	14.38
7.0	6	16.19	16.09	16.00	16.02	16.05
9.0	8	16.83	16.73	16.63	16.59	16.55
11.5	10	17.46	17.37	17.27	17.17	17.06
13.5	12	18.44	18.33	18.22	18.08	18.00
15.5	14	19.41	19.29	19.17	18.99	18.95
16.5	16	19.90	19.77	19.64	19.45	19.42

PFA004Z048

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

Model FDE200VSATVG Indoor unit FDE71VG (3 uints) Outdoor unit FDC200VSA

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					19.36	15.16	20.45	16.28	20.99	16.11	21.67	15.98	23.02	16.84	24.37	16.49
13					19.46	15.20	20.57	16.33	21.13	16.16	21.78	16.02	23.09	16.87	24.40	16.50
15					19.55	15.24	20.69	16.37	21.26	16.21	21.90	16.06	23.16	16.89	24.43	16.51
17					19.56	15.24	20.77	16.40	21.37	16.25	21.99	16.10	23.23	16.91	24.47	16.52
19					19.64	15.28	20.84	16.43	21.48	16.29	22.09	16.13	23.30	16.93	24.51	16.53
21					19.34	15.15	20.50	16.30	21.11	16.16	21.72	16.00	22.92	16.82	24.13	16.43
23					19.04	15.03	20.16	16.17	20.74	16.03	21.35	15.87	22.55	16.70	23.76	16.32
25			17.82	15.43	18.89	14.97	19.99	16.11	20.56	15.96	21.16	15.81	22.37	16.64	23.57	16.27
27			17.68	15.37	18.74	14.91	19.82	16.05	20.38	15.89	21.25	15.84	22.13	16.57		
29			17.40	15.24	18.43	14.78	19.49	15.92	20.03	15.77	20.93	15.73	21.83	16.48		
31			17.11	15.12	18.11	14.66	19.15	15.80	19.69	15.65	20.60	15.62	21.52	16.38		
33	15.84	13.97	16.58	14.89	17.80	14.53	18.82	15.68	19.34	15.53	20.28	15.51	21.21	16.29		
35	15.73	13.92	16.37	14.80	17.49	14.41	18.49	15.55	19.00	15.41	19.95	15.40	20.91	16.19		
37	15.52	13.82	16.13	14.70	17.14	14.27	18.05	15.39	18.57	15.26	19.48	15.24	20.39	16.04		
39	15.31	13.72	15.89	14.59	16.78	14.13	17.61	15.24	18.13	15.11	19.00	15.09	19.87	15.88		
41	15.10	13.63	15.65	14.49	16.43	13.99	17.18	15.08	17.70	14.96	18.53	14.93	19.36	15.73		
43	14.89	13.53	15.41	14.39	16.07	13.85	16.74	14.93	17.26	14.81	18.05	14.77	18.84	15.58		
46	14.58	13.39	15.05	14.24	15.54	13.64	16.09	14.69	16.61	14.59	17.34	14.54	18.06	15.35		
50	11.25	11.02	11.78	11.54	12.39	12.14	12.68	12.42	12.88	12.62	13.08	12.82	13.28	13.01		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	11.10	10.98	10.86	10.73	10.60
-11.5	-12	11.93	11.80	11.67	11.54	11.40
-9.5	-10	12.75	12.61	12.48	12.34	12.20
-7.5	-8	13.57	13.43	13.29	13.14	13.00
-5.5	-6	13.78	13.64	13.51	13.37	13.24
-3.0	-4	13.99	13.86	13.73	13.60	13.47
-1.0	-2	14.20	14.08	13.95	13.83	13.71
1.0	0	14.41	14.29	14.18	14.06	13.94
2.0	1	14.51	14.40	14.29	14.17	14.06
3.0	2	16.19	16.05	15.91	15.79	15.67
5.0	4	19.54	19.35	19.15	19.02	18.89
7.0	6	22.89	22.64	22.40	22.25	22.11
9.0	8	23.99	23.78	23.58	23.42	23.25
11.5	10	25.09	24.92	24.75	24.58	24.40
13.5	12	25.95	25.79	25.63	25.45	25.27
15.5	14	26.82	26.66	26.50	26.32	26.14
16.5	16	27.25	27.10	26.94	26.76	26.57

PFA004Z048

(4) Double twin type

Model FDE200VSADVG Indoor unit FDE50VG (4 uints) Outdoor unit FDC200VSA

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃CWB		14℃CWB		16℃CWB		18℃CWB		19℃CWB		20℃CWB		22℃CWB		24℃CWB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					19.36	14.79	20.45	15.79	20.99	15.66	21.67	15.58	23.02	16.37	24.37	16.11
13					19.46	14.83	20.57	15.84	21.13	15.72	21.78	15.62	23.09	16.40	24.40	16.12
15					19.55	14.87	20.69	15.89	21.26	15.77	21.90	15.67	23.16	16.43	24.43	16.13
17					19.56	14.88	20.77	15.93	21.37	15.82	21.99	15.70	23.23	16.45	24.47	16.15
19					19.64	14.91	20.84	15.96	21.48	15.86	22.09	15.74	23.30	16.47	24.51	16.16
21					19.34	14.78	20.50	15.81	21.11	15.71	21.72	15.60	22.92	16.34	24.13	16.03
23					19.04	14.64	20.16	15.67	20.74	15.57	21.35	15.45	22.55	16.21	23.76	15.91
25			17.82	14.93	18.89	14.57	19.99	15.60	20.56	15.49	21.16	15.38	22.37	16.14	23.57	15.85
27			17.68	14.87	18.74	14.51	19.82	15.53	20.38	15.42	21.25	15.42	22.13	16.06		
29			17.40	14.73	18.43	14.37	19.49	15.39	20.03	15.28	20.93	15.29	21.83	15.95		
31			17.11	14.59	18.11	14.23	19.15	15.26	19.69	15.14	20.60	15.17	21.52	15.84		
33	15.84	13.53	16.58	14.34	17.80	14.09	18.82	15.12	19.34	15.01	20.28	15.05	21.21	15.74		
35	15.73	13.47	16.37	14.25	17.49	13.96	18.49	14.98	19.00	14.87	19.95	14.92	20.91	15.63		
37	15.52	13.37	16.13	14.13	17.14	13.80	18.05	14.81	18.57	14.71	19.48	14.74	20.39	15.45		
39	15.31	13.26	15.89	14.02	16.78	13.65	17.61	14.63	18.13	14.54	19.00	14.57	19.87	15.27		
41	15.10	13.16	15.65	13.91	16.43	13.49	17.18	14.46	17.70	14.37	18.53	14.39	19.36	15.10		
43	14.89	13.05	15.41	13.80	16.07	13.34	16.74	14.28	17.26	14.20	18.05	14.21	18.84	14.92		
46	14.58	12.90	15.05	13.63	15.54	13.11	16.09	14.02	16.61	13.96	17.34	13.95	18.06	14.66		
50	11.25	11.02	11.78	11.54	12.39	11.81	12.68	12.42	12.88	12.58	13.08	12.45	13.28	13.01		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	11.10	10.98	10.86	10.73	10.60
-11.5	-12	11.93	11.80	11.67	11.54	11.40
-9.5	-10	12.75	12.61	12.48	12.34	12.20
-7.5	-8	13.57	13.43	13.29	13.14	13.00
-5.5	-6	13.78	13.64	13.51	13.37	13.24
-3.0	-4	13.99	13.86	13.73	13.60	13.47
-1.0	-2	14.20	14.08	13.95	13.83	13.71
1.0	0	14.41	14.29	14.18	14.06	13.94
2.0	1	14.51	14.40	14.29	14.17	14.06
3.0	2	16.19	16.05	15.91	15.79	15.67
5.0	4	19.54	19.35	19.15	19.02	18.89
7.0	6	22.89	22.64	22.40	22.25	22.11
9.0	8	23.99	23.78	23.58	23.42	23.25
11.5	10	25.09	24.92	24.75	24.58	24.40
13.5	12	25.95	25.79	25.63	25.45	25.27
15.5	14	26.82	26.66	26.50	26.32	26.14
16.5	16	27.25	27.10	26.94	26.76	26.57

PFA004Z048

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

Model FDE250VSADVG Indoor unit FDE60VG (4 uints) Outdoor unit FDC250VSA

Cooling Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18℃CDB		21℃CDB		23℃CDB		26℃CDB		27℃CDB		28℃CDB		31℃CDB		33℃CDB	
	12℃WB		14℃WB		16℃WB		18℃WB		19℃WB		20℃WB		22℃WB		24℃WB	
℃CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					24.64	18.95	26.08	20.38	26.80	20.13	27.60	19.89	29.20	20.91	30.80	20.32
13					24.67	18.96	26.11	20.39	26.83	20.14	27.63	19.90	29.23	20.92	30.83	20.33
15					24.69	18.97	26.14	20.40	26.86	20.15	27.66	19.91	29.26	20.92	30.86	20.34
17					24.70	18.97	26.23	20.43	26.99	20.19	27.78	19.95	29.34	20.95	30.91	20.35
19					24.81	19.01	26.33	20.47	27.13	20.24	27.90	19.98	29.43	20.97	30.96	20.36
21					24.43	18.87	25.90	20.32	26.67	20.09	27.43	19.84	28.96	20.84	30.48	20.24
23					24.05	18.72	25.47	20.17	26.20	19.94	26.96	19.69	28.49	20.71	30.01	20.13
25			22.51	19.34	23.86	18.65	25.25	20.10	25.97	19.86	26.73	19.62	28.25	20.65	29.77	20.07
27			22.33	19.27	23.67	18.58	25.04	20.03	25.74	19.79	26.85	19.66	27.96	20.57		
29			21.97	19.12	23.27	18.44	24.61	19.88	25.30	19.65	26.44	19.53	27.57	20.46		
31			21.61	18.98	22.88	18.29	24.19	19.74	24.87	19.51	26.03	19.41	27.18	20.36		
33	20.01	17.53	20.94	18.71	22.49	18.15	23.77	19.60	24.44	19.37	25.62	19.28	26.80	20.26		
35	19.87	17.47	20.68	18.60	22.10	18.00	23.35	19.46	24.00	19.24	25.21	19.16	26.41	20.15		
37	19.61	17.35	20.42	18.50	21.78	17.89	22.94	19.33	23.56	19.10	24.66	19.00	25.76	19.98		
39	19.51	17.31	20.33	18.46	21.65	17.84	22.72	19.25	23.30	19.02	24.30	18.89	25.30	19.86		
41	20.09	17.56	20.57	18.56	21.47	17.77	22.44	19.16	22.98	18.92	23.88	18.77	24.77	19.72		
43	19.02	17.10	19.85	18.27	21.05	17.62	21.92	18.99	22.41	18.74	23.19	18.57	23.96	19.51		
46	17.16	16.31	17.71	17.36	18.29	16.65	18.93	18.05	19.55	17.88	20.41	17.77	21.26	18.83		
50	11.31	11.08	11.84	11.60	12.45	12.20	12.74	12.49	12.94	12.69	13.14	12.88	13.35	13.08		

Heating Mode : HC (kW)

Outdoor air temp.		Indoor air temperature ℃CDB				
℃CDB	℃WB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	13.22	13.07	12.93	12.78	12.63
-11.5	-12	13.88	13.73	13.58	13.43	13.28
-9.5	-10	14.55	14.39	14.24	14.08	13.93
-7.5	-8	15.21	15.05	14.89	14.73	14.58
-5.5	-6	15.48	15.32	15.17	15.02	14.87
-3.0	-4	15.74	15.59	15.45	15.30	15.16
-1.0	-2	16.00	15.87	15.73	15.59	15.45
1.0	0	16.27	16.14	16.01	15.87	15.74
2.0	1	16.40	16.27	16.14	16.01	15.88
3.0	2	18.64	18.48	18.32	18.18	18.04
5.0	4	23.11	22.89	22.66	22.50	22.34
7.0	6	27.59	27.29	27.00	26.82	26.65
9.0	8	28.92	28.67	28.42	28.22	28.03
11.5	10	30.24	30.04	29.84	29.63	29.41
13.5	12	31.28	31.09	30.89	30.68	30.46
15.5	14	32.32	32.14	31.95	31.73	31.51
16.5	16	32.85	32.66	32.47	32.25	32.03

PFA004Z048

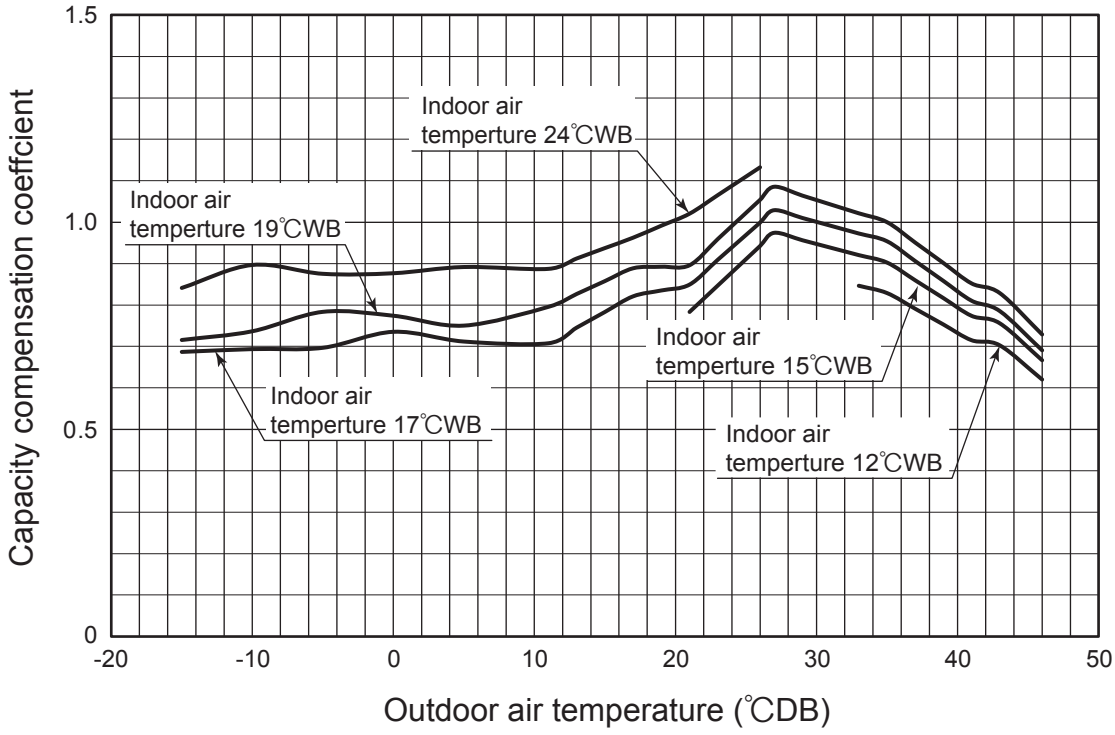
Note(1) These data show average statuses.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.(Cooling only)
(2) Capacities are based on the following conditions.
Corresponding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

[References data]

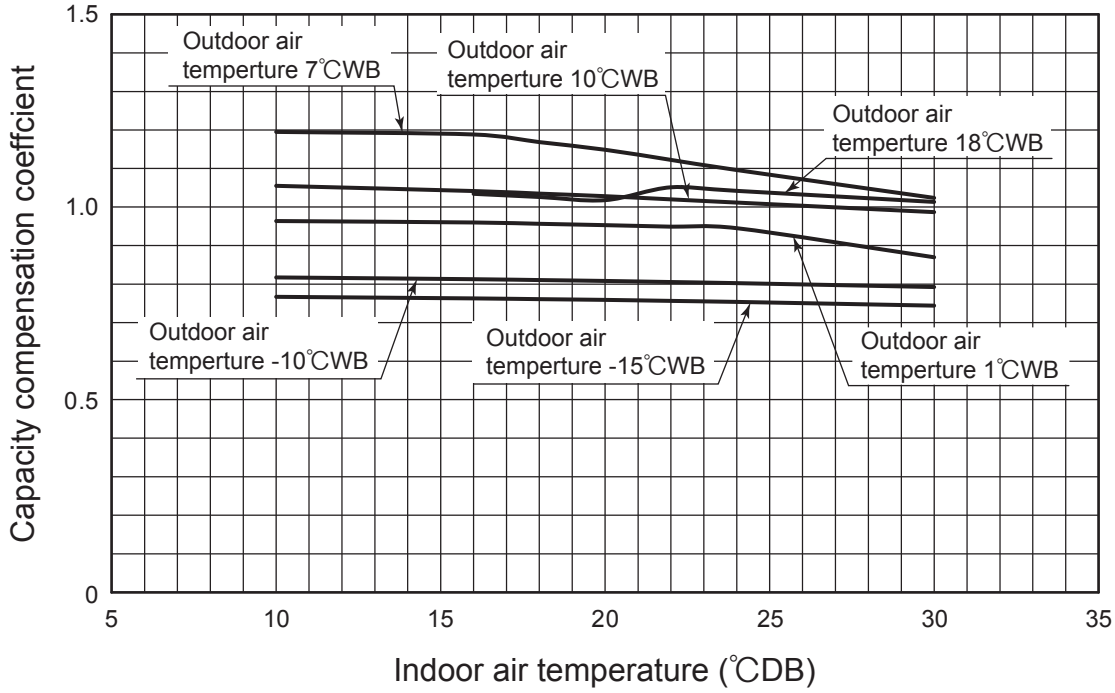
Capacity variation against outdoor and indoor temperature at the maximum compressor speed capacity compensation coefficient shows the ratio to nominal capacity.

(Ⅰ) Model FDC71VNP

① **Cooling**

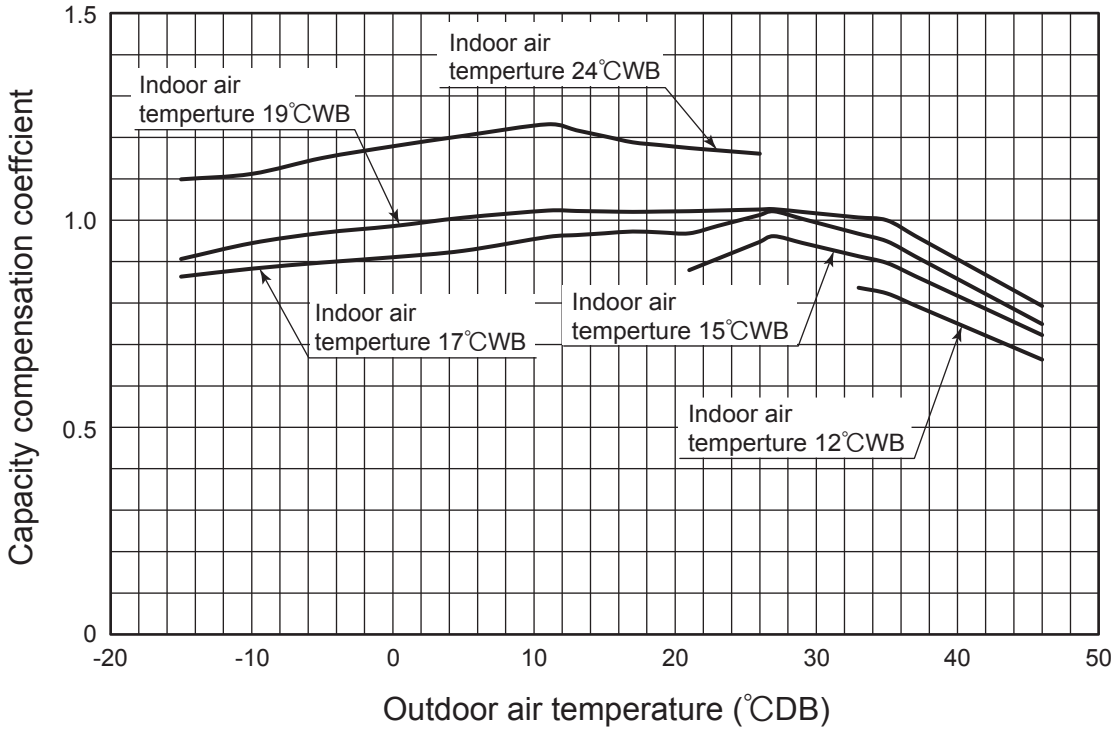


② **Heating**

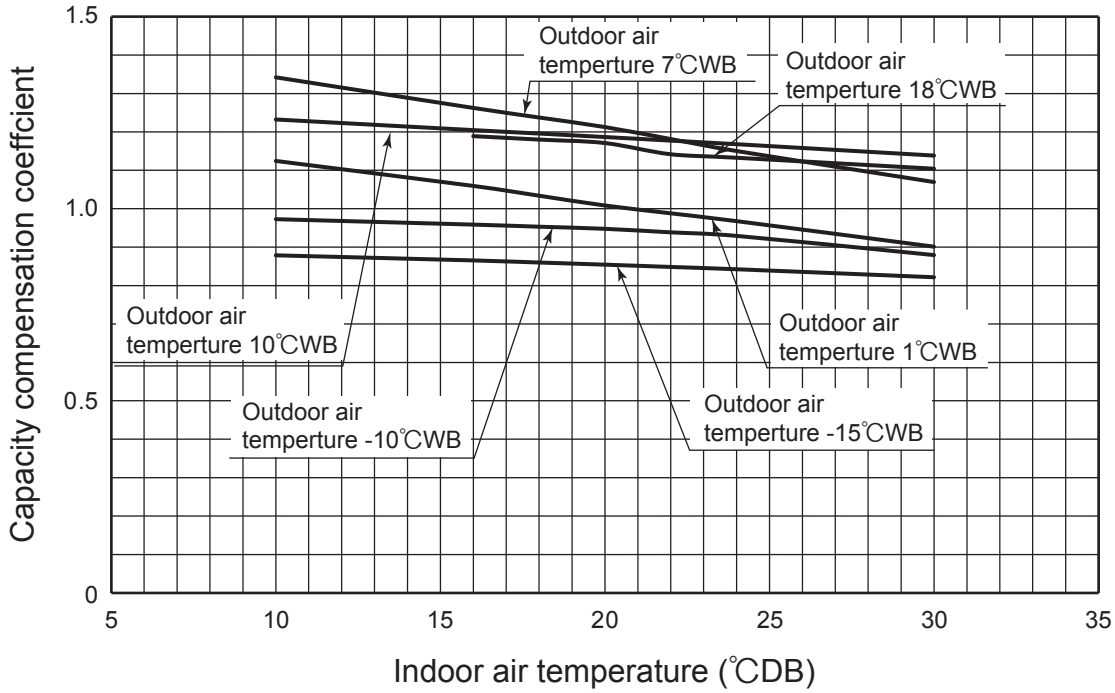


(Ⅱ) Model FDC90VNP

① Cooling

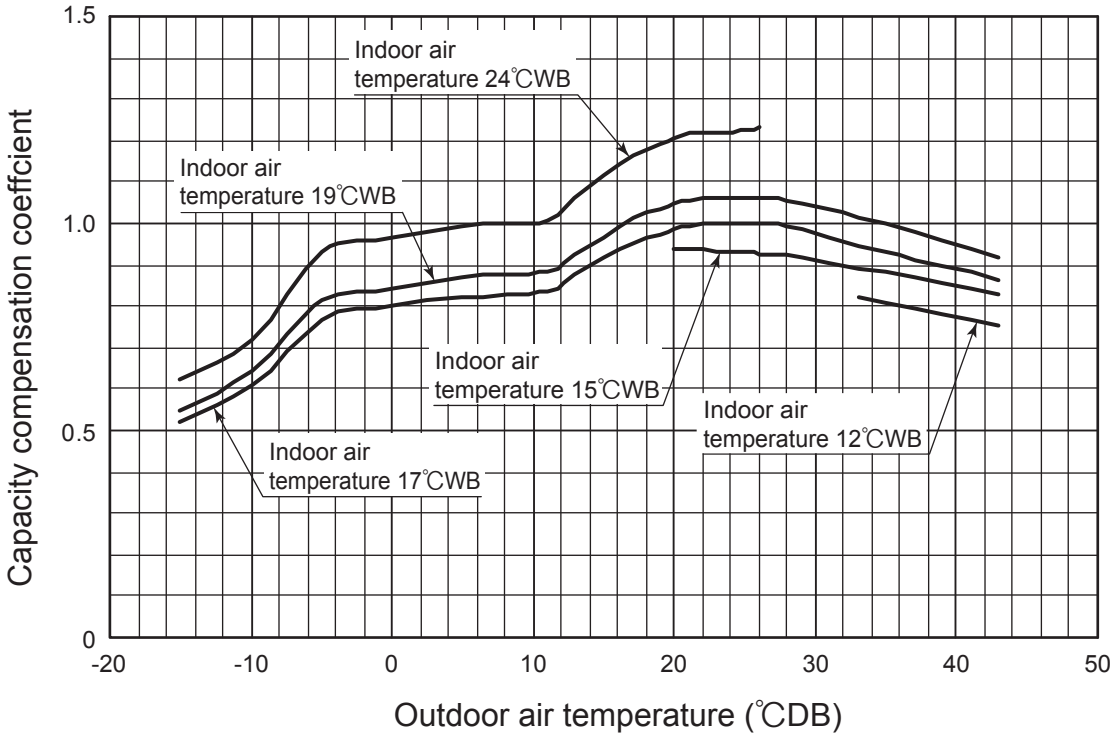


② Heating

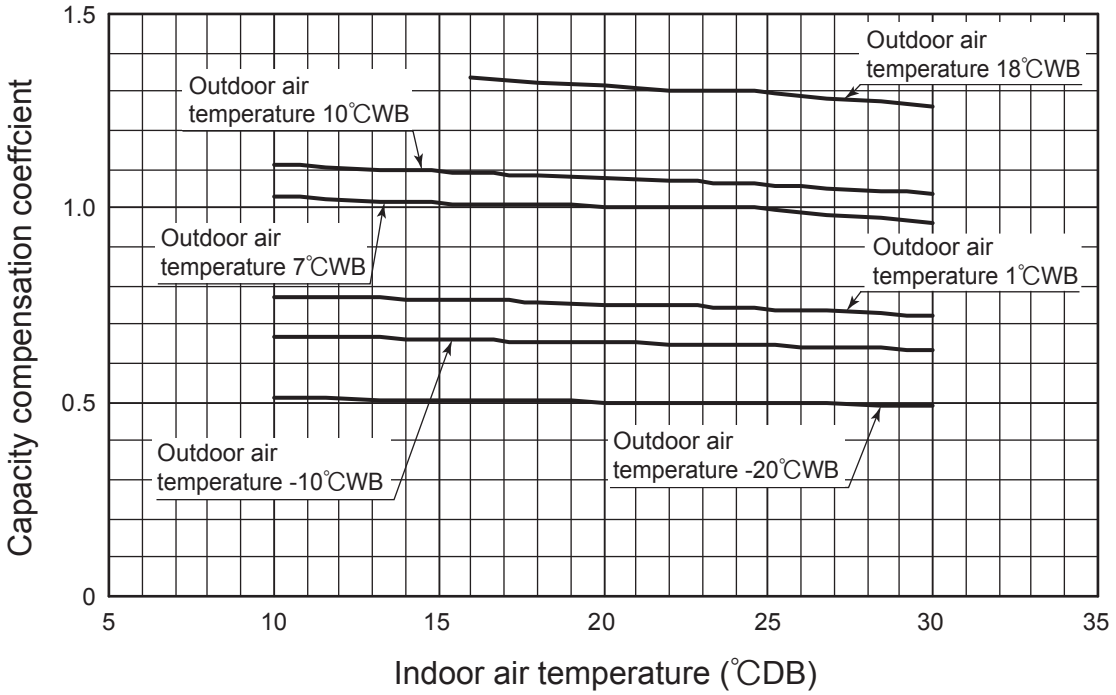


(Ⅲ) Models FDC100, 125, 140VN, 100, 125, 140VS

① Cooling

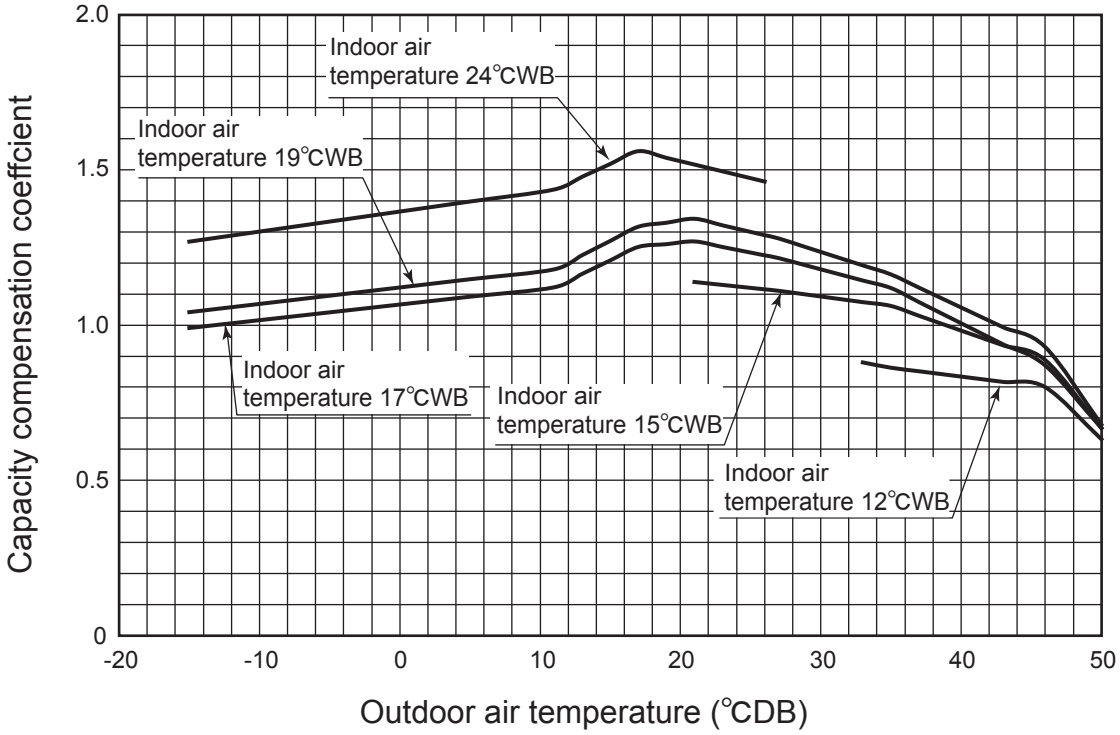


② Heating

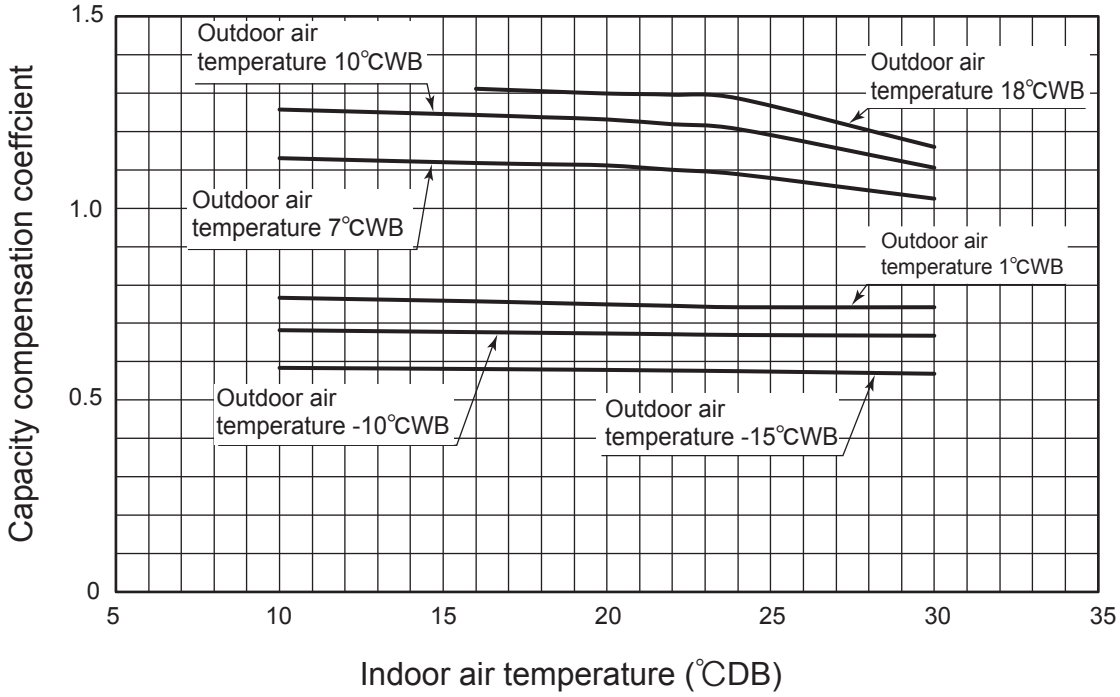


(Ⅳ) Model FDC200VSA

① Cooling

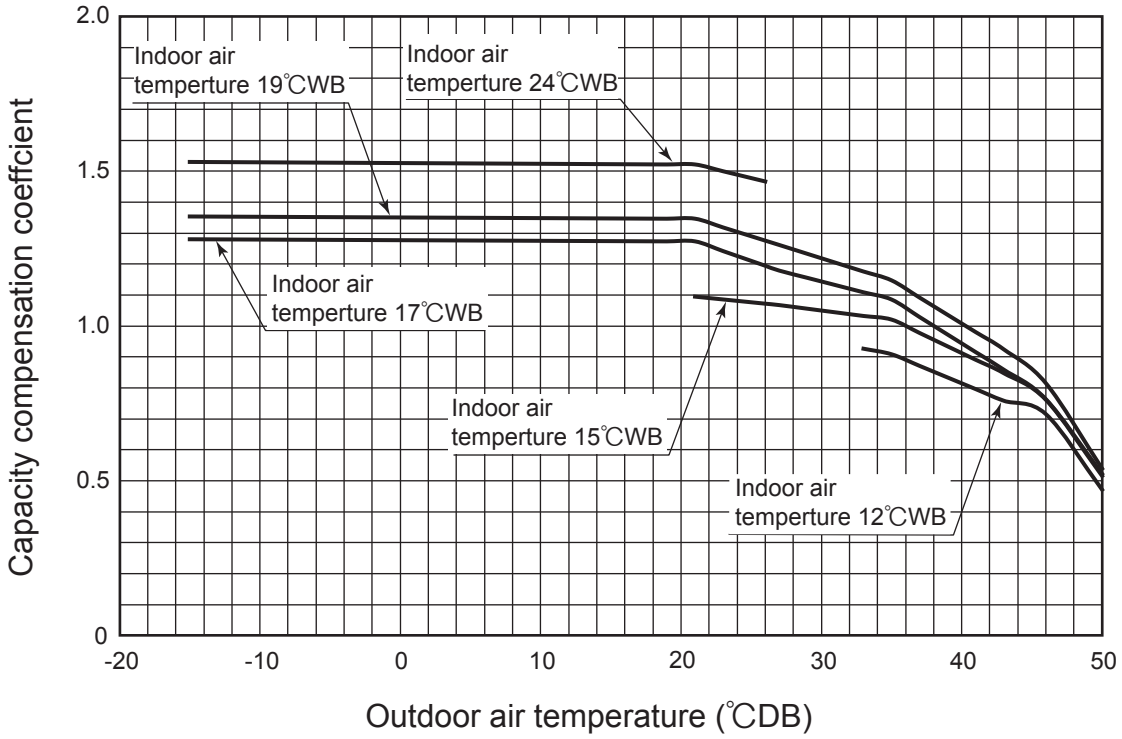


② Heating

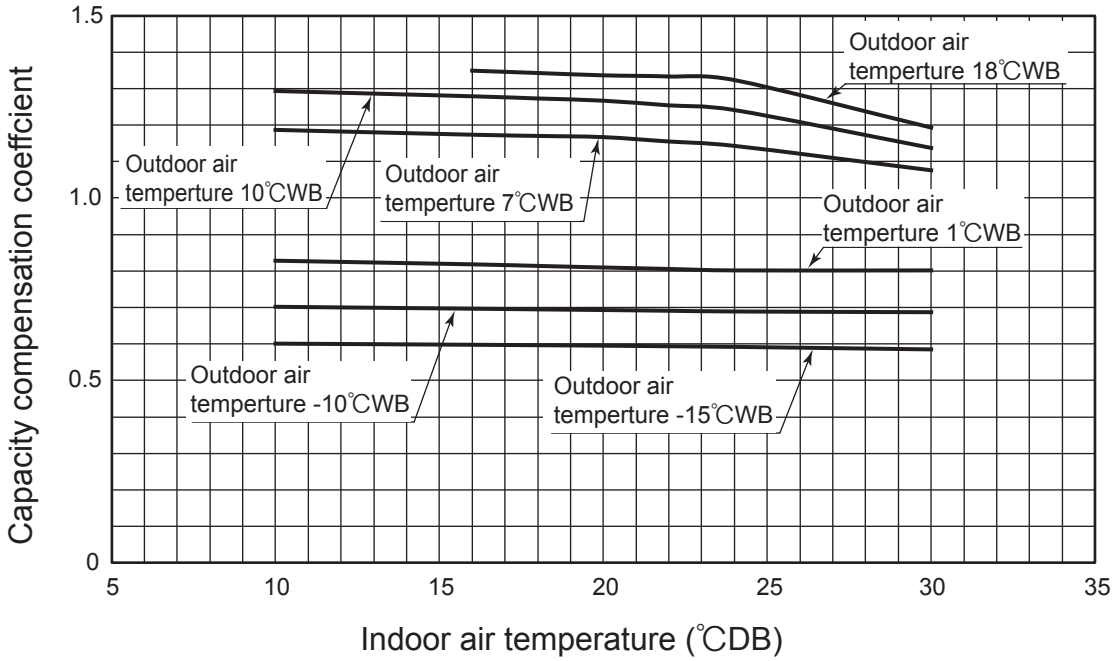


(V) **Model FDC250VSA**

① **Cooling**



② **Heating**



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

Fan speed	P-Hi or Hi	Me	Lo
Coefficient	1.00	0.97	0.95

2.8.3 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.

(1) Models FDC71,90

Equivalent piping length(1)(m)	7.5	10	15	20	25	30
Heating	1	0.99	0.97	0.96	0.93	0.90
Cooling	1	1	1	1	1	1

Note (1) Calculate the equivalent length using the following formula.
However, install the piping so that the equivalent length is within +5 m of the piping distance limit (actual length) for each respective piping system.

(2) Models FDC100 - 140

Equivalent piping length (1)(m)			7.5	10	15	20	25	30	35	40	45	50	55
Heating			1	1	1	1	1	0.998	0.998	0.993	0.993	0.988	0.988
Cooling	FDC100 model	ϕ 15.88	1	0.991	0.978	0.964	0.951	0.937	0.924	0.910	0.897	0.883	0.870
	FDC125 model		1	0.986	0.968	0.950	0.932	0.914	0.896	0.878	0.860	0.842	0.824
	FDC140 model		1	0.985	0.966	0.946	0.927	0.907	0.888	0.868	0.849	0.829	0.810
	FDC100 model	ϕ 19.05	1.016	1.013	1.007	1.002	0.996	0.991	0.985	0.980	0.974	0.969	0.963
	FDC125 model		1.022	1.018	1.009	1.001	0.992	0.984	0.975	0.967	0.958	0.950	0.941
	FDC140 model		1.026	1.021	1.011	1.002	0.992	0.983	0.973	0.964	0.954	0.945	0.935

Note (1) Calculate the equivalent length using the following formula.
However, install the piping so that the piping length is within +5 m of the limit length (actual length) for the respective types.

(3) Models FDC200, 250

Equivalent piping length (1) (m)			7.5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Heating			1	0.998	0.995	0.991	0.988	0.984	0.981	0.977	0.974	0.970	0.967	0.963	0.960	0.956	0.953
Cooling	FDC200 model	ϕ 22.22	1	0.997	0.991	0.984	0.978	0.971	0.965	–	–	–	–	–	–	–	–
	FDC250 model		1	0.995	0.985	0.975	0.965	0.954	0.944	–	–	–	–	–	–	–	–
	FDC200 model	ϕ 25.4	–	–	–	–	–	–	0.988	0.984	0.981	0.977	0.974	0.970	0.967	0.963	0.960
	FDC250 model		–	–	–	–	–	–	0.978	0.972	0.966	0.960	0.953	0.947	0.941	0.935	0.929
	FDC200 model	ϕ 28.58	–	–	–	–	–	–	0.999	0.997	0.995	0.993	0.991	0.989	0.987	0.985	0.983
	FDC250 model		–	–	–	–	–	–	0.997	0.994	0.990	0.987	0.983	0.980	0.976	0.973	0.969

Note (1) Calculate the equivalent length using the following formula.
However, install the piping so that the piping length is within +5 m of the limit length (actual length) for the respective types.

• Equivalent Length =Actual Length + (Equivalent bend length x number of bends in the piping.)
Equivalent length per bend.

Gas pipe diameter (mm)	ϕ 12.7	ϕ 15.88	ϕ 19.05	ϕ 22.22	ϕ 25.4	ϕ 28.58
Equivalent bend length	0.20	0.25	0.30	0.35	0.40	0.45

2.8.4 Height difference between the indoor unit and outdoor unit

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

Height difference between the indoor unit and outdoor unit in the vertical height difference	5m	10m	15m	20m	25m	30m
Adjustment coefficient	0.99	0.98	0.97	0.96	0.95	0.94

Piping length limitations

Item \ Model	FDC71,90	FDC100 - 140	FDC200, 250
Max. one way piping length	30m	50m	70m
Max. vertical height difference	Outdoor unit is higher 20m Outdoor unit is lower 20m	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 FDE200VSATVG with the air flow "P-High", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulbtemperature at 19.0℃ and outdoor dry-bulb temperature 35℃ is

Net cooling capacity = 19.0 × 1.00 × 0.991 × 0.99 ≒ 18.6kW

- 19.0: Net cooling total capacity of FDE200VSATVG (Outdoor temp. : 35℃DB Indoor temp. : 19℃WB) shown in 2.8.1
- 1.00: Air flow : P-High shown in 2.8.2
- 0.991: Piping length :15m (Gas pipe size is ϕ 22.22) shown in 2.8.3
- 0.99: Height diff. : 5m (Outdoor unit : below) shown in 2.8.4

2.9 APPLICATION DATA

2.9.1 Installation of indoor unit ..... See page 67.
2.9.2 Electric wiring work installation ..... See page 71.
2.9.3 Installation of wired remote control (Option) ..... See page 75.

2.9.4 Installation of outdoor unit

(1) Models FDC71, 90VNP

PCA012D057C

R410A REFRIGERANT USED

- **This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 67.**
- **When install the unit, be sure to check whether the selection of installation place, power source specifications, usage limitation (piping length, height differences between indoor and outdoor units, power source voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

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

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

⚠ WARNING

❗

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except by the qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening service valves before completed connection of refrigerant piping work, air can be sucked into refrigerant circuit, which can cause bust or personal injury due to anomalously high pressure in the refrigerant.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power source by means of a circuit breaker or switch (fuse:20A) with a contact separation of at least 3mm.**
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Be sure to switch off the power source in the event of installation, inspection or servicing.**
  If the power source is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed option parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.
- **Appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.**
  Children being supervised not to play with appliance.

⃠

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

⚠ CAUTION

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

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

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

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

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

Notabilia as a unit designed for R410A

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

Check before installation work

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

Accessories for outdoor unit		Q'ty
①	Grommet (Heat pump type only)	4
②	Drain elbow (Heat pump type only)	1
③	Reducer set ø9.52→ø6.35	1
④	Reducer set ø15.88→ø12.7	1

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

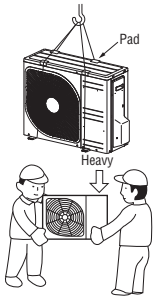
Necessary tools for the installation work			
		9	Wrench key (Hexagon) [4m/m]
		10	Vacuum pump
1	Plus headed driver	11	Vacuum pump adapter (Anti-reverse flow type) (Designed specifically for R410A)
2	Knife		
3	Saw	12	Gauge manifold (Designed specifically for R410A)
4	Tape measure	13	Charge hose (Designed specifically for R410A)
5	Hammer	14	Flaring tool set (Designed specifically for R410A)
6	Spanner wrench	15	Gas leak detector (Designed specifically for R410A)
7	Torque wrench [14.0～82.0N·m (1.4～8.2kgf·m)]	16	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)
8	Hole core drill (65mm in diameter)		

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

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

1) Delivery

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



2) Portage

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

3) Selection of installation location for the outdoor unit

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

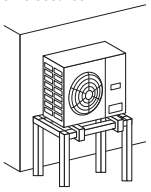
- ○ A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
- ○ A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit.
- ○ A place where the unit is not exposed to oil splashes.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

Do not install the unit in places which exposed to sea breeze (e.g. coastal area) or calcium chloride (e.g. snow melting agent), exposed to ammonia substance (e.g. organic fertilizer).

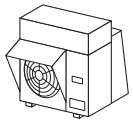
4) Caution about selection of installation location

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

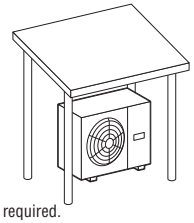
1 Install the unit on the base so that the bottom is higher than snow cover surface, and draining water is secured.



2 Provide a snow hood to the outdoor unit on site.



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

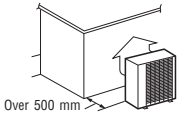


Since drain water generated by defrost control may freeze, following measures are required.

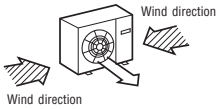
- Don't execute drain piping work by using a drain elbow and drain grommets (accessories). [Refer to Drain piping work.]
- Attached heater on a base plate on site, if there is possibility to freeze drain water. In case that the product has a corrective drainage system, the drainage paths should have suitable threatment against freezing but be sure not to melt the material of drainage paths with heat.

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

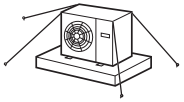
1. Install the outlet air blow side of the unit to face a wall of building, or provide a fence or a windbreak screen.



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



3. The unit should be installed on the stable and level foundation. If the foundation is not level, the down the unit with wires.

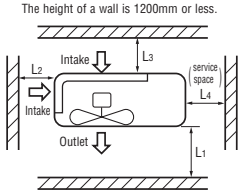


5) Installation space

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

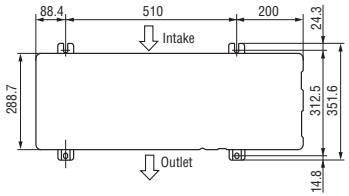
(mm)

Size \ Example installation	I	II	III	IV
L1	Open	280	280	180
L2	100	75	Open	Open
L3	100	80	80	80
L4	250	Open	250	Open

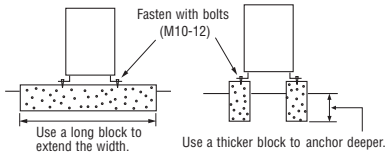


6) Installation

① Anchor bolt fixed position



② Notabilia for installation



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

7) To run the unit for a cooling operation, when the outdoor temperature is –5°C or lower.

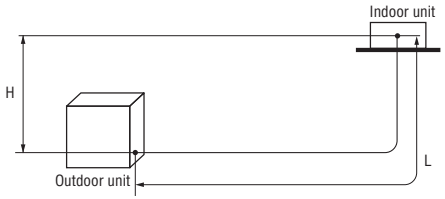
- When the outdoor air temperature is –5°C or lower, provide a snow hood to the outdoor unit on site. So that strong wind will not blow against the outdoor heat exchanger directly.

2. REFRIGERANT PIPING WORK

1) Restrictions on unit installation and use

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

Restrictions			Dimensional restrictions	Marks appearing in the drawing on the right
Indoor unit	FDT, FDEN, FDU, FDUM, SRK	Main pipe length	30m or less	L
	FDF		23m or less	L
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher		20m or less	H
	When the outdoor unit is positioned lower		20m or less	H



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

2) Determination of pipe size

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

		Gas pipe	Liquid pipe
Outdoor unit connected		ø12.7 Flare	ø6.35 Flare
Refrigerant piping (branch pipeL)		ø12.7	ø6.35
Indoor unit connected	FDT, FDEN, FDU, FDUM, FDF	ø15.88	ø9.52
	SRK	ø15.88	ø6.35

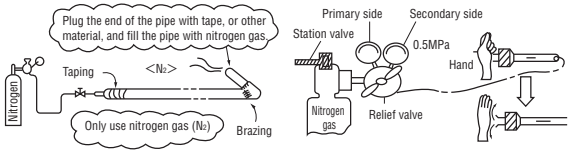
When pipe is brazing.

About brazing

Brazing must be performed under a nitrogen gas flow.

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

If the refrigerant is existing in the pipe at brazing, poisonous gas is produced.



3) Refrigerant pipe wall thickness and material

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

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

Pipe diameter [mm]	ø6.35	ø12.7
Minimum pipe wall thickness [mm]	0.8	0.8
Pipe material*	O-type pipe	O-type pipe

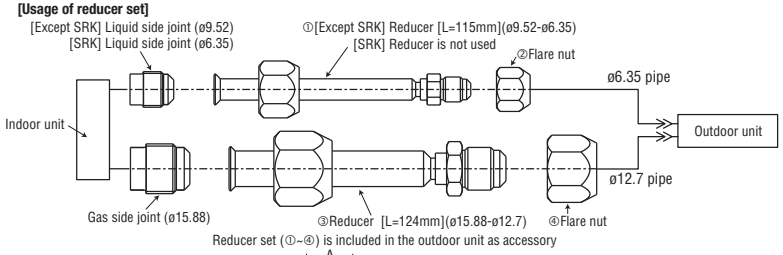
*Phosphorus deoxidized seamless copper pipe ICS 23.040.15, ICS 77.150.30

4) On-site piping work

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

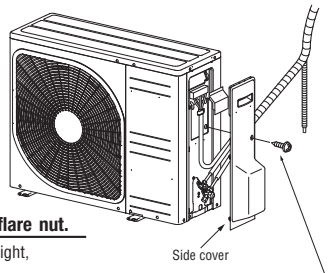
- [Except SRK] Regarding the change in the size of liquid/gas pipe; Use the reducer at indoor unit side. Reducer set is available in the outdoor unit as accessory.
- [SRK] Regarding the change in the size of gas pipe; Use the reducer at indoor unit side. Reducer set is available in the outdoor unit as accessory.

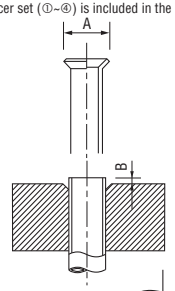
[Usage of reducer set]



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

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





Flared pipe end : A (mm)

Copper pipe outer diameter	A $^{0}_{-0.4}$
ø6.35	9.1
ø12.7	16.6

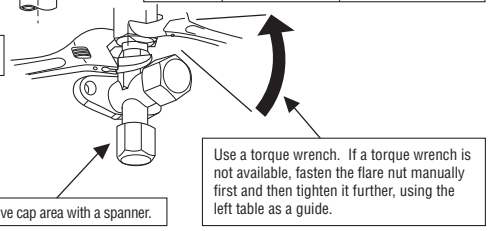
Copper pipe protrusion for flaring : B (mm)

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

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

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

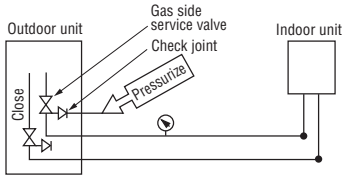
Service valve size (mm)	Tightening torque (N·m)	Tightening angle (°)	Recommended length of a tool handle (mm)
ø6.35	14~18	45~60	150
ø9.52	34~42	30~45	200
ø12.7	49~61	30~45	250
ø15.88	68~82	15~20	300



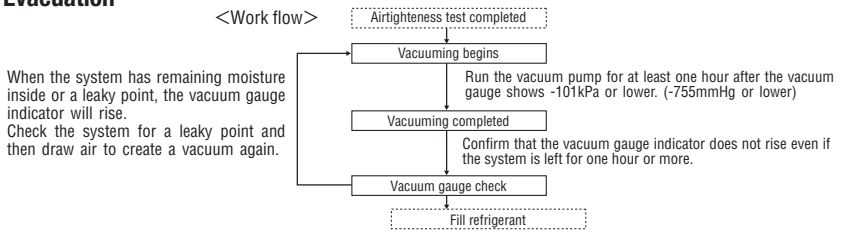
5) Air tightness test

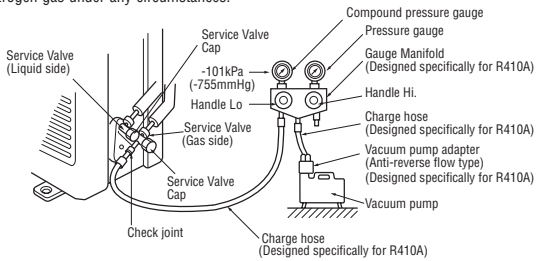
① Although outdoor and indoor units themselves have been tested for air tightness at the factory, check the connecting pipes after the installation work for air tightness from the service valve's check joint equipped on the outdoor unit side. While conducting a test, keep the service valve shut all the time.
a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
d) If no pressure drop is observed with an installation pressurized to the specified level and left for about one day, it is acceptable. When the ambient Temperature fall 1℃, the pressure also fall approximately 0.01 MPa. The pressure, if changed, should be compensated for.
e) If a pressure drop is observed in checking e) and a) – d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair it. After repair, conduct an air-tightness test again.

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



6) Evacuation





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

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

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

Service valve size (mm)	Service valve cap tightening torque (N·m)	Check joint blind nut tightening torque (N·m)
ø6.35 (1/4")	20～30	10～12
ø12.7 (1/2")	25～35	

7) Additional refrigerant charge

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

Indoor unit	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe ø6.35)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
FDT, FDEN FDU, FDUM, SRK	0.02	1.6	15
FDF	0.02	1.6	8

●This unit contains factory charged refrigerant covering 15m/8m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 15m/8m refrigerant piping.
When refrigerant piping exceeds 15m/8m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 15m/8m.
●If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size. For further information, please see "5. UTILIZATION OF EXISTING PIPING."

Formula to calculate the volume of additional refrigerant required

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

*When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.
● For an installation measuring 15m/8m or shorter in pipe length, please charge the refrigerant volume charged for shipment at the factory, when you recharge refrigerant after servicing etc.

(2) Charging refrigerant

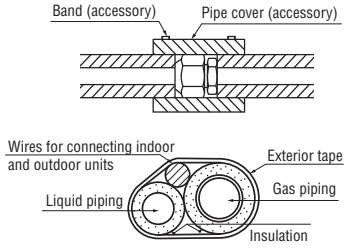
●Since R410A refrigerant must be charged in the liquid phase, you should charge it, keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
●Charge refrigerant always from the liquid side service port with the service valve shut. When you find it difficult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

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

8) Heating and condensation prevention

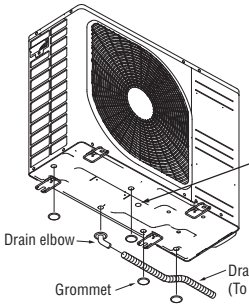
(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
· Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.

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



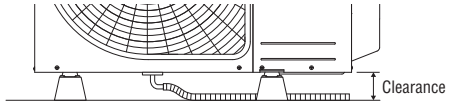
3. DRAIN PIPING WORK

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



⚠ CAUTION

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



- When condensed water needs to be led to a drain, etc., install the unit on a flat base or concrete blocks.
  (prepared on site)
  Then, please secure space for the drain elbow and the drain hose.

4. ELECTRICAL WIRING WORK

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

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

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

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

⚠ CAUTION

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

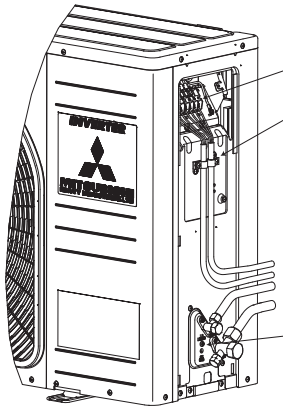
Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.

H05RNR4G1.5 (Example) or 245IEC57

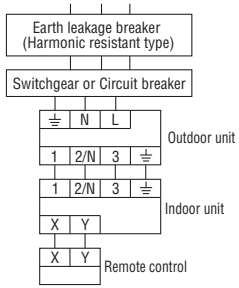
H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth. rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm^2)

Main fuse specification

Specification	Part No.
250V 20A	SSA564A136A



Power cable, indoor-outdoor connecting wires



- Always perform grounding system installation work with the power cord unplugged.
- Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire.
- In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.
- Grounding terminals are provided in the control box.

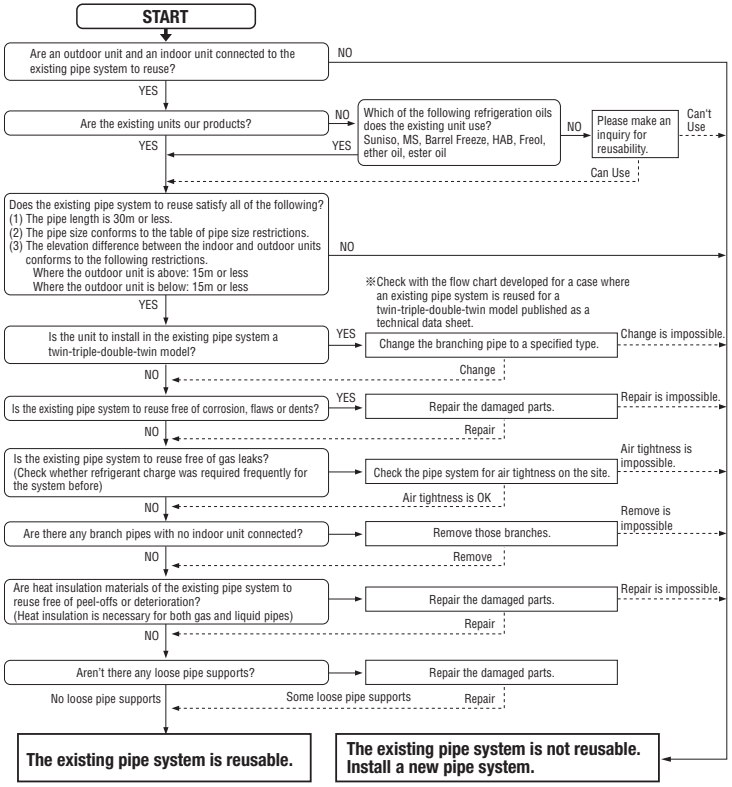
⚠ CAUTION Always use an earth leakage circuit breaker designed for inverter circuits to prevent a faulty operation.

Phase	Earth leakage breaker	Switchgear or Circuit Breaker		Power souce (minimum)	Interconnecting and grounding wires (minimum)
		Switch breaker	Over current protector rated capacity		
Single-phase	20A,30mA, 0.1sec or less	30A	20A	2.0 mm^2	1.5mm×4

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

5. UTILIZATION OF EXISTING PIPING

Check whether an existing pipe system is reusable or not by using the following flow chart.



<Table of pipe size restrictions>

◎:Standard pipe size○:Usable △:Restricted to shorter pipe length limits

Additional charge volume per meter of pipe			0.02kg/m	0.025kg/m	0.06kg/m	
Indoor unit	Pipe size	Liquid pipe	ø6.35	ø6.35	ø9.52	ø9.52
		Gas pipe	ø12.7	ø15.88	ø12.7	ø15.88
FDT, FDEN FDU, FDUM, SRK	Usability		◎	○	△	△
	Maximum one-way pipe length		30	24	10	10
	Length covered without additional charge		15	12	5	5
FDF	Usability		◎	○	△	△
	Maximum one-way pipe length		23	18	8	8
	Length covered without additional charge		8	6	3	3

- **Please consult with our distributor in the area, if you need to recover refrigerant and charge it again.**
- Any combinations of pipe sizes not listed in the table are not usable.

Formula to calculate additional charge volume

Additional charge volume (kg) = {Main pipe length (m) – Length covered without additional charge shown in the table (m)} × Additional charge volume per meter of pipe shown in the table (kg/m)

※ If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged.

Example) When FDT is installed in a 10m long existing pipe system (liquid ø9.52, gas ø12.7), the quantity of refrigerant to charge additionally should be (10m-5m) x 0.06kg/m = 0.3 kg.

⚠ WARNING

<Where the existing unit can be run for a cooling operation.>

Carry out the following steps with the excising unit (in the order of (1), (2), (3) and (4))

(1) Run the unit for 30 minutes for a cooling operation.
(2) Stop the indoor fan and run the unit for 3 minutes for a cooling operation (returning liquid)
(3) Close the liquid side service valve of the outdoor unit and pump down (refrigerant recovery)
(4) Blow with nitrogen gas. ※ If discolored refrigeration oil or any foreign matters is discharged by the blow, wash the pipe system or install a new pipe system.
- For the flare nut, do not use the old one, but use the one supplied with the outdoor unit. Process a flare to the dimensions specified for R410A.

<Where the existing unit cannot be run for a cooling operation.>

Wash the pipe system or install a new pipe system.
- If you choose to wash the pipe system, please contact our distributor in the area.

INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and ensure that the unit operates properly.
Explain to the customer how to use the unit and how to take care of the unit following the instruction manual.

After installation

- ☐ Power cables and connecting wires are securely fixed to the terminal block.
- ☐ The power source voltage is correct as the rating.
- ☐ The drain hose is fixed securely.
- ☐ Service valve is fully open.
- ☐ No gas leaks from the joints of the service valve and joint.
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.
- ☐ The reverse flow check cap is attached.
- ☐ The cover of the pipe cover (A) faces downward to prevent rain from entering.
- ☐ Gaps are properly sealed between the pipe covers (A) (B) and the wall surface / pipes.
- ☐ The screw of the side cover is tightened securely.

(2) Models FDC100-140VNX, 100-140VSX

PSB012D955T

Inverter driven split PAC
100VN～140VN,100VS～140VS
100VNX～140VNX,100VSX～140VSX
Designed for R410A refrigerant

◎This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 67 .
◎When install the unit, be sure to check whether the selection of installation place, power source specifications, usage limitation (piping length, height differences between indoor and outdoor units, power source voltage and etc.) and installation spaces

SAFETY PRECAUTIONS

- We recommend you to read this "SAFETY PRECAUTIONS" carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.
- The precautions described below are divided into ⚠WARNING and ⚠CAUTION. The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the ⚠WARNING and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in ⚠CAUTION. **These are very important precautions for safety. Be sure to observe all of them without fail.**
- The meaning of "Marks" used here are as shown below.

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

- For 3 phase power source outdoor unit,EN61000-3-2 is not applicable if consent by the utility company or nortification to the utility company is given before usage.
- 3 phase power source unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. If installed as a house-hold appliance it could cause electromagnetic interference.
- 5 and 6 HP units of single phase power source are equipment complying with IEC 61000-3-12.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user

Check before installation work

[Accessory]

Edging		1 piece	knock-out hole protection

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

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction.
- **Install the system in full accordance with the instruction manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause fall of the unit, water leaks, electric shocks, fire, refrigerant leak, substandard performance, control failure and personal injury.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with ISO5149.**
  Consult the expert about prevention measures. If the density of refrigerant exceeds the limit in the event of leakage, lack of oxygen can occur, which can cause serious accidents.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Hang up the unit at the specified points with ropes which can support the weight in lifting for portage. And to avoid jolting out of alignment, be sure to hang up the unit at 4-point support.**
  An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power source with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire,
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.

- **Do not perform brazing work in the airtight room**
  It can cause lack of oxygen.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by using double spanners and torque wrench according to prescribed method. Be sure not to tighten the flare nut too much.**
  Loose flare connection or damage on the flare part by tightening with excess torque can cause burst or refrigerant leaks which may result in lack of oxygen.
- **Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening service valves before completed connection of refrigerant piping work, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked into refrigerant circuit, which can cause burst or personal injury due to anomalously high pressure in the refrigerant
- **Only use prescribed option parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not perform any change of protective device itself or its setup condition**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.
- **Be sure to switch off the power source in the event of installation, inspection or servicing.**
  If the power source is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Consult the dealer or an expert regarding removal of the unit.**
  Incorrect installation can cause water leaks, electric shocks or fire.
- **Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.**
  If disconnecting refrigerant pipes in state of opening service valves before compressor stopping, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant circuit

- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not run the unit with removed panels or protections**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair.**
  If you repair or modify the unit, it can cause water leaks, electric shocks or fire.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting. Never connect the grounding wire to a gas pipe because if gas leaks,it could cause explosion or ignition.
- **Use the circuit breaker for all pole with correct capacity.**
  Using the incorrect circuit breaker, it can cause the unit malfunction and fire.
- **Install isolator or disconnect switch on the power source wiring in accordance with the local codes and regulations.**
  The isolator should be locked in accordanced with EN60204-1.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **Pay attention not to damage the drain pan by weld spatter when welding work is done near the indoor unit.**
  If weld spatter entered into the indoor unit during welding work, it can cause pin-hole in drain pan and result in water leakage. To prevent such damage, keep the indoor unit in its packing or cover it.
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **Perform installation work properly according to this installation manual.**
  Improper installation can cause abnormal vibrations or increased noise generation.
- **Earth leakage breaker must be installed**
  If the earth leakage breaker is not installed, it can cause fire or electric shocks.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place..
- **When the outdoor unit is installed on a roof or a high place, provide permanent ladders and handrails along the access route and fences and handrails around the outdoor unit.**
  If safety facilities are not provided, it can cause personal injury due to falling from the installation place.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base flame can cause the unit falling down and cause personal injury.
- **Do not install the unit in the locations listed below**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual)
  - Locations where the unit is exposed to chimney smoke
  - Locations at high altitude (more than 1000m high)
  - Locations with ammonic atmospheres (e.g. organic fertilizer).
  - Locations with calcium chloride (e.g. snow melting agent).
  - Locations where heat radiation from other heat source can affect the unit
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit
  - Locations where short circuit of air can occur (in case of multiple units installation)
  - Locations where strong air blows against the air outlet of outdoor unit

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

  It can affect surrounding environment and cause a claim
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not touch any buttons with wet hands**
  It can cause electric shocks
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not clean up the unit with water**
  It can cause electric shocks
- **Do not operate the outdoor unit with any article placed on it.**
  You may incur property damage or personal injure from a fall of the article.
- **Do not step onto the outdoor unit.**
  You may incur injury from a drop or fall.

Notabilia as a unit designed for R410A

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

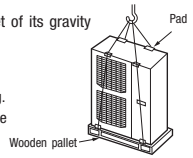
	Dedicated R410A tools
a)	Gauge manifold
b)	Charge hose
c)	Electronic scale for refrigerant charging
d)	Torque wrench
e)	Flare tool
f)	Protrusion control copper pipe gauge
g)	Vacuum pump adapter
h)	Gas leak detector

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

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

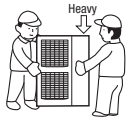
1) Delivery

- Deliver the unit as close as possible to the installation site before removing it from the packaging.
- When some compelling reason necessitates the unpacking of the unit before it is carried in, use nylon slings or protective wood pieces so as not to damage the unit by ropes lifting it.



2) Portage

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



3) Selection of installation location for the outdoor unit

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

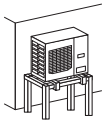
○ A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
○ A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit
○ A place where the unit is not exposed to oil splashes.
○ A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

Do not install the unit in places which exposed to sea breeze (e.g. coastal area) or calcium chloride (e.g. snow melting agent), exposed to ammonia substance (e.g. organic fertilizer).

4) Caution about selection of installation location

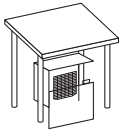
(1) If the unit is installed in the area where the snow will accumulate, following measures are required.
The bottom plate of unit and intake, outlet may be blocked by snow.

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



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

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

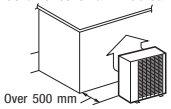


Since drain water generated by defrost control may freeze, following measures are required.

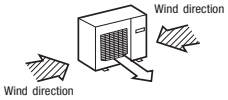
- Don't execute drain piping work by using a drain elbow and drain grommets (optional parts). [Refer to Drain piping work.]
- Recommend setting Defrost Control (SW3-1) and Snow Guard Fan Control (SW3-2). [Refer to Setting SW3-1, SW3-2.]
- Attach heater on a base plate on site, if there is possibility to freeze drain water.
  In case that the product has a corrective drainage system, the drainage paths should have suitable measure against freezing but be sure not to melt the material of drainage paths with heat.

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

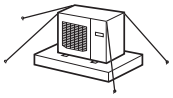
1.Install the outlet air blow side of the unit to face a wall of building, or provide a fence or a windbreak screen.



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



3.The unit should be installed on the stable and level foundation. If the foundation is not level, tie down the unit with wires.

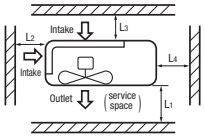


5) Installation space

- Walls surrounding the unit in the four sides are not acceptable.
- There must be a 1-meter or larger space in the above.
- Where a danger of short-circuiting exists, install guide louvers.
- When more than one unit are installed, provide sufficient intake space consciously so that short-circuiting may not occur.
- Where piling snow can bury the outdoor unit, provide proper snow guards.
- A barrier wall placed in front of the exhaust diffuser must not be higher than the unit.

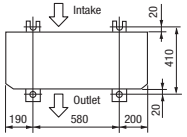
(mm)

Size \ Example installation	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

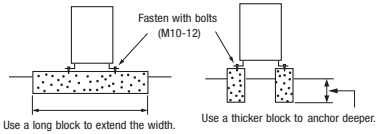


6) Installation

① Anchor bolt fixed position



② Notabilia for installation



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

7) To run the unit for a cooling operation, when the outdoor temperature is –5°C or lower.

- When the outdoor air temperature is -5°C or lower, provide a snow hood to the outdoor unit on site.
  So that strong wind will not blow against the outdoor heat exchanger directly. Regarding outline of a snow hood, refer to our technical manual.

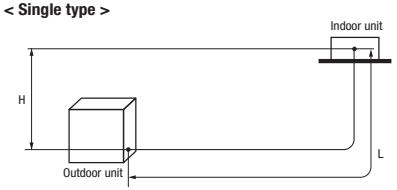
2. REFRIGERANT PIPING WORK

1) Restrictions on unit installation and use

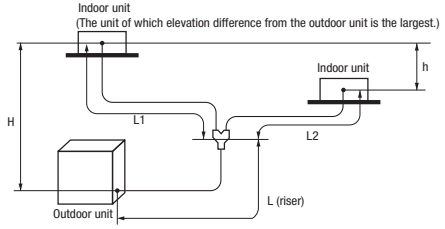
- Check the following points in light of the indoor unit specifications and the installation site.
- Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

Descriptions	One-way pipe length difference from the first branching point to the indoor unit		Marks appearing in the drawing			
					< 3m	≧ 3m
	Model for outdoor units	Dimensional limitations	Single type	Twin type	Triple type A	Triple type B
One-way pipe length of refrigerant piping	100VN,125VN,100VS,125VS	≦ 50m	L	L+L1+L2	—	—
	140VN,140VS				L+L1+L2+L3	L+La+L1+L2+L3
	100VNX,125VNX,100VSX,125VSX	≦ 100m			—	—
	140VNX,140VSX				L+L1+L2+L3	L+La+L1+L2+L3
Main pipe length	100VN,125VN,100VS,125VS	≦ 50m	—	L	—	—
	140VN,140VS				L	L
	100VNX,125VNX,100VSX,125VSX	≦ 100m			—	—
	140VNX,140VSX				L	L
One-way pipe length between the first branching point from to the second branching point	Triple type: 140VN,140VS, 140VNX,140VSX	≦ 5m	—	—	—	La
One-way pipe length after the first branching point	Twin type: All Models	≦ 30m	—	L1, L2	—	—
	Triple type: 140VN,140VS, 140VNX,140VSX			—	L1, L2, L3	L1 (1)
One-way pipe length after the first branching point and second branching point	Triple type: 140VN,140VS 140VNX,140VSX	≦ 27m	—	—	—	La+L2, La+L3 (1)
One-way pipe length difference from the first branching point to the indoor unit	Twin type: All Models	≦ 10m	—	| L1−L2 |	—	—
	Triple type: 140VN,140VS, 140VNX,140VSX	≦ 3m		—	| L1−L2 | , | L2−L3 | , | L3−L1 |	
		≦ 10m			—	L1−(La+L2), L1−(La+L3) (1)
One-way pipe length difference from the second branching point to the indoor unit	Triple type: 140VN,140VS, 140VNX,140VSX	≦ 10m	—	—	—	| L2−L3 |
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher,	≦ 30m	H	H	H	H
	When the outdoor unit is positioned lower,	≦ 15m				
Elevation difference between indoor units		≦ 0.5m	—	h	h1, h2, h3	h1, h2, h3

< Single type >



< Twin type >

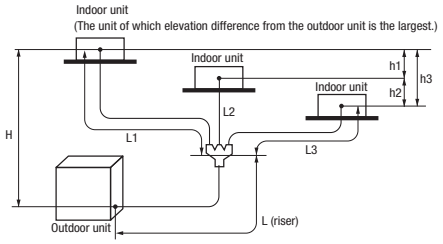


⚠CAUTION

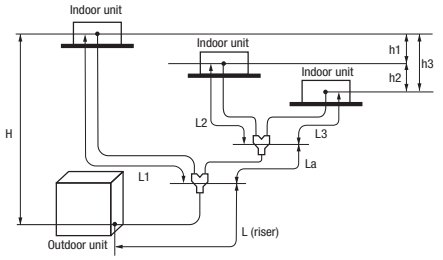
- The use restrictions appearing in the table above are applicable to the standard pipe size combinations shown in the table below. Where an existing pipe system is utilized, different one-way pipe length restrictions should apply depending on its pipe size. For more information, see " 6. UTILIZATION OF EXISTING PIPING."
- With the triple pipe connection, the way of use is different when the difference of one-way pipe length after the first branching point is 3m to 10m. For details, refer to the above table and right figure.

Note (1) Install the indoor units so that L + L1 becomes the longest one-way pipe.
Keep the pipe length difference between L1 and (La + L2) or (La + L3) within 10m.

< Triple type A >



< Triple type B >



2) Determination of pipe size

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

		Model 100V		Model 125V		Model 140V	
		Gas pipe	Liquid pipe	Gas pipe	Liquid pipe	Gas pipe	Liquid pipe
Outdoor unit connected		ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52
		Flare	Flare	Flare	Flare	Flare	Flare
Refrigerant piping (Main pipe L)		ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52
In the case of a single type	Indoor unit connected	ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52	ϕ15.88	ϕ9.52
	Capacity of indoor unit	Model 100V		Model 125V		Model 140V	
In the case of a twin type	Branching pipe set	DIS-WA1		DIS-WA1		DIS-WA1	
	Refrigerant piping (branch pipe L1,L2)	ϕ12.7	ϕ9.52	ϕ12.7	ϕ9.52	ϕ15.88	ϕ9.52
	Indoor unit connected	ϕ12.7	ϕ6.35	ϕ12.7	ϕ6.35	ϕ15.88	ϕ9.52
	Capacity of indoor unit	Model 50V×2		Model 60V×2		Model 71V×2	
In the case of a triple type A	Branching pipe set	–		–		DIS-TA1	
	Refrigerant piping (branch pipe L1,L2,L3)					ϕ12.7	ϕ9.52
	Indoor unit connected					ϕ12.7	ϕ6.35
	Capacity of indoor unit					Model 50V×3	
In the case of a triple type B	Branching pipe set	–		–		DIS-WA1	
	Refrigerant piping (branch pipe La)					ϕ15.88	ϕ9.52
	Refrigerant piping (branch pipe L1)					ϕ12.7	ϕ9.52
	Branching pipe set (After branch pipe La)					DIS-WA1	
	Refrigerant piping (branch pipe L2,L3)					ϕ12.7	ϕ9.52
	Indoor unit connected					ϕ12.7	ϕ6.35
	Capacity of indoor unit					Model 50V×3	

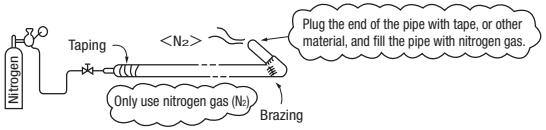
⚠CAUTION

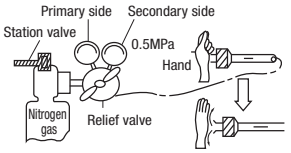
- When the 50V or 60V model is connected as an indoor unit, always use a ϕ9.52 liquid pipe for the branch (branching pipe – indoor unit) and a different diameter joint supplied with the branching pipe set for connection with the indoor unit (ϕ6.35 on the liquid pipe side).
  If a ϕ6.35 pipe is used for connection with a branching pipe, a refrigerant distribution disorder may occur, causing one of the indoor units to fall short of the rated capacity.
- A riser pipe must be a part of the main. A branching pipe set should be installed horizontally at a point as close to an indoor unit as possible.
  A branching part must be dressed with a heat-insulation material supplied as an accessory.
- For the details of installation work required at and near a branching area, see the installation manual supplied with your branching pipe set.

About brazing

Brazing must be performed under a nitrogen gas flow.

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





3) Refrigerant pipe wall thickness and material

- Select refrigerant pipes of the table shown on the right wall thickness and material as specified for each pipe size.
- This unit uses R410A. Always use 1/2H pipes having a 1.0mm or thicker wall for ϕ19.05 or larger pipes, because O-type pipes do not meet the pressure resistance requirement.

Pipe diameter [mm]	6.35	9.52	12.7	15.88	22.22	25.4	28.58
Minimum pipe wall thickness [mm]	0.8	0.8	0.8	1.0	1.0	1.0	1.0
Pipe material*	O-type pipe	O-type pipe	O-type pipe	O-type pipe	1/2H-type pipe	1/2H-type pipe	1/2H-type pipe

*Phosphorus deoxidized seamless copper pipe C1220T, JIS H3300

NOTE

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

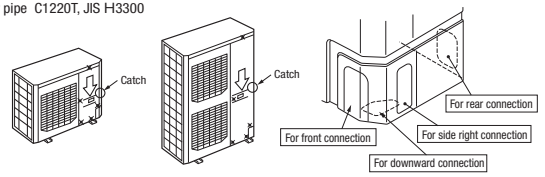
4) On-site piping work

⚠IMPORTANT

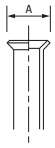
- Take care so that installed pipes may not touch components within a unit. If touching with an internal component, it will generate abnormal sounds and/or vibrations.

How to remove the service panel

First remove the five screws (✕ mark) of the service panel and push it down into the direction of the arrow mark and then remove it by pulling it toward you.

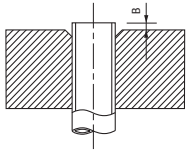


- The pipe can be laid in any of the following directions: side right, front, rear and downward.
- Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area and attach an edging material supplied as an accessory by cutting it to an appropriate length before laying a pipe.
- Carry out the on site piping work with the service valve fully closed.
- Give sufficient protection to a pipe end (compressed and blazed, or with an adhesive tape) so that water or foreign matters may not enter the piping.
- Bend a pipe to a radius as large as practical.(R100～R150) Do not bend a pipe repeatedly to correct its form.
- Flare connection is used between the unit and refrigerant pipe. Flare a pipe after engaging a flare nut onto it. Flare dimensions for R410A are different from those for conventional R407C. Although we recommend the use of flaring tools designed specifically for R410A, conventional flaring tools can also be used by adjusting the measurement of protrusion B with a protrusion control gauge.
- The pipe should be anchored every 1.5m or less to isolate the vibration.
- Tighten a flare joint securely with a double spanner.



Flared pipe end: A (mm)

Copper pipe outer diameter	A 0 −0.4
ϕ6.35	9.1
ϕ9.52	13.2
ϕ12.7	16.6
ϕ15.88	19.7



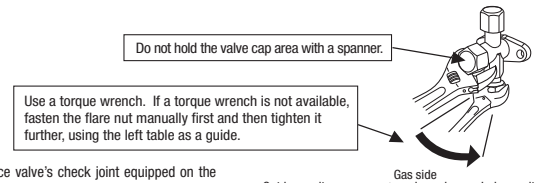
Copper pipe protrusion for flaring: B (mm)

Copper pipe outer diameter	In the case of a rigid (clutch) type	
	With an R410A tool	With a conventional tool
ϕ6.35	0～0.5	0.7～1.3
ϕ9.52		
ϕ12.7		
ϕ15.88		

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

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

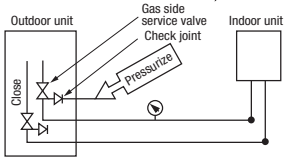
Service valve size (mm)	Tightening torque (N-m)	Tightening angle (°)	Recommended length of a tool handle (mm)
φ6.35 (1/4")	14～18	45～60	150
φ9.52 (3/8")	34～42	30～45	200
φ12.7 (1/2")	49～61	30～45	250
φ15.88 (5/8")	68～82	15～20	300



5) Air tightness test

① Although outdoor and indoor units themselves have been tested for air tightness at the factory, check the connecting pipes after the installation work for air tightness from the service valve's check joint equipped on the outdoor unit side. While conducting a test, keep the service valve shut all the time.
a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
d) If no pressure drop is observed with an installation pressurized to the specified level and left for about one day, it is acceptable. When the ambient Temperature fall 1℃, the pressure also fall approximately 0.01 MPa. The pressure, if changed, should be compensated for.
e) If a pressure drop is observed in checking e) and a) – d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair it. After repair, conduct an air-tightness test again.

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



6) Evacuation

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

Airtighteness test completed
↓
Vacuuming begins
↓
Vacuuming completed
↓
Vacuum gauge check
↓
Fill refrigerant

Run the vacuum pump for at least one hour after the vacuum gauge shows -101kPa or lower. (-755mmHg or lower)
Confirm that the vacuum gauge indicator does not rise even if the system is left for one hour or more.

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

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

7) Additional refrigerant charge

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

<Single type>

Item / Capacity	Standard refrigerant charge volume (kg)	Pipe length for standard refrigerant charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
100VN～140VN 100VS～140VS	2.0	0	0.06	3.8	30
100VNX～140VNX 100VSX～140VSX	2.7			4.5	

<Twin, triple type>

Item / Capacity	Standard refrigerant charge volume (kg)	Pipe length for standard refrigerant charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)		Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
			Main pipe	Branch pipe		
100VN～140VN 100VS～140VS	2.0	0	0.06		3.8	30
100VNX～140VNX 100VSX～140VSX	2.7				4.5	

- ●A standard refrigerant charge volume means a refrigerant charge volume for an installation with 0m long refrigerant piping.
- ●This unit contains factory charged refrigerant covering 30m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30m refrigerant piping. When refrigerant piping exceeds 30m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30m.
- ●When refrigerant piping is shorter than 3m, reduce refrigerant by 1kg from the factory charged volume and adjust to 2.8kg or 3.5kg.
- ●If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size. For further information, see "6. UTILIZATION OF EXISTING PIPING."

Formula to calculate the volume of additional refrigerant required

Additional charge volume (kg) = { Main pipe length (m) – Length covered without additional charge 30 (m) } x 0.06 (kg/m) + Total length of branch pipes (m) x 0.06 (kg/m)

*When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.

- ●**To charge refrigerant again, recover refrigerant from the system first and then charge the volume calculated from the above table (Standard refrigerant charge volume + additional charge volume for total pipe length.)**

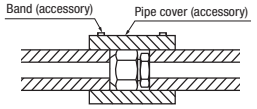
(2) Charging refrigerant

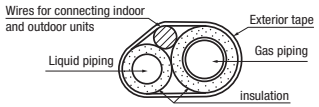
- ●Since R410A refrigerant must be charged in the liquid phase, you should charge it, keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
- ●Charge refrigerant always from the liquid side service port with the service valve shut. When you find it difficult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

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

8) Heating and condensation prevention

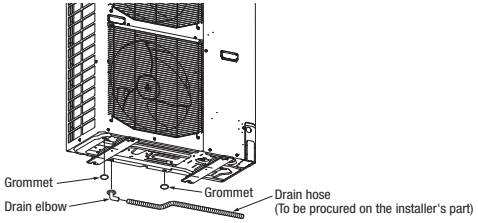
(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
(2) Use a heat insulating material that can withstand 120℃ or a higher temperature. Poor heat insulating capacity can cause heat insulation problems or cable deterioration.
- Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.
- All gas pipes must be securely heat insulated in order to prevent damage from dripping water that comes from the condensation formed on them during a cooling operation or personal injury from burns because their surface can reach quite a high temperature due to discharged gas flowing inside during a heating operation.
- Wrap indoor units' flare joints with heat insulating parts (pipe cover) for heat insulation (both gas and liquid pipes).
- Give heat insulation to both gas and liquid side pipes. Bundle a heat insulating material and a pipe tightly together so that no gaps may be left between them and wrap them together with a connecting cable by a dressing tape.
- Although it is verified in a test that this air-conditioning unit shows satisfactory performance under JIS condensation test conditions, **both gas and liquid pipes need to be dressed with 20 mm or thicker heat insulation materials above the ceiling where relative humidity exceeds 70%.**



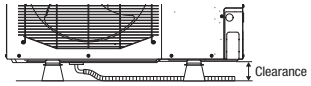


3. DRAIN PIPING WORK

- Execute drain piping by using a drain elbow and drain grommets supplied separately as option parts, where water drained from the outdoor unit is a problem.
- Water may drip where there is a larger amount of drain water. Seal around the drain elbow and drain grommets with putty or adequate caulking material.
- Condensed water may flow out from vicinity of service valve or connected pipes.
- Where you are likely to have several days of sub-zero temperatures in a row, do not use a drain elbow and drain grommets. (There is a risk of drain water freezing inside and blocking the drain.)
- Do not use drain elbow and grommet made of plastic for drain piping when base heater for outdoor unit is used. Plastic grommet and elbow will be damaged and burnt in worst case.
- Prepare another drain tray made of metallic material for collecting drain when base heater is used.



- When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks.
  Then, please secure space for the drain elbow and the drain hose.



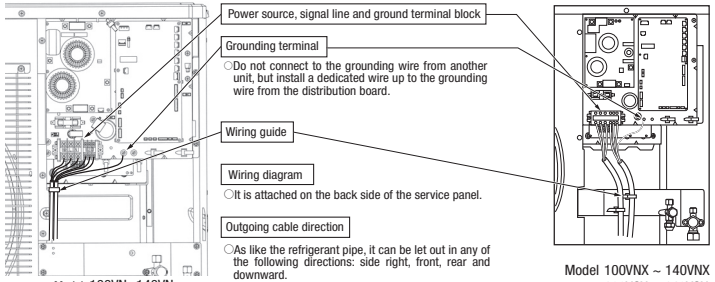
4. ELECTRICAL WIRING WORK

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

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

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

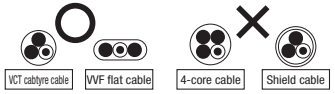
  Do not use anything lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC57) for supply cords of parts of appliances for outdoor use.
- Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire. If improperly grounded, an electric shock or malfunction may result.
- A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
- The installation of an impulse withstanding type earth leakage breaker is necessary. A failure to install an earth leakage breaker can result in an acccident such as an electric shock or a fire.



Model 100VN~140VN
100VS~140VS

Model 100VNX ~ 140VNX
100VSX ~ 140VSX

- Do not turn on the power until the electrical work is completeted .
- Do not use a condensive capacitor for power factor improvement under any circumstances. (It dose not improve power factor, while it can cause an abnormal overheat accident)
- For power source cables, use conduits.
- Do not lay electronic control cables (remote control and signaling wires) and other cables together outside the unit. Laying them together can result in the malfunctioning or a failure of the unit due to electric noises.
- Fasten cables so that may not touch the piping, etc.
- When cables are connected, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)
- Always use a three-core cable for an indoor-outdoor connecting cable. Never use a shield cable.
- ● Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire.
- ● In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.
- ● Grounding terminals are provided in the control box.



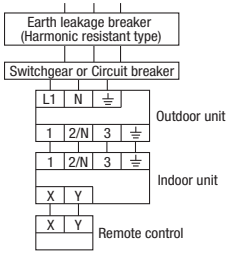
Main fuse specification

Model	Specification	Part No.
100VN~140VN 100VNX~140VNX	250V 30A	SSA564A049A
100VS~140VS 100VSX~140VSX	—	—

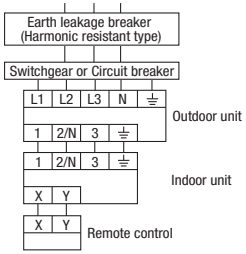
Power cable, indoor-outdoor connecting wires

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

⚠ CAUTION Always use an earth leakage circuit breaker designed for inverter circuits to prevent a faulty operation.



Model 100VN ~ 140VN
100VNX ~ 140VNX



Model 100VS ~ 140VS
100VSX ~ 140VSX

Model	Power source	Power cable thickness(mm²)	MAX. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness × number
100VN~140VN	Single phase 3 wire 220-240V 50Hz 220V 60Hz	5.5	24	25	ϕ1.6mm	ϕ1.6mm x 3
100VNX						
125VNX,140VNX			26	23		
100VS~140VS	3 phase 4 wire 380-415V 50Hz 380V 60Hz	3.5	15	27		
100VSX~140VSX						

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

※At the connection with the duct type indoor unit.

Model	Power source	Power cable thickness(mm²)	MAX. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness × number
100VN,100VNX	Single phase 3 wire 220-240V 50Hz 220V 60Hz	5.5	25	24	ϕ1.6mm	ϕ1.6mm x 3
125VN			27	22		
140VN		8	28	32		
125VNX			29	31		
140VNX			30	30		
100VS,100VSX	3 phase 4 wire 380-415V 50Hz 380V 60Hz	3.5	16	26		
125VS,125VSX			18	23		
140VS,140VSX			19	21		

5. TEST RUN

⚠ WARNING

- Before conduct a test run, make sure that the service valves are closed.
- Turn on power 6 hours prior to a test run to energize the crank case heater.
- In case of the first operation after turning on power, even if the unit does not move for 30 minutes, it is not a breakdown.
- Always give a 3-minute or longer interval before you start the unit again whenever it is stopped.

} A failure to observe these instructions can result in a compressor breakdown.

- Removing the service panel will expose high-voltage live parts and high-temperature parts, which are quite dangerous. Take utmost care not to incur an electric shock or burns. Do not leave the unit with the service panel open.

⚠ CAUTION

- When you operate switches (SW3, SW5) for on-site setting, be careful not to touch a live part.
- You cannot check discharge pressure from the liquid service valve charge port.
- The 4-way valve (20S) is energized during a heating operation.
- When power source is cut off to reset the unit, give 3 or more minutes before you turn on power again after power is cut off. If this procedure is not observed in turning on power again, "Communication error between outdoor and indoor unit" may occur.

1) Test run method

(1) A test run can be initiated from an outdoor unit by using SW3-3 and SW3-4 for on-site setting.
(2) Switching SW3-3 to ON will start the compressor.
(3) The unit will start a cooling operation, when SW3-4 is OFF, or a heating operation, when SW3-4 is ON.
(4) **Do not fail to switch SW3-3 to OFF when a test run is completed.**

SW-3-3	SW-3-4	
ON	OFF	Cooling during a test run
	ON	Heating during a test run
OFF	—	Normal or After the test operation

2) Checking the state of the unit in operation

Use check joints provided on the piping before and after the four-way valve installed inside the outdoor unit for checking discharge pressure and suction pressure.
As indicated in the table shown on the right, pressure detected at each point will vary depending on whether a cooling or heating operation has been selected.

	Check joint of the pipe	Charge port of the gas operation valve
Cooling operation	Discharge pressure (High pressure)	Suction pressure (Low pressure)
Heating operation	Suction pressure (Low pressure)	Discharge pressure (High pressure)

3) Setting SW3-1, SW3-2, on-site

(1) Defrost control switching (SW3-1)
・When this switch is turned ON, the unit will run in the defrost mode more frequently.
・Set this switch to ON, when installed in a region where outdoor temperature falls below zero during the season the unit is run for a heating operation.
(2) Snow guard fan control (SW3-2)
・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℃ or lower and the compressor is not running.
・When the unit is used in a very snowy country, set this switch to ON.

4) Failure diagnosis in a test run

Error indicated on the remote control unit	Printed circuit board LED(The cycles of 5 seconds)		Failure event	Action
	Red LED	Green LED		
E34	Blinking once	Blinking continuously	Open phase	Check power cables for loose contact or disconnection
E40	Blinking once	Blinking continuously	63H1 actuation or operation with service valves shut (occurs mainly during a heating operation)	1. Check whether the service valves are open. 2. If an error has been canceled when 3 minutes have elapsed since a compressor stop, you can restart the unit by effecting Check Reset from the remote control unit.
E49	Blinking once	Blinking continuously	Low pressure error or operation with service valves shut (occurs mainly during a cooling operation)	

- If an error code other than those listed above is indicated, refer to the wiring diagram of the outdoor unit and the indoor unit.

5) The state of the electronic expansion valve.

The following table illustrates the steady states of the electronic expansion valve.

	When power is turned on	When the unit comes to a normal stop		When the unit comes to an abnormal stop	
		During a cooling operation	During a heating operation	During a cooling operation	During a heating operation
Valve for a cooling operation	Complete shut position	Complete shut position	Full open position	Full open position	Full open position
Valve for a heating operation	Full open position	Full open position	Complete shut position	Full open position	Full open position

6) Heed the following on the first operation after turning on the circuit breaker.

This outdoor unit may start in the standby mode (waiting for a compressor startup), which can continue up to 30 minutes, to prevent the oil level in the compressor from lowering on the first operation after turning on the circuit breaker. If that is the case, do not suspect a unit failure.

Items to check before a test run

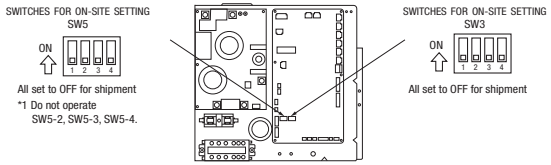
- When you leave the outdoor unit with power supplied to it, be sure to close the panel.

Item No.used in the installation manual	Item	Check item	Check
2	Refrigerant plumbing	If brazed, was it brazed under a nitrogen gas flow?	
		Were air-tightness test and vacuum extraction surely performed?	
		Are heat insulation materials installed on both liquid and gas pipes?	
		Are service valves surely opened for both liquid and gas systems?	
		Have you recorded the additional refrigerant charge volume and refrigerant pipe length on the panel's label?	
4	Electric wiring	Is the unit free of cabling errors such as uncompleted connection, an absent or reversed phase?	
		Are properly rated electrical equipments used for circuit breakers and cables?	
		Doesn't cabling cross-connect between units, where more than one unit are installed?	
		Aren't indoor-outdoor signal wires connected to remote control wires?	
		Do indoor-outdoor connecting cables connect between the same terminal numbers?	
		Are either VCT cabtyre cables or WF flat cables used for indoor-outdoor connecting cables?	
		Does grounding satisfy the D type grounding (type III grounding) requirements?	
		Is the unit grounded with a dedicated grounding wire not connected to another unit's grounding wire?	
		Are cables free of loose screws at their connection points?	
		Are cables held down with cable clamps so that no external force works onto terminal connections?	
—	Indoor unit	Is indoor unit installation work completed?	
		Where a face cover should be attached onto an indoor unit, is the face cover attached to the indoor unit?	

Test run procedure

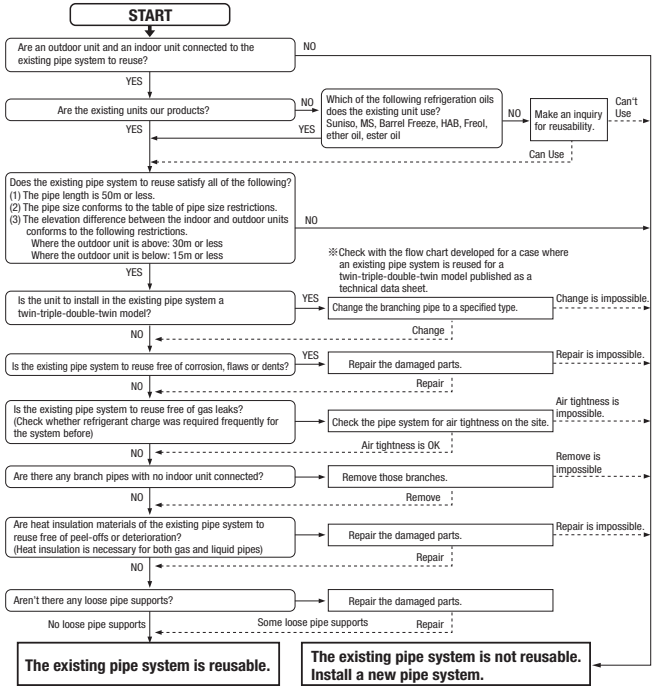
- Always carry out a test run and check the following in order as listed.

Turn	The contents of operation	Check
①	Open the gas side service valve fully.	
②	Open the liquid side service valve fully.	
③	Close the panel.	
④	Where a remote control unit is used for unit setup on the installation site, follow instructions for unit setup on the installation site with a remote control unit.	
⑤	SW3-3 ON / SW3-4 OFF: the unit will start a cooling operation.	
	SW3-3 ON / SW3-4 ON: the unit will start a heating operation.	
⑥	When the unit starts operation, press the wind direction button provided on the remote control unit to check its operation.	
⑦	Place your hand before the indoor unit's diffuser to check whether cold (warm) winds come out in a cooling (heating) operation.	
⑧	Make sure that a red LED is not blinking.	
⑨	When you complete the test run, do not forget to turn SW3-3 to the OFF position.	
⑩	Where options are used, check their operation according to the respective instruction manuals.	



6. UTILIZATION OF EXISTING PIPING.

Check whether an existing pipe system is reusable or not by using the following flow chart.



⚠ WARNING <Where the existing unit can be run for a cooling operation.>

Carry out the following steps with the excising unit (in the order of (1), (2), (3) and (4))

(1) Run the unit for 30 minutes for a cooling operation.
(2) Stop the indoor fan and run the unit for 3 minutes for a cooling operation (returning liquid)
(3) Close the liquid side service valve of the outdoor unit and pump down (refrigerant recovery)
(4) Blow with nitrogen gas. ※ If discolored refrigeration oil or any foreign matters is discharged by the blow, wash the pipe system or install a new pipe system.
- For the flare nut, do not use the old one, but use the one supplied with the outdoor unit. Process a flare to the dimensions specified for R410A.
- **Turn on-site setting switch SW5-1** to the ON position. (Where the gas pipe size is φ19.05)

<Where the existing unit cannot be run for a cooling operation.>

Wash the pipe system or install a new pipe system.
- If you choose to wash the pipe system, contact our distributor in the area.

<Table of pipe size restrictions>

◎:Standard pipe size ○:Usable
△:Restricted to shorter pipe length limits ×:Not usable

Additional charging amount of refrigerant per 1m		0.06kg/m		0.08kg/m	
Pipe size	Liquid pipe	φ9.52	φ9.52	φ12.7	φ12.7
	Gas pipe	φ15.88	φ19.05	φ15.88	φ19.05
100VN 100VS	Usability	◎	○※1	△	△※1
	Maximum one-way pipe length	50	50	25	25
	Length covered without additional charge	30	30	15	15
125VN 125VS	Usability	◎	○※1	△	△※1
	Maximum one-way pipe length	50	50	25	25
	Length covered without additional charge	30	30	15	15
140VN 140VS	Usability	◎	○※1	△	△※1
	Maximum one-way pipe length	50	50	25	25
	Length covered without additional charge	30	30	15	15

Additional charging amount of refrigerant per 1m		0.02kg/m	0.06kg/m		0.08kg/m	
Pipe size	Liquid pipe	φ6.35	φ9.52	φ9.52	φ12.7	φ12.7
	Gas pipe	φ15.88	φ15.88	φ19.05	φ15.88	φ19.05
100VNX 100VSX	Usability	△	◎	○※1	△	△※1
	Maximum one-way pipe length	20	100	100	50	50
	Length covered without additional charge	10	30	30	15	15
125VNX 125VSX	Usability	△	◎	○※1	△	△※1
	Maximum one-way pipe length	20	100	100	50	50
	Length covered without additional charge	10	30	30	15	15
140VNX 140VSX	Usability	△	◎	○※1	△	△※1
	Maximum one-way pipe length	20	100	100	50	50
	Length covered without additional charge	10	30	30	15	15

<Pipe system after the branching pipe>

			After 1st branch ※4			After 2nd branch		
Additional charging amount of refrigerant per 1m			0.06kg/m			0.06kg/m		
Pipe size	Liquid pipe		φ9.52			φ9.52		
	Gas pipe		φ12.7	φ15.88	φ19.05※1	φ12.7	φ15.88	φ19.05※1
Model	Combination type	Combination of capacity						
100V	Twin	50+50	◎	○	×	—	—	—
125V	Twin	60+60	◎	○	×	—	—	—
140V	Twin	71+71	×	◎	○	—	—	—
	Triple A	50+50+50	◎	○	×	—	—	—
	Triple B	50+50+50	×	◎※5	○※5	◎	○	×

※1 Because of its insufficient pressure resistance, **turn the dip switch SW5-1** provided on the outdoor unit board to the ON position for φ19.05 × t1.0.
(In the case of a twin-triple-double-twin model, this also applies to the case where φ19.05 × t1.0 is used in a pipe system after the first branching point.)
However, you need not turn the dip switch SW5-1 to the ON position, if 1/2H pipes or pipes having 1.2 or thicker walls are used.

※2 When the main pipe length exceeds 40m, a significant capacity drop may be experienced due to pressure loss in the liquid pipe system. Use φ12.7 for the liquid main.

※3 Keep the total pipe length, not one-way pipe length, below the specified maximum pipe length.
※4 Piping size after branch should be equal or smaller than main pipe size.
※5 Piping size from first branch to indoor unit should be φ9.52 (Liquid) / φ12.7 (Gas).

- When refrigerant piping is shoter than 3m, reduce refrigerant by 1kg from factory charged volume.
- Any combinations of pipe sizes not listed in the table or marked with × in the table are not usable.

<The model types of existing units of which branching pipes are reusable.>

Models later than Type 8.
- FDC ＊＊＊8□□□
- FDCP ＊＊＊8□□□

The branching pipes used with models other than those listed above are not reusable because of their insufficient pressure resistance. Please use our genuine branching pipes for R410A.

- ＊＊＊ are numbers representing horsepower. □□□ is an alphanumeric letter.

Formula to calculate additional charge volume

Additional charge volume (kg) = {Main pipe length (m) − Length covered without additional charge shown in the table (m)} × Additional charge volume per meter of pipe shown in the table (kg/m) + Total length of branch pipes (m) × Additional charge volume per meter of pipe shown in the table (kg/m)

※ If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged.
Example) When an 140V (single installation) is installed in a 20m long existing pipe system (liquid φ12.7, gas φ19.05), the quantity of refrigerant to charge additionally should be (20m-15m) x 0.08kg/m = 0.4 kg.

Inverter driven split PAC
FDC200VSA, 250VSA (200V, 250V)
FDCA160VSA, 200VSA (A160V, A200V)
Designed for R410A refrigerant

(3) Models FDC200, 250VSA

◎This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 67.
◎When install the unit, be sure to check whether the selection of installation place, power source specifications, usage limitation (piping length, height differences between indoor and outdoor units, power source voltage and etc.) and installation spaces

SAFETY PRECAUTIONS

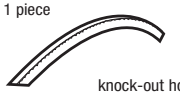
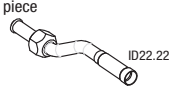
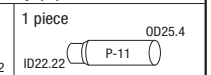
- We recommend you to read this "SAFETY PRECAUTIONS" carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.
- The precautions described below are divided into ⚠WARNING and ⚠CAUTION. The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the ⚠WARNING and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in ⚠CAUTION. **These are very important precautions for safety. Be sure to observe all of them without fail.**
- The meaning of "Marks" used here are as shown below.

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

- For 3 phase power source outdoor unit,EN61000-3-2 is not applicable if consent by the utility company or nortification to the utility company is given before usage.
- 3phase power source unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. If installed as a house-hold appliance it could cause electromagnetic interference.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.

Check before installation work

[Accessory]

Edging	Accessory pipe	
1 piece	1 piece	1 piece
 knock-out hole protection	 Accessory pipe A	 Accessory pipe B

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

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction.
- **Install the system in full accordance with the instruction manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause fall of the unit, water leaks, electric shocks, fire, refrigerant leak, substandard performance, control failure and personal injury.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with ISO5149.**
  Consult the expert about prevention measures. If the density of refrigerant exceeds the limit in the event of leakage, lack of oxygen can occur, which can cause serious accidents.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Hang up the unit at the specified points with ropes which can support the weight in lifting for portage. And to avoid jolting out of alignment, be sure to hang up the unit at 4-point support.**
  An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power source with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire,
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.

- **Do not perform brazing work in the airtight room**
  It can cause lack of oxygen.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by using double spanners and torque wrench according to prescribed method. Be sure not to tighten the flare nut too much.**
  Loose flare connection or damage on the flare part by tightening with excess torque can cause burst or refrigerant leaks which may result in lack of oxygen.
- **Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening service valves before completed connection of refrigerant piping work, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked into refrigerant circuit, which can cause burst or personal injury due to anomalously high pressure in the refrigerant
- **Only use prescribed option parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not perform any change of protective device itself or its setup condition**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.
- **Be sure to switch off the power source in the event of installation, inspection or servicing.**
  If the power source is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Consult the dealer or an expert regarding removal of the unit.**
  Incorrect installation can cause water leaks, electric shocks or fire.
- **Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.**
  If disconnecting refrigerant pipes in state of opening service valves before compressor stopping, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant circuit

- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not run the unit with removed panels or protections**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair.**
  If you repair or modify the unit, it can cause water leaks, electric shocks or fire.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting. Never connect the grounding wire to a gas pipe because if gas leaks,it could cause explosion or ignition.
- **Use the circuit breaker for all pole with correct capacity.**
  Using the incorrect circuit breaker, it can cause the unit malfunction and fire.
- **Install isolator or disconnect switch on the power source wiring in accordance with the local codes and regulations.**
  The isolator should be locked in accordanced with EN60204-1.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **Pay attention not to damage the drain pan by weld spatter when welding work is done near the indoor unit.**
  If weld spatter entered into the indoor unit during welding work, it can cause pin-hole in drain pan and result in water leakage. To prevent such damage, keep the indoor unit in its packing or cover it.
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **Perform installation work properly according to this installation manual.**
  Improper installation can cause abnormal vibrations or increased noise generation.
- **Earth leakage breaker must be installed**
  If the earth leakage breaker is not installed, it can cause fire or electric shocks.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **When the outdoor unit is installed on a roof or a high place, provide permanent ladders and handrails along the access route and fences and handrails around the outdoor unit.**
  If safety facilities are not provided, it can cause personal injury due to falling from the installation place.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base frame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base frame can cause the unit falling down and cause personal injury.
- **Do not install the unit in the locations listed below**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines
  - Locations with heavy snow (If installed, be sure to provide base frame and snow hood mentioned in the manual)
  - Locations where the unit is exposed to chimney smoke
  - Locations at high altitude (more than 1000m high)
  - Locations with ammonic atmospheres (e.g. organic fertilizer).
  - Locations with calcium chloride (e.g. snow melting agent).
  - Locations where heat radiation from other heat source can affect the unit
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit
  - Locations where short circuit of air can occur (in case of multiple units installation)
  - Locations where strong air blows against the air outlet of outdoor unit

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

  It can affect surrounding environment and cause a claim
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not touch any buttons with wet hands**
  It can cause electric shocks
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not clean up the unit with water**
  It can cause electric shocks
- **Do not operate the outdoor unit with any article placed on it.**
  You may incur property damage or personal injure from a fall of the article.
- **Do not step onto the outdoor unit.**
  You may incur injury from a drop or fall.

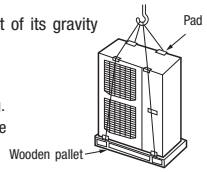
Notabilia as a unit designed for R410A

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

	Dedicated R410A tools
a)	Gauge manifold
b)	Charge hose
c)	Electronic scale for refrigerant charging
d)	Torque wrench
e)	Flare tool
f)	Protrusion control copper pipe gauge
g)	Vacuum pump adapter
h)	Gas leak detector

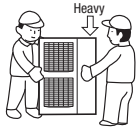
1. HAULAGE AND INSTALLATION (Take particular care in carrying in or moving the unit, and always perform such an operation with two or more persons.)

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



1) Delivery

- Deliver the unit as close as possible to the installation site before removing it from the packaging.
- When some compelling reason necessitates the unpacking of the unit before it is carried in, use nylon slings or protective wood pieces so as not to damage the unit by ropes lifting it.



2) Portage

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

3) Selection of installation location for the outdoor unit

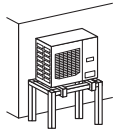
Be sure to select a suitable installation place in consideration of following conditions.

○ A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
○ A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit
○ A place where the unit is not exposed to oil splashes.
○ A place where it can be free from danger of flammable gas leakage.
○ A place where drain water can be disposed without any trouble.
○ A place where the unit will not be affected by heat radiation from other heat source.
○ A place where snow will not accumulate.
○ A place where the unit can be kept away 5m or more from TV set and/or radio receiver in order to avoid any radio or TV interference.
○ A place where good air circulation can be secured, and enough service space can be secured for maintenance and service of the unit safely.
○ A place where the unit will not be affected by electromagnetic waves and/or high-harmonic waves generated by other equipment.
○ A place where chemical substances like sulfuric gas, chloric gas, acid and alkali (including ammonia), which can harm the unit, will not be generated and not remain.
○ A place where strong wind will not blow against the outlet air blow of the unit.
Do not install the unit in places which exposed to sea breeze (e.g. coastal area)
or calcium chloride (e.g. snow melting agent), exposed to ammonia substance (e.g. organic fertilizer).

4) Caution about selection of installation location

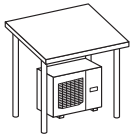
(1) If the unit is installed in the area where the snow will accumulate, following measures are required.
The bottom plate of unit and intake, outlet may be blocked by snow.

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



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

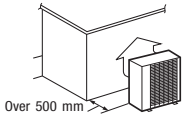
3.Install the unit under eaves or providen the roof on site.



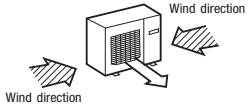
Since drain water generated by defrost control may freeze, following measures are required.
- Don't execute drain piping work by using a drain elbow and drain grommets (option parts). [Refer to Drain piping work.]
- Recommend setting Defrost Control (SW3-1) and Snow Guard Fan Control (SW3-2). [Refer to Setting SW3-1, SW3-2.]
- Attach heater on a base plate on site, if there is possibility to freeze drain water.
  In case that the product has a corrective drainage system, the drainage paths should have suitable measure against freezing but be sure not to melt the material of drainage paths with heat.

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

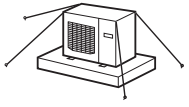
1.Install the outlet air blow side of the unit to face a wall of building, or provide a fence or a windbreak screen.



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



3.The unit should be installed on the stable and level foundation. If the foundation is not level, tie down the unit with wires.

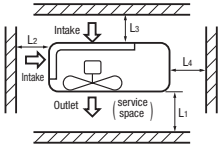


5) Installation space

- Walls surrounding the unit in the four sides are not acceptable.
- There must be a 1-meter or larger space in the above.
- Where a danger of short-circuiting exists, install guide louvers.
- When more than one unit are installed, provide sufficient intake space consciously so that short-circuiting may not occur.
- Where piling snow can bury the outdoor unit, provide proper snow guards.
- A barrier wall placed in front of the exhaust diffuser must not be higher than the unit.

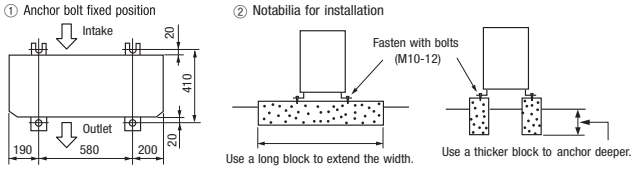
(mm)

Size \ Example installation	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4 ※1	5	5	5
L4 ※2	250 (5)	250 (5)	250 (5)



※1 In case of 200V model
※2 In case of 250V, A160V, A200V model. If unit is installed in L4 space with ( )'s condition, secure space of 250mm in lateral (L4) by unit movement at the time of exchange work of compressor.

6) Installation



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

7) To run the unit for a cooling operation, when the outdoor temperature is –5°C or lower.

- When the outdoor air temperature is -5°C or lower, provide a snow hood to the outdoor unit on site.
  So that strong wind will not blow against the outdoor heat exchanger directly. Regarding outline of a snow hood, refer to our technical manual.

2. REFRIGERANT PIPING WORK

1) Restrictions on unit installation and use

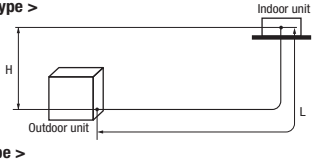
- Check the following points in light of the indoor unit specifications and the installation site.
- Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

Restrictions	One-way pipe length difference from the first branching point to the indoor unit				Marks appearing in the drawing				
	Model for outdoor units			Dimensional restrictions	Single type	Twin type	< 3m Triple type A	≧ 3m Triple type B	W-twin type
One-way pipe length of refrigerant piping	200V	Liquid Piping	φ9.52	≦ 40m	L	L+L1 L+L2	200V: L+L1, L+L2, L+L3 250V: L+L1, L+La+L2, L+La+L3 (2) (type B)	200V: L+L1 (1) 250V: Prohibitation of the use	L+La+L1, L+La+L2 L+Lb+L3, L+Lb+L4
			φ12.7	40~70m					
	200V·250V,A160V,A200V	Gas piping	φ25.4 or φ28.58	35~70m					
			φ22.22	≦ 35m					
Main pipe length	200V	Liquid Piping	φ9.52	≦ 40m	—	L	200V: L 250V: L (type B)	200V: L 250V: Prohibitation of the use	L
			φ12.7	40~70m					
	200V·250V,A160V,A200V	Gas piping	φ25.4 or φ28.58	35~70m					
			φ22.22	≦ 35m					
One-way pipe length between the first branching point from to the second branching point	200V			≦ 5m	—	—	—	La	—
	250V,A160V,A200V						La (type B)	Prohibitation of the use	
One-way pipe length after the first branching point	200V			≦ 30m	—	L1, L2	L1, L2, L3	L1 (1)	La+L1, La+L2 Lb+L3, Lb+L4
	250V,A160V,A200V						L1, La+L2, La+L3 (2) (type B)	Prohibitation of the use	
One-way pipe length from the first branching point to indoor units through the second branching point	200V			≦ 27m	—	—	—	La+L2, La+L3 (1)	—
One-way pipe length difference from the first branching point to the indoor unit	Twin type			≦ 10m	—	| L1—L2 |	—	—	—
	Triple type	200V		≦ 3m			| L1—L2 | , | L2—L3 | , | L3—L1 |		
				≦ 10m			—	L1—(La+L2), L1—(La+L3) (1)	
		250V,A160V,A200V		≦ 3m			| L1—(La+L2) | , | L1—(La+L3) | , | L2—L3 | (2) (type B)	Prohibitation of the use	
	W-twin type	200V·250V,A160V,A200V		≦ 10m			—	—	| L1—L2 | , | L3—L4 | | (L1+La)—(L3+Lb) | , | (L1+La)—(L4+Lb) | | (L2+La)—(L3+Lb) | , | (L2+La)—(L4+Lb) |
One-way pipe length difference from the second branching point to the indoor unit	200V			≦ 10m	—	—	—	| L2—L3 |	| L1—L2 | , | L3—L4 |
Total pipe length after the second branching point				≦ 15m	—	—	—	—	L1+L2, L3+L4
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher,			≦ 30m	H	H	H	H	H
	When the outdoor unit is positioned lower,			≦ 15m					
Elevation difference between indoor units				≦ 0.5m	—	h	h1, h2, h3	h1, h2, h3	h1, h2, h3, h4, h5, h6

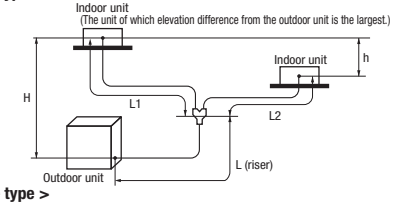
⚠CAUTION
- For model 200V, **always use φ 12.7mm liquid main pipe** when the one way piping length exceeds 40m. If φ9.52mm pipes are used in an installation having over 40m piping, they can cause performance degradation and/or water leaks from an indoor unit. Use φ9.52mm liquid main pipe when the one way piping length is less than 40m.
- Always use φ25.4mm or φ28.58mm gas pipes when the length of the main "L" exceeds 35m.
  If the φ22.22mm pipes are used in an installation having over 35m piping, they can cause performance degradation and/or water leaks from an indoor unit.
- Triple type B is not allowed to use in case of 250V.

Note (1) Install the indoor units so that L + L1 becomes the longest one-way pipe.
Keep the pipe length difference between L1 and (La + L2) or (La + L3) within 10m.
Note (2) Connect the unit that is the maximum capacity with L1.

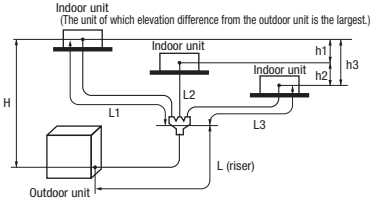
< Single type >



< Twin type >



< Triple type >
Type A



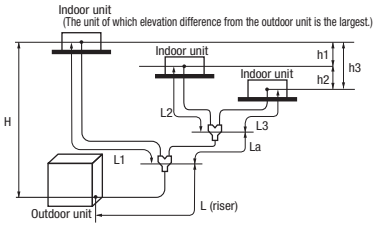
2) Determination of pipe size

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

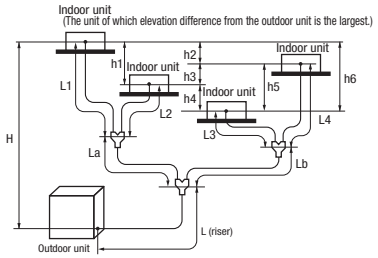
		Model 200V		Model 250V,A160V,A200V			
		Gas pipe	Liquid pipe	Gas pipe	Liquid pipe	Gas pipe	Liquid pipe
Outdoor unit connected		φ22.22	φ9.52	φ22.22	φ12.7	φ22.22	φ12.7
		Brazing	Flare	Brazing	Flare	Brazing	Flare
Refrigerant piping (branch pipeL)		φ22.22 or φ25.4 or φ28.58	φ9.52 or φ12.7	φ22.22 or φ25.4 or φ28.58	φ12.7	φ22.22 or φ25.4 or φ28.58	φ12.7
In the case of a single type	Indoor unit connected	φ25.4	φ9.52	φ25.4	φ12.7	–	
	Capacity of indoor unit	Model 200V		Model 250V			
In the case of a twin type	Branching pipe set	DIS-WB1G		DIS-WB1G		–	
	Refrigerant piping (branch pipe L1,L2)	φ15.88	φ9.52	φ15.88	φ9.52		
	Indoor unit connected	φ15.88	φ9.52	φ15.88	φ9.52		
	Capacity of indoor unit	Model 100V×2		Model 125V×2			
In the case of a triple type A	Branching pipe set	DIS-TB1G		–		–	
	Refrigerant piping (branch pipe L1,L2,L3)	φ15.88	φ9.52				
	Indoor unit connected	φ15.88	φ9.52				
	Capacity of indoor unit	Model 71V×3					
In the case of a triple type B	Branching pipe set	DIS-WB1G		DIS-WB1G		DIS-WB1G	
	Refrigerant piping (branch pipe La,L1)	φ15.88	φ9.52	φ15.88	φ9.52	φ15.88	φ9.52
	Branching pipe set	DIS-WA1G		DIS-WA1G		DIS-WA1G	
	Refrigerant piping (branch pipe L2,L3)	φ15.88	φ9.52	φ12.7	φ9.52	φ15.88	φ9.52
	Indoor unit connected	φ15.88	φ9.52	φ12.7	φ6.35	φ15.88	φ9.52
	Capacity of indoor unit	Model 71V×3		Model 60V×2+ Model 125V		Model 71V×2+Model 100V	
In the case of a W-twin type	Branching pipe set	DIS-WB1G		DIS-WB1G		–	
	Refrigerant piping (branch pipe La,Lb)	φ15.88	φ9.52	φ15.88	φ9.52		
	Branching pipe set	DIS-WA1G× 2		DIS-WA1G× 2			
	Refrigerant piping (branch pipe L1,L2,L3,L4)	φ12.7	φ9.52	φ12.7	φ9.52		
	Indoor unit connected	φ12.7	φ6.35	φ12.7	φ6.35		
	Capacity of indoor unit	Model 50V×4		Model 60V×4			

< Triple type >

Type B



< W-twin type >

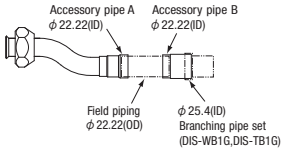


⚠CAUTION

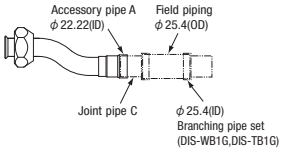
- When the model 50V or model 60V model is connected as an indoor unit, always use a φ9.52 liquid pipe for the branch (branching pipe – indoor unit) and a different diameter joint supplied with the branching pipe set for connection with the indoor unit φ6.35 on the liquid pipe side).
  If a φ6.35 pipe is used for connection with a branching pipe, a refrigerant distribution disorder may occur, causing one of the indoor units to fall short of the rated capacity.
- A riser pipe must be a part of the main. A branching pipe set should be installed horizontally at a point as close to an indoor unit as possible.
  A branching part must be dressed with a heat-insulation material supplied as an accessory.
- For the details of installation work required at and near a branching area, see the installation manual supplied with your branching pipe set.

3) How to use pipe reducer.

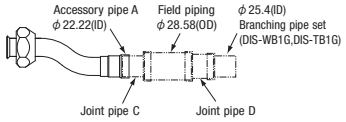
- φ22.22(OD) size of the refrigerant gas pipe can be used by using accessory pipe A,B.



- φ25.4(OD) size of the refrigerant gas pipe can be used by using accessory pipe A and joint pipe C. Ready joint C yourself. Need not accessory pipe B.



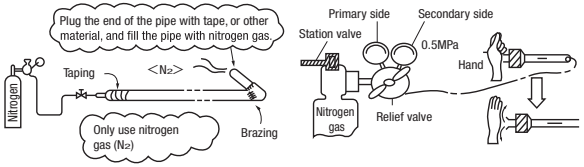
- φ28.58(OD) size of the refrigerant gas pipe can be used by using accessory pipe A and joint pipe C,D. Ready joint C and D yourself.



About brazing

Brazing must be performed under a nitrogen gas flow.

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



4) Refrigerant pipe wall thickness and material

- Select refrigerant pipes of the table shown on the right wall thickness and material as specified for each pipe size.
- This unit uses R410A. Always use 1/2H pipes having a 1.0mm or thicker wall for φ19.05 or larger pipes, because O-type pipes do not meet the pressure resistance requirement.

Pipe diameter [mm]	6.35	9.52	12.7	15.88	22.22	25.4	28.58
Minimum pipe wall thickness [mm]	0.8	0.8	0.8	1.0	1.0	1.0	1.0
Pipe material*	O-type pipe	O-type pipe	O-type pipe	O-type pipe	1/2H-type pipe	1/2H-type pipe	1/2H-type pipe

*Phosphorus deoxidized seamless copper pipe C1220T, JIS H3300

NOTE

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

5) On-site piping work

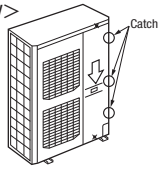
⚠IMPORTANT

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

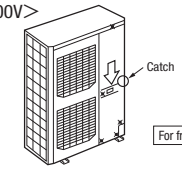
How to remove the service panel

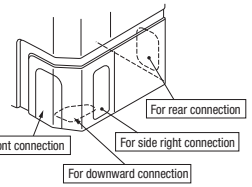
First remove screws (✕ mark) of the service panel and push it down into the direction of the arrow mark and then remove it by pulling it toward you.

<250V, A200V, A160V>

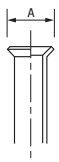


<200V>



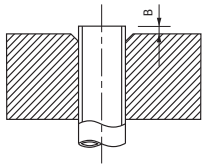


- The pipe can be laid in any of the following directions: side right, front, rear and downward.
- Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area and attach an edging material supplied as an accessory by cutting it to an appropriate length before laying a pipe.
- Carry out the on site piping work with the service valve fully closed.
- Give sufficient protection to a pipe end (compressed and blazed, or with an adhesive tape) so that water or foreign matters may not enter the piping.
- Bend a pipe to a radius as large as practical.(R100～R150) Do not bend a pipe repeatedly to correct its form.
- Flare connection is used between the unit and refrigerant pipe. Flare a pipe after engaging a flare nut onto it. Flare dimensions for R410A are different from those for conventional R407C. Although we recommend the use of flaring tools designed specifically for R410A, conventional flaring tools can also be used by adjusting the measurement of protrusion B with a protrusion control gauge.
- The pipe should be anchored every 1.5m or less to isolate the vibration.
- Tighten a flare joint securely with a double spanner.



Flared pipe end: A (mm)

Copper pipe outer diameter	A $^{0}_{-0.4}$
φ6.35	9.1
φ9.52	13.2
φ12.7	16.6
φ15.88	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
φ6.35	0～0.5	0.7～1.3
φ9.52		
φ12.7		
φ15.88		

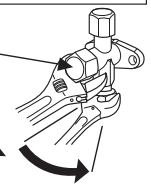
⚠ CAUTION **Do not apply force beyond proper fastening torque in tightening the flare nut.**

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

Service valve size (mm)	Tightening torque (N-m)	Tightening angle (°)	Recommended length of a tool handle (mm)
φ6.35 (1/4")	14～18	45～60	150
φ9.52 (3/8")	34～42	30～45	200
φ12.7 (1/2")	49～61	30～45	250
φ15.88 (5/8")	68～82	15～20	300
φ19.05 (3/4")	100～120	15～20	450

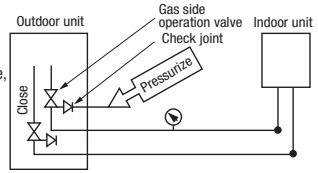
Do not hold the valve cap area with a spanner.

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



6) Air tightness test

① Although outdoor and indoor units themselves have been tested for air tightness at the factory, check the connecting pipes after the installation work for air tightness from the service valve's check joint equipped on the outdoor unit side. While conducting a test, keep the service valve shut all the time.
a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
d) If no pressure drop is observed with an installation pressurized to the specified level and left for about one day, it is acceptable. When the ambient Temperature fall 1℃, the pressure also fall approximately 0.01 MPa. The pressure, if changed, should be compensated for.
e) If a pressure drop is observed in checking a) – d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair it. After repair, conduct an air-tightness test again.
② In conducting an air-tightness test, use nitrogen gas and pressurize the system with nitrogen gas from the gas side. Do not use a medium other than nitrogen gas under any circumstances.



7) Evacuation

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

Run the vacuum pump for at least one hour after the vacuum gauge shows -101kPa or lower. (-755mmHg or lower)

Confirm that the vacuum gauge indicator does not rise even if the system is left for one hour or more.

Airtighteness test completed
↓
Vacuuming begins
↓
Vacuuming completed
↓
Vacuum gauge check
↓
Fill refrigerant

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

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

8) Additional refrigerant charge

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

<Single type>

Item / Capacity	Standard refrigerant charge volume (kg)	Pipe length for standard refrigerant charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
200V	3.8	0	0.06 (Liquid piping ϕ9.52)	5.6	30
			0.145 (Liquid piping ϕ12.7)		
250V A160V, A200V	3.6		0.12	7.2	

<Twin, triple type>

Item / Capacity	Standard refrigerant charge volume (kg)	Pipe length for standard refrigerant charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)		Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
			Main pipe	Branch pipe		
200V	3.8	0	0.06 (Liquid piping ϕ9.52)	0.06	5.6	30
			0.145 (Liquid piping ϕ12.7)			
250V A160V, A200V	3.6		0.12	0.06	7.2	

- A standard refrigerant charge volume means a refrigerant charge volume for an installation with 0m long refrigerant piping.
- This unit contains factory charged refrigerant covering 30m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30m refrigerant piping. When refrigerant piping exceeds 30m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30m.
- When refrigerant piping is shorter than 3m, reduce refrigerant by 1kg from the factory charged volume and adjust to 4.6kg or 6.2kg.
- If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size. For further information, see "6. UTILIZATION OF EXISTING PIPING."

Formula to calculate the volume of additional refrigerant required

Model 200V	In the case of ϕ9.52mm main liquid piping	Additional charge volume (kg) = { Main pipe length (m) – 30 (m) } x 0.06 (kg/m) + Total length of branch pipes (m) x 0.06 (kg/m)
	In the case of ϕ12.7mm main liquid piping	Additional charge volume (kg) = { Main pipe length (m) – 30 (m) } x 0.145 (kg/m) + Total length of branch pipes (m) x 0.06 (kg/m)
Model 250V, A160V, A200V		Additional charge volume (kg) = { Main pipe length (m) – 30 (m) } x 0.12 (kg/m) + Total length of branch pipes (m) x 0.06 (kg/m)

*When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.

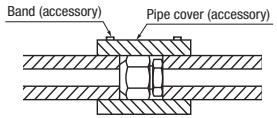
- **To charge refrigerant again, recover refrigerant from the system first and then charge the volume calculated from the above table (Standard refrigerant charge volume + additional charge volume for total pipe length.)**

In case of 200V and using ϕ12.7 at main liquid piping, calculate the amount as follows
Total charge volume(kg) = Refrigerant volume charged for shipment at the factory + (Main piping length(m)-30(m))x0.145(kg/m) + Total length of branch pipes (m) x 0.06 (kg/m)

(2) Charging refrigerant

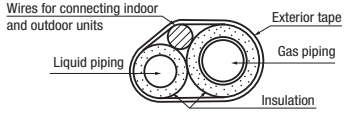
- Since R410A refrigerant must be charged in the liquid phase, you should charge it, keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
- Charge refrigerant always from the liquid side service port with the service valve shut. When you find it difficult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

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



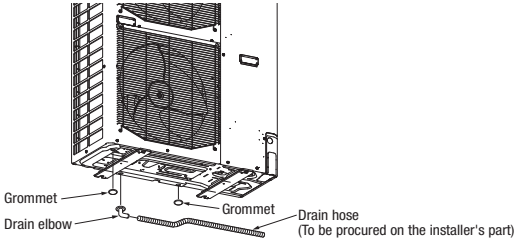
9) Heating and condensation prevention

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

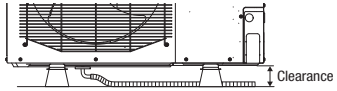


3. DRAIN PIPING WORK

- Execute drain piping by using a drain elbow and drain grommets supplied separately as option parts, where water drained from the outdoor unit is a problem.
- Water may drip where there is a larger amount of drain water. Seal around the drain elbow and drain grommets with putty or adequate caulking material.
- Condensed water may flow out from vicinity of service valve or connected pipes.
- Where you are likely to have several days of sub-zero temperatures in a row, do not use a drain elbow and drain grommets. (There is a risk of drain water freezing inside and blocking the drain.)
- Do not use drain elbow and grommet made of plastic for drain piping when base heater for outdoor unit is used. Plastic grommet and elbow will be damaged and burnt in worst case.
- Prepare another drain tray made of metallic material for collecting drain when base heater is used.



- When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks.
  Then, please secure space for the drain elbow and the drain hose.

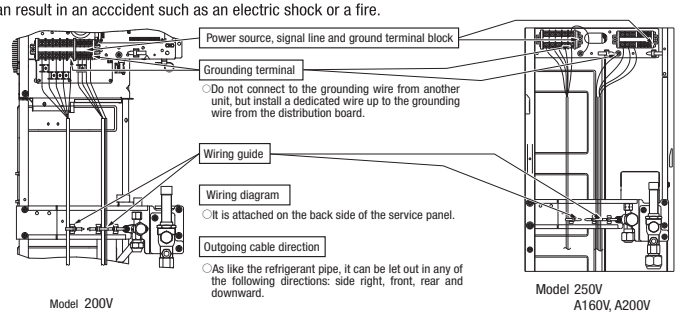


4. ELECTRICAL WIRING WORK For details of electrical cabling, refer to the indoor unit installation manual.

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

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

  Do not use anything lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC57) for supply cords of parts of appliances for outdoor use.
- Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire.
  If impropery grounded, an electric shock or malfunction may result.
- A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
- The installation of an impulse withstanding type earth leakage breaker is necessary. A failure to install an earth leakage breaker can result in an acccident such as an electric shock or a fire.



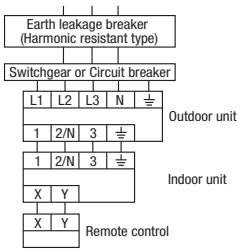
- Do not turn on the power until the electrical work is completeted .
- Do not use a condensive capacitor for power factor improvement under any circumstances. (It dose not improve power factor, while it can cause an abnormal overheat accident)
- For power source cables, use conduits.
- Do not lay electronic control cables (remote control and signaling wires) and other cables together outside the unit. Laying them together can result in the malfunctioning or a failure of the unit due to electric noises.
- Fasten cables so that may not touch the piping, etc.
- When cables are connected, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)
- Always use a three-core cable for an indoor-outdoor connecting cable. Never use a shield cable. Separate grounding wire from indoor - outdoor connecting wire.

● Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire.
● In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.
● Grounding terminals are provided in the control box.

Power cable, indoor-outdoor connecting wires

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

⚠ CAUTION Always use an earth leakage circuit breaker designed for inverter circuits to prevent a faulty operation.



Model	Power source	Power cable thickness (mm²)	MAX. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness × number
200V	3 phase 4 wire 380-415V 50Hz 380V 60Hz	5.5	20	54	ϕ1.6mm	ϕ1.6mm x 3
250V, A160V, A200V			21	51		

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

※At the connection with FDU indoor unit.

Model	Power source	Power cable thickness (mm²)	MAX. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness × number
200V	3 phase 4 wire 380-415V 50Hz 380V 60Hz	5.5	25	43	ϕ1.6mm	ϕ1.6mm x 3
250V, A160V, A200V			27	40		

※At the connection with FDUM indoor unit.

Model	Power source	Power cable thickness (mm²)	MAX. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness × number
200V	3 phase 4 wire 380-415V 50Hz 380V 60Hz	5.5	22	49	ϕ1.6mm	ϕ1.6mm x 3
250V, A160V, A200V			24	45		

5. TEST RUN

⚠ WARNING

- Before conduct a test run, make sure that the service valves are opened.
- Turn on power 6 hours prior to a test run to energize the crank case heater.
- In case of the first operation after turning on power, even if the unit does not move for 30 minutes, it is not a breakdown.
- Always give a 3-minute or longer interval before you start the unit again whenever it is stopped.

} A failure to observe these instructions can result in a compressor breakdown.

- Removing the service panel will expose high-voltage live parts and high-temperature parts, which are quite dangerous. Take utmost care not to incur an electric shock or burns. Do not leave the unit with the service panel open.

⚠ CAUTION

- When you operate switches (SW3, SW5) for on-site setting, be careful not to touch a live part.
- You cannot check discharge pressure from the liquid service valve charge port.
- The 4-way valve (20S) is energized during a heating operation.
- When power source is cut off to reset the unit, give 3 or more minutes before you turn on power again after power is cut off. If this procedure is not observed in turning on power again, "Communication error between outdoor and indoor unit" may occur.

1) Test run method

(1) A test run can be initiated from an outdoor unit by using SW3-3 and SW3-4 for on-site setting.
(2) Switching SW3-3 to ON will start the compressor.
(3) The unit will start a cooling operation, when SW3-4 is OFF, or a heating operation, when SW3-4 is ON.
(4) **Do not fail to switch SW3-3 to OFF when a test run is completed.**

SW-3-3	SW-3-4	
ON	OFF	Cooling during a test run
	ON	Heating during a test run
OFF	—	Normal or After the test operation

2) Checking the state of the unit in operation

Use check joints provided on the piping before and after the four-way valve installed inside the outdoor unit for checking discharge pressure and suction pressure.
As indicated in the table shown on the right, pressure detected at each point will vary depending on whether a cooling or heating operation has been selected.

	Check joint of the pipe	Charge port of the gas service valve
Cooling operation	Discharge pressure (High pressure)	Suction pressure (Low pressure)
Heating operation	Suction pressure (Low pressure)	Discharge pressure (High pressure)

3) Setting SW3-1, SW3-2, on-site

(1) Defrost control switching (SW3-1)
- ·When this switch is turned ON, the unit will run in the defrost mode more frequently.
- ·Set this switch to ON, when installed in a region where outdoor temperature falls below zero during the season the unit is run for a heating operation.

(2) Snow guard fan control (SW3-2)
- ·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℃ or lower and the compressor is not running.
- ·When the unit is used in a very snowy country, set this switch to ON.

4) Failure diagnosis in a test run

Error indicated on the remote control unit	Printed circuit board LED(The cycles of 5 seconds)		Failure event	Action
	Red LED	Green LED		
E40	Blinking once	Blinking continuously	63H1 actuation or operation with service valves shut (occurs mainly during a heating operation)	1. Check whether the service valves are open. 2. If an error has been canceled when 3 minutes have elapsed since a compressor stop, you can restart the unit by effecting Check Reset from the remote control unit.
E49	Blinking once	Blinking continuously	Low pressure error or operation with service valves shut (occurs mainly during a cooling operation)	

- If an error code other than those listed above is indicated, refer to the wiring diagram of the outdoor unit and the indoor unit.

5) The state of the electronic expansion valve.

The following table illustrates the steady states of the electronic expansion valve.

	When power is turned on	When the unit comes to a normal stop		When the unit comes to an abnormal stop	
		During a cooling operation	During a heating operation	During a cooling operation	During a heating operation
Valve for a cooling operation	Complete shut position	Complete shut position	Full open position	Full open position	Full open position
Valve for a heating operation	Full open position	Full open position	Complete shut position	Full open position	Full open position

6) Heed the following on the first operation after turning on the circuit breaker.

- ·This outdoor unit may start in the standby mode (waiting for a compressor startup), which can continue up to 30 minutes, to prevent the oil level in the compressor from lowering on the first operation after turning on the circuit breaker. If that is the case, do not suspect a unit failure.
- ·At the first operation of heating mode after turning on the circuit breaker, the outdoor unit may start in cooling mode a while to prevent from liquid refrigerant back to compressor. If that is the case, do not suspect a unit failure.

Items to check before a test run

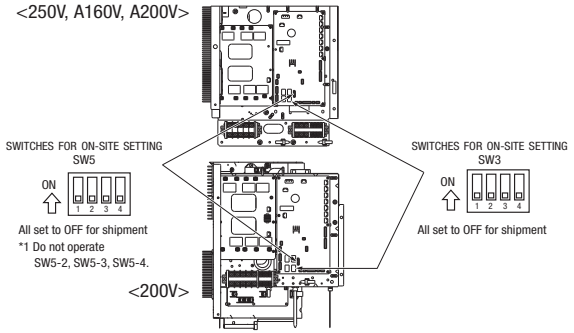
- When you leave the outdoor unit with power supplied to it, be sure to close the panel.

Item No.used in the installation manual	Item	Check item	Check
2	Refrigerant plumbing	If brazed, was it brazed under a nitrogen gas flow?	
		Were air-tightness test and vacuum extraction surely performed?	
		Are heat insulation materials installed on both liquid and gas pipes?	
		Are service valves surely opened for both liquid and gas systems?	
		Have you recorded the additional refrigerant charge volume and refrigerant pipe length on the panel's label?	
4	Electric wiring	Is the unit free of cabling errors such as uncompleted connection, an absent or reversed phase?	
		Are properly rated electrical equipments used for circuit breakers and cables?	
		Doesn't cabling cross-connect between units, where more than one unit are installed?	
		Aren't indoor-outdoor signal wires connected to remote control wires?	
		Do indoor-outdoor connecting cables connect between the same terminal numbers?	
		Are either VCT cabtyre cables or WF flat cables used for indoor-outdoor connecting cables?	
		Does grounding satisfy the D type grounding (type III grounding) requirements?	
		Is the unit grounded with a dedicated grounding wire not connected to another unit's grounding wire?	
		Are cables free of loose screws at their connection points?	
		Are cables held down with cable clamps so that no external force works onto terminal connections?	
—	Indoor unit	Is indoor unit installation work completed?	
		Where a face cover should be attached onto an indoor unit, is the face cover attached to the indoor unit?	

Test run procedure

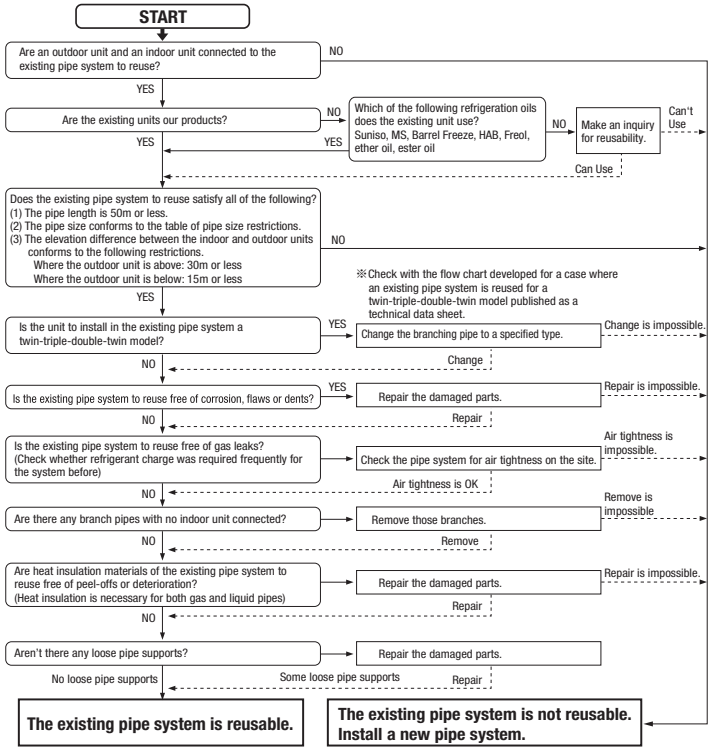
- Always carry out a test run and check the following in order as listed.

Turn	The contents of operation	Check
①	Open the gas side service valve fully.	
②	Open the liquid side service valve fully.	
③	Close the panel.	
④	Where a remote control unit is used for unit setup on the installation site, follow instructions for unit setup on the installation site with a remote control unit.	
⑤	SW3-3 ON / SW3-4 OFF: the unit will start a cooling operation.	
	SW3-3 ON / SW3-4 ON: the unit will start a heating operation.	
⑥	When the unit starts operation, press the wind direction button provided on the remote control unit to check its operation.	
⑦	Place your hand before the indoor unit's diffuser to check whether cold (warm) winds come out in a cooling (heating) operation.	
⑧	Make sure that a red LED is not blinking.	
⑨	When you complete the test run, do not forget to turn SW3-3 to the OFF position.	
⑩	Where options are used, check their operation according to the respective instruction manuals.	



6. UTILIZATION OF EXISTING PIPING.

Check whether an existing pipe system is reusable or not by using the following flow chart.



⚠ WARNING <Where the existing unit can be run for a cooling operation.>

Carry out the following steps with the excising unit (in the order of (1), (2), (3) and (4))

(1) Run the unit for 30 minutes for a cooling operation.
(2) Stop the indoor fan and run the unit for 3 minutes for a cooling operation (returning liquid)
(3) Close the liquid side service valve of the outdoor unit and pump down (refrigerant recovery)
(4) Blow with nitrogen gas. ※ If discolored refrigeration oil or any foreign matters is discharged by the blow, wash the pipe system or install a new pipe system.
- ● For the flare nut, do not use the old one, but use the one supplied with the outdoor unit. Process a flare to the dimensions specified for R410A.
- ● **Turn on-site setting switch SW5-1** to the ON position. (Where the gas pipe size is φ19.05)

<Where the existing unit cannot be run for a cooling operation.>

Wash the pipe system or install a new pipe system.
- ● If you choose to wash the pipe system, contact our distributor in the area.

<Table of pipe size restrictions>

◎:Standard pipe size ○:Usable
△:Restricted to shorter pipe length limits ×:Not usable

Additional charging amount of refrigerant per 1m		0.06kg/m			0.12kg/m ※5			0.2kg/m		
Pipe size	Liquid pipe	φ9.52	φ9.52	φ9.52	φ12.7	φ12.7	φ12.7	φ15.88	φ15.88	φ15.88
	Gas pipe	φ22.22	φ25.4	φ28.58	φ22.22	φ25.4	φ28.58	φ22.22	φ25.4	φ28.58
200V	Usability	◎	○※2	○※2	△	◎	◎	△	△	×
	Maximum one-way pipe length	35	70	70	35	70	70	30m	30m	×
	Length covered without additional charge	30	30	30	16.5	16.5	16.5	9	9	×
250V A160V A200V	Usability	×	×	×	◎	◎	◎	△	△	△
	Maximum one-way pipe length	×	×	×	35	70	70	35	40	40
	Length covered without additional charge	×	×	×	30	30	25	18	18	18

<Pipe system after the branching pipe>

			After 1st branch ※3			After 2nd branch		
Additional charging amount of refrigerant per 1m			0.06kg/m			0.06kg/m		
Pipe size	Liquid pipe		φ9.52			φ9.52		
	Gas pipe		φ12.7	φ15.88	φ19.05※1	φ12.7	φ15.88	φ19.05※1
Model	Combination type	Combination of capacity						
200V	Twin	100+100	×	◎	○	—	—	—
	Triple A	71+71+71	×	◎	○	—	—	—
	Triple B	71+71+71	×	◎	○ ※4	×	◎	○
	Double twin	50+50+50+50	×	◎	○	◎	○	×
250V A160V A200V	Twin	125+125	×	◎	○	—	—	—
	Triple A	—	—	—	—	—	—	—
	Triple B	60+60+125	×	◎	○ ※4	◎	×	×
	Triple B	71+71+100	×	◎	○ ※4	×	◎	×
	Double twin	60+60+60+60	×	◎	○	◎	○	×

※1 Because of its insufficient pressure resistance, **turn the dip switch SW5-1** provided on the outdoor unit board to the ON position for φ19.05 × t1.0. (In the case of a twin-triple-double-twin model, this also applies to the case where φ19.05 × t1.0 is used in a pipe system after the first branching point.) However, you need not turn the dip switch SW5-1 to the ON position, if 1/2H pipes or pipes having 1.2 or thicker walls are used.
※2 When the main pipe length exceeds 40m, a significant capacity drop may be experienced due to pressure loss in the liquid pipe system. Use φ12.7 for the liquid main.
※3 Piping size after branch should be equal or smaller than main pipe size.
※4 Piping size from first branch to indoor unit should be φ9.52 (Liquid) / φ15.88 (Gas).
※5 In case of 200V, change 0.145 kg/m.
- ● When refrigerant piping is shoter than 3m, reduce refrigerant by 1kg from factory charged volume.
- ● Any combinations of pipe sizes not listed in the table or marked with × in the table are not usable.

<The model types of existing units of which branching pipes are reusable.>

Models later than Type 8.

●FDC ＊＊＊8□□□ ●FDCP ＊＊＊8□□□

The branching pipes used with models other than those listed above are not reusable because of their insufficient pressure resistance. Please use our genuine branching pipes for R410A.

●＊＊＊ are numbers representing horsepower. □□□ is an alphanumeric letter.

Formula to calculate additional charge volume

Additional charge volume (kg) = {Main pipe length (m) – Length covered without additional charge shown in the table (m)} × Additional charge volume per meter of pipe shown in the table (kg/m) + Total length of branch pipes (m) × Additional charge volume per meter of pipe shown in the table (kg/m)

※ If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged.

Example) When an 250V (twin installation) is installed in a 40m long existing pipe system (main pipe length 30m, liquid φ15.88, gas φ25.4; pipe length after branching pipe 5m x 2, liquid φ9.52, gas φ15.88), the quantity of refrigerant to charge additionally should be (30m-18m) x 0.2kg/m + 5m x 2 x 0.06kg/m = 3.0 kg.

2.9.5 Method for connecting the accessory pipe

Model FDC200VSA

PSC012D028A

- Be sure to use the accessory pipe to connect the service valve on the gas side with the field pipe.
- Be sure to use the straight pipe（Procured at the field） shown in the table 1 applicable.
- When tightening the flare, connect the pipe securely by pressing the flared face of pipe against the service valve.
- When brazing between the pipe in place and the attached pipe, confirm that no excessive force is applied to the flare joint. Otherwise gas could leak from the flare joint.
- Connect the attached pipe according to the following steps ①～⑤.

① Referring to Table 2 and Table 3, prepare the straight pipe and the elbow in the field, which are used in the construction examples Ⓐ～Ⓓ applicable to the connecting direction.

② Firstly, use the accessory pipe to assemble the connecting pipe assembly outside the outdoor unit.
（As shown in the figure of connecting examples Ⓐ～Ⓓ.）

③ After assembling the connecting pipe, connect it to the service valve on the gas side inside the outdoor unit. Tighten the flare nut with appropriate torque.

Proper torque	
φ19.05	100～120N・m

④ After connection of the connecting pipe assembly to the service valve on the gas side, braze the connecting pipe assembly and the field pipe.

⑤ When connecting pipe contacts wiring, attach heat insulating material to the pipe in order to prevent from contacting of the pipe and wiring.（ If the wiring is rubbed with the pipe and the cover of wiring is teared, there is a risk of a short circuit or an electric shock.）

About brazing

- Be sure to braze while supplying nitrogen gas.
  If no nitrogen gas is supplied, a large amount of impurity（oxidized film） will be generated, which may clog the capillary tube and the expansion valve, resulting in fatal malfunction.

Table 1 Pipe specification

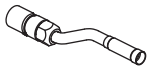
Refrigerant line（one way）	length（m）
≦35（m）	φ22.22 x T1.0
≦70（m）	φ25.4 x T1.0 or φ28.58 x T1.0

- Be sure to use pipes of 1／2H material, and wall thickness above 1mm.（Pressure resistance of O-type pipe is not enough）

Table 2 Parts used for the connecting pipe assembly

No.	Name	Quantity	Remark
1	Accessory pipe A	1	Accessory
2	Straight pipe ①	1	Procured at the field
3	Straight pipe ②	1 or 0	Procured at the field（Not required for downward direction）
4	Elbow	1 or 0	Procured at the field（Not required for downward direction）

A



Accessory pipe A x 1 pc

Heat insulating material is attached to the accessory pipe with band. When installing the heat insulating material, cut the band and retrieve it.

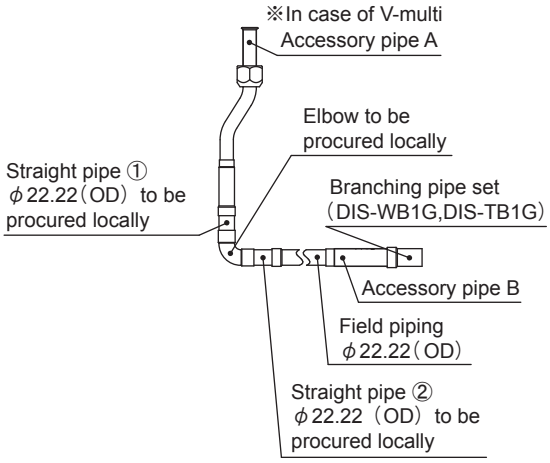
B

Accessory pipe B x 1 pc

- Branching pipe set can be used by using the accessory pipe B. When φ22.22（OD） size of the indoor unit gas pipe is used, the accessory pipe B is unnecessary.

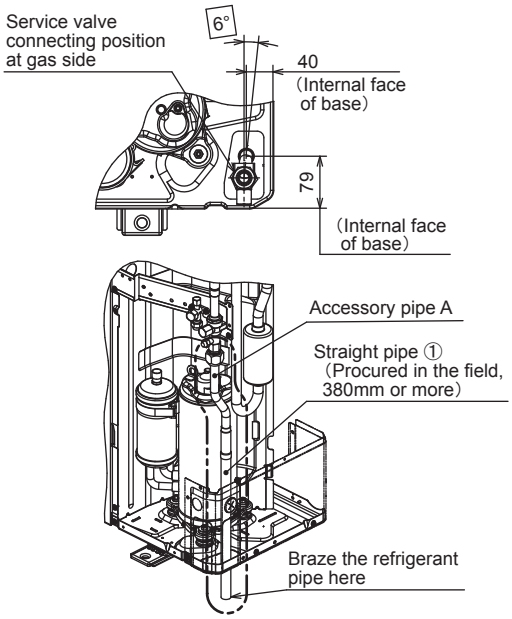
Table 3 Length and specification of straight pipe（Procured in the field）

	Ⓐ Downward	Ⓑ Forward	Ⓒ Rightward	Ⓓ Backward
Straight pipe ①	380mm or more	200mm	155mm	215mm
Straight pipe ②	—	160mm or more	160mm or more	370mm or more

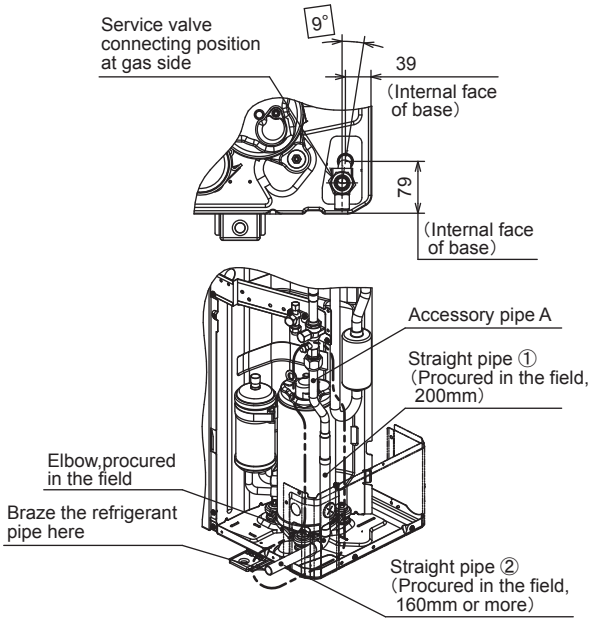


【Connection example Ⓐ ～ Ⓓ applicable to the connecting direction.】

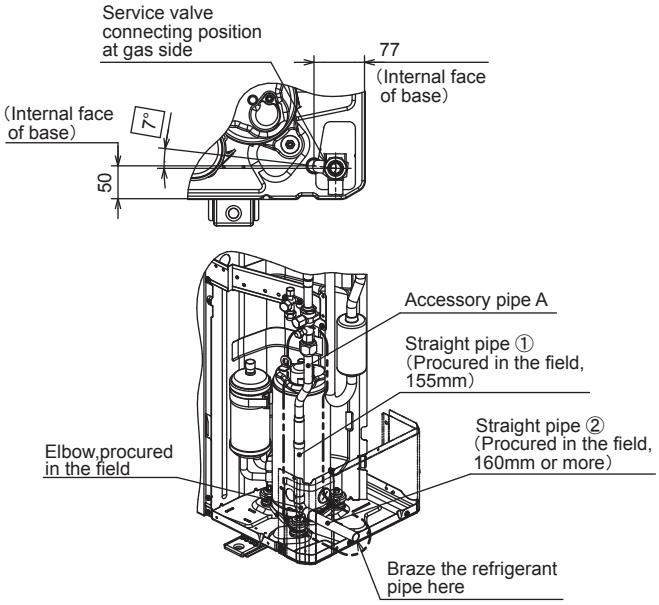
- The piping angle shown below is an example in case of 15mm of heat insulating material.
  Adjust an angle, according to the thickness of heat insulating material.
  Pass the connecting pipe in a hole after angle adjustment.



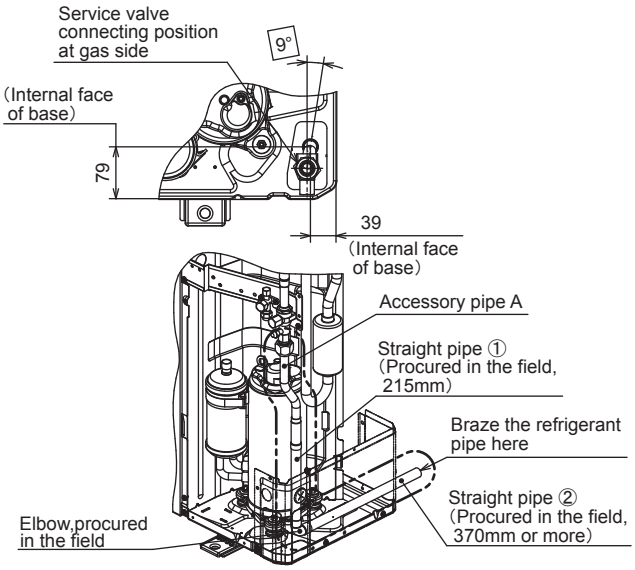
Connection example of refrigerant pipe-Ⓐ
(Downward connection)



Connection example of refrigerant pipe-Ⓑ
(Forward connection)



Connection example of refrigerant pipe-Ⓒ
(Rightward connection)



Connection example of refrigerant pipe-Ⓓ
(Backward connection)

Model FDC250VSA

PSC012D028C

- Be sure to use the accessory pipe to connect the service valve on the gas side with the field pipe.
- Be sure to use the straight pipe （Procured at the field） shown in the table 1 applicable to the model of outdoor unit.
- When tightening the flare, connect the pipe securely by pressing the flared face of pipe against the service valve.
- When brazing between the pipe in place and the attached pipe, confirm that no excessive force is applied to the flare joint. Otherwise gas could leak from the flare joint.
- Connect the attached pipe according to the following steps ①～⑤.

① Referring to Table 2 and Table 3, prepare the straight pipe and the elbow in the field, which are used in the construction examples Ⓐ～Ⓓ applicable to the connecting direction.

② Firstly, use the accessory pipe to assemble the connecting pipe assembly outside the outdoor unit. （As shown in the figure of connecting examples Ⓐ～Ⓓ.）

③ After assembling the connecting pipe, connect it to the service valve on the gas side inside the outdoor unit. Tighten the flare nut with appropriate torque.

Proper torque	
φ19.05	100～120N・m

④ After connection of the connecting pipe assembly to the service valve on the gas side, braze the connecting pipe assembly and the field pipe.

⑤ When connecting pipe contacts wiring, attach heat insulating material to the pipe in order to prevent from contacting of the pipe and wiring. （If the wiring is rubbed with the pipe and the cover of wiring is teared, there is a risk of a short circuit or an electric shock.）

About brazing

- Be sure to braze while supplying nitrogen gas.
  If no nitrogen gas is supplied, a large amount of impurity （oxidized film） will be generated, which may clog the capillary tube and the expansion valve, resulting in fatal malfunction.

※In case of V-multi
（In case of FDC250V）

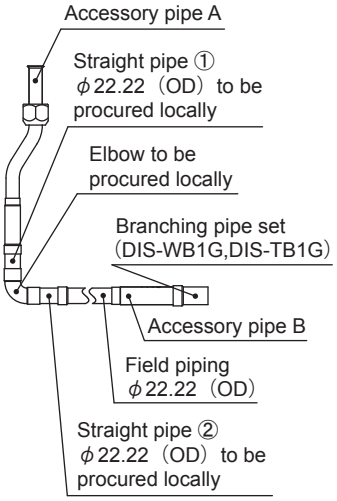


Table 1 Pipe specification

		Refrigerant line （one way） length（m）	
Single type	FDC250V	≦35（m）	φ22.22 x T1.0
		≦70（m）	φ25.4 x T1.0 or φ28.58 x T1.0
Multi type	FDC224KXZPE1	≦90（m）	φ19.05 x T1.0
		≦120（m）	φ22.22 x T1.0
	FDC280KXZPE1	≦90（m）	φ22.22 x T1.0
		≦120（m）	φ25.4 x T1.0 or φ28.58 x T1.0

- Be sure to use pipes of 1／2H material, and wall thickness above 1mm. （Pressure resistance of O-type pipe is not enough）

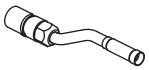
Table 2 Parts used for the connecting pipe assembly

No.	Name	Quantity	Remark
1	Accessory pipe A	1	Accessory
2	Straight pipe ①	1	Procured at the field
3	Straight pipe ②	1 or 0	Procured at the field（Not required for downward direction）
4	Elbow	1 or 0	Procured at the field（Not required for downward direction）

Table 3 Length and specification of straight pipe （Procured in the field）

	Ⓐ Downward	Ⓑ Forward	Ⓒ Rightward	Ⓓ Backward
Straight pipe ①	400mm or more	192.5～202.5mm	192.5～202.5mm	210mm
Straight pipe ②	—	105mm or more	155mm or more	370mm or more

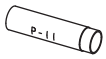
A



Accessory pipe A x 1 pc
（Except FDC224KXZPE1）

Heat insulating material is attached to the accessory pipe with band. When installing the heat insulating material, cut the band and retrieve it.

B

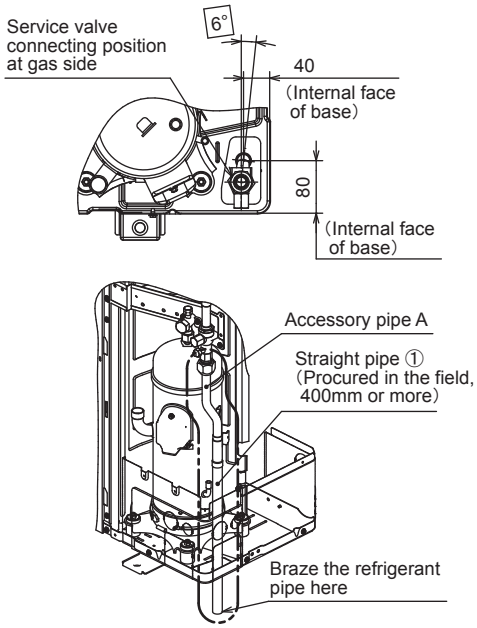


Accessory pipe B x 1 pc
（Only use for FDC250V）

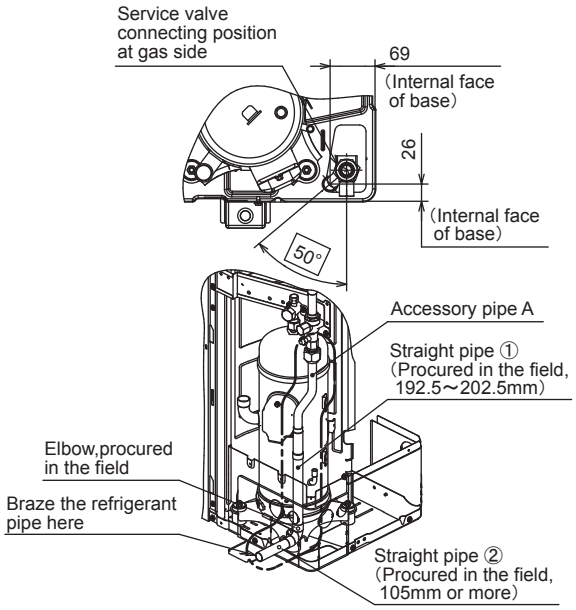
- Branching pipe set can be used by using the accessory pipe B. When φ22.22（OD） size of the indoor unit gas pipe is used, the accessory pipe B is unnecessary.

【Connection example Ⓐ～Ⓓ applicable to the connecting direction.】

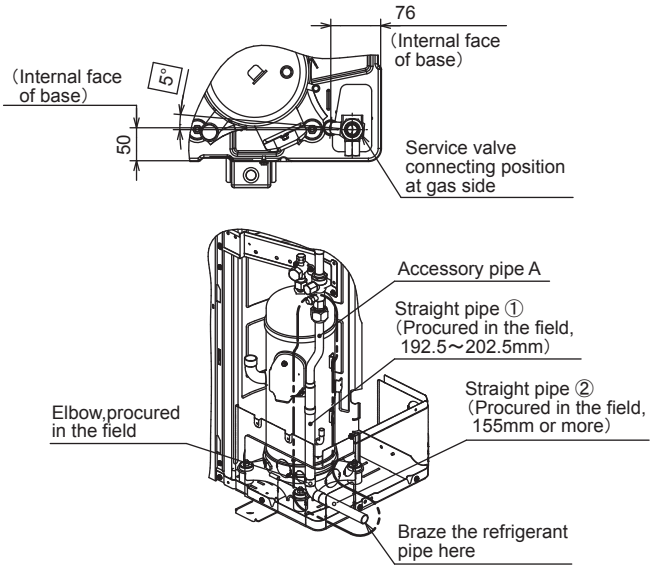
- The piping angle shown below is an example in case of 15mm of heat insulating material.
  Adjust an angle, according to the thickness of heat insulating material.
  Pass the connecting pipe in a hole after angle adjustment.



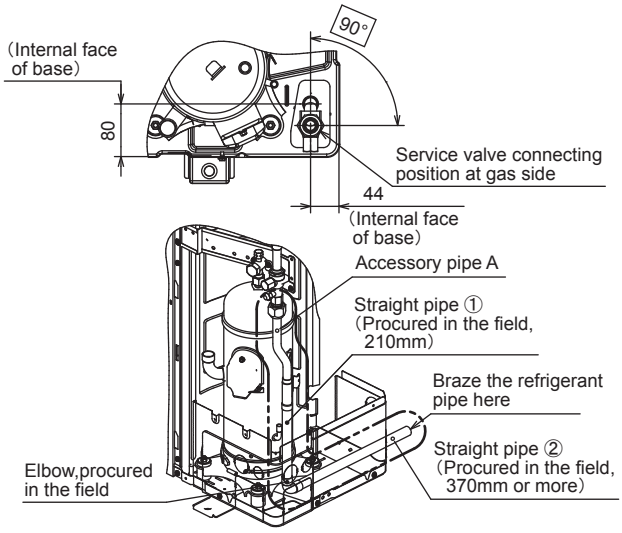
Connection example of refrigerant pipe-Ⓐ
(Downward connection)



Connection example of refrigerant pipe-Ⓑ
(Forward connection)



Connection example of refrigerant pipe-Ⓒ
(Rightward connection)



Connection example of refrigerant pipe-Ⓓ
(Backward connection)

2.9.6 Instructions for branching pipe set (DIS-WA1, WB1, TA1, TB1)

For R410A

PSB012D865 F

⚠ WARNING / CAUTION

- This set is for R410A refrigerant.
- Select a branching pipe set correctly rated for the combined total capacity of connected indoor units and install it according to this manual.
  An improperly installed branching pipe set can cause degraded performance or an abnormal unit stop.
- Provide good heat insulation to the pipes by following instructions contained in this manual.
  Improper heat insulation can result in degraded performance or a water leak accident from condensation.
- Please make sure that only parts supplied as accessories or the manufacturer's approved parts are used in installing the unit, because a leak of refrigerant can result in a lack-of-oxygen accident, if it reaches a concentration beyond the tolerable limit.

This manual explains how to use a branching pipe set that is indispensable in connecting pipes for a twin/triple/W-twin configuration installation (system). For the details of piping work, unit installation work and electrical installation work, please refer to the installation manuals and installation guides supplied with your outdoor and indoor units.

1. Branching pipe set specifications

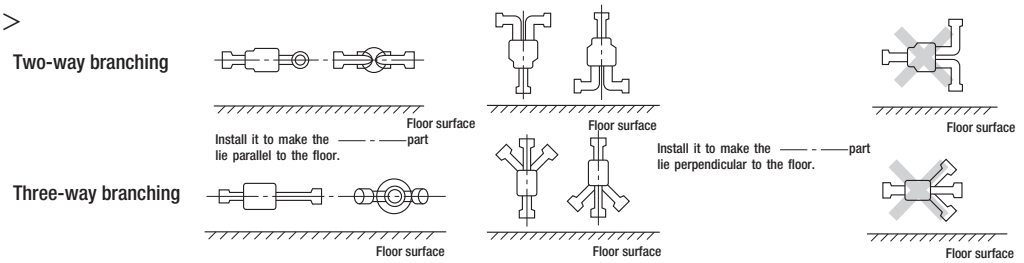
(1) Please make sure that you have chosen the right branching pipe set and the specifications of the parts contained in it by checking with the table below.
(2) Connect pipes as illustrated in the table below. The pipe from an outdoor unit must be brazed to the pipe connection port "①" and the pipes from indoor units to "②," "③" and "④."

Branching pipe set type	Supported outdoor/indoor unit combinations		Part lists			
	Outdoor unit model	Indoor unit model	Branching pipe set for a liquid pipe	Branching pipe set for a gas pipe	Different diameter pipe joint	Heat insulation material
DIS-WA1 (Two-way branching set)	3HP	1.5HP＋1.5HP	ID9.52 ① ② ③ ID9.52 ID9.52 1 piece	ID15.88 ① ② ③ ID15.88 ID15.88 1 piece	Joint A ID9.52 2 pieces Flare joint (for indoor unit side connection) Joint B OD15.88 ID12.7 2 pieces	One each for liquid and gas
	4HP	2HP＋2HP				
		1.5HP＋2.5HP				
	5HP	2.5HP＋2.5HP				
		2HP＋3HP				
	6HP	3HP＋3HP				
		2HP＋4HP				
DIS-WB1 (Two-way branching set)	8HP	4HP＋4HP	ID9.52 ① ② ③ ID12.7 ID9.52 1 piece	ID15.88 ① ② ③ ID25.4 ID15.88 1 piece	Joint C OD12.7 ID9.52 1 piece	One each for liquid and gas
		3HP＋5HP				
	10HP	5HP＋5HP				
DIS-TA1 (Three-way branching set)	6HP	2HP＋2HP＋2HP	ID9.52 ① ② ③ ④ ID9.52 1 piece	ID12.7 ① ② ③ ④ ID15.88 1 piece	Joint A ID9.52 3 pieces Flare joint (for indoor unit side connection)	One each for liquid and gas
DIS-TB1 (Three-way branching set)	8HP	3HP＋3HP＋3HP	ID9.52 ① ② ③ ④ ID9.52 1 piece	ID15.88 ① ② ③ ④ ID25.4 1 piece	Joint A ID9.52 2 pieces Flare joint (for indoor unit side connection) Joint B OD15.88 ID12.7 1 piece Joint D ID12.7 OD9.52 1 piece	One each for liquid and gas

(3) To connect pipes for a Double Twin installation (involving 4 indoor units), please see 2-7. "Double Twin configuration."
(4) A branching pipe set must always be installed into the posture as illustrated in the drawing below.

ID stands for inner diameter and OD, outer diameter.

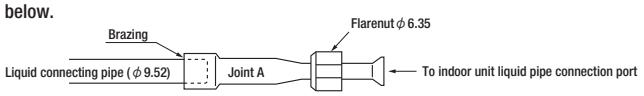
＜Posture to install into＞



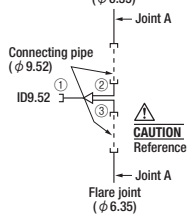
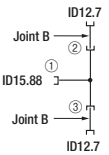
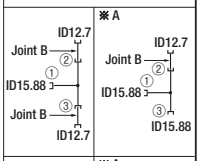
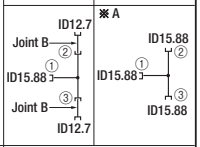
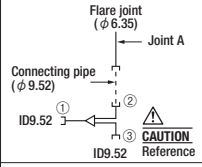
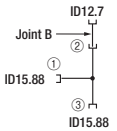
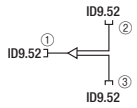
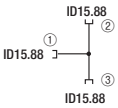
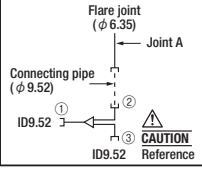
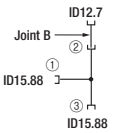
2. Pipe connecting procedure

Braze the different diameter pipe joint found in the set matching the connected outdoor and indoor unit capacities according to the instructions set out below.

⚠ CAUTION In connecting an indoor unit of which capacity is 1.5HP, 2HP or 2.5HP, always use a ϕ9.52 liquid pipe to connect to the branching pipe (branching pipe – indoor unit).
In connecting to an indoor unit (liquid pipe side: ϕ6.35), use the different diameter pipe joint A supplied with the set and follow the procedure set out below.

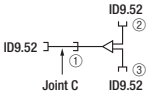
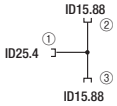
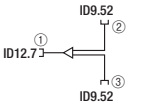
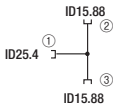


2-1 DIS-WA1

Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
3HP	1.5HP+1.5HP		
4HP	2HP+2HP		
	1.5HP+2.5HP		
5HP	2.5HP+2.5HP		
	2HP+3HP		
6HP	3HP+3HP		
	2HP+4HP		

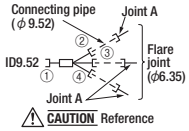
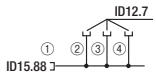
Note When connect the indoor unit of an old model that is shown in the model list, use the joint supplied with the branch piping set like ※A

2-2 DIS-WB1

Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
8HP	3HP+5HP		
	4HP+4HP		
10HP	5HP+5HP		

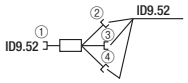
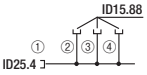
2-3 DIS-TA1

Applicable to the difference in length of pipes after the branch being less than 3 m
* Connection is not allowed when the difference in length of pipes is larger than 3 m.

Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
6HP	2HP+2HP+2HP		

2-4 DIS-TB1

Applicable to the difference in length of pipes after the branch being less than 3 m
* Connection is not allowed when the difference in length of pipes is larger than 3 m.

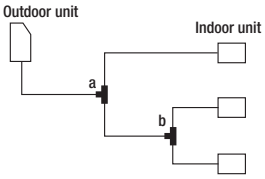
Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
8HP	3HP+3HP+3HP		

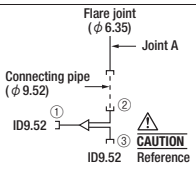
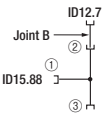
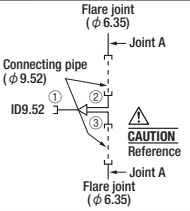
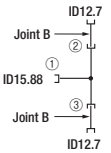
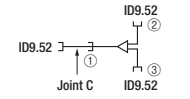
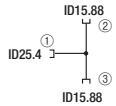
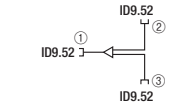
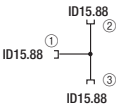
▷OLD Model list

model name
FDTA251R
FDENA251R
FDKNA251R
FDURA251R
FDUMA252R

2-5. Triple type for same model/same capacity or different model/same capacity

When the difference in length of pipes after the branch is longer than 3 m and shorter than 10 m

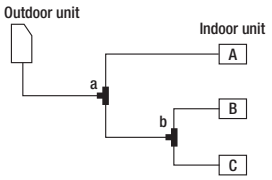


Outdoor unit model	Indoor unit model	Branching pipe	Branching pipe set type	Liquid branching pipe	Gas branching pipe
6HP	2HP+2HP+2HP	a	DIS-WA1		
		b			
8HP	3HP+3HP+3HP	a	DIS-WB1		
		b	DIS-WA1		

2-6. Triple type for same model/different capacity or different model/different capacity

Applicable to the difference in length of pipes after the branch being less than 3 m

* Connection is not allowed when the difference in length of pipes is larger than 3 m.



Connecting position

Outdoor unit model	Indoor unit model	A	B	C
10HP	2.5HP+2.5HP+5HP	5HP	2.5HP	2.5HP
	3HP+3HP+4HP	4HP	3HP	3HP

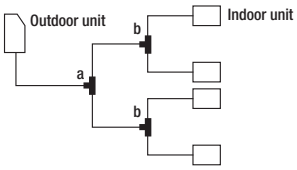
Outdoor unit model	Indoor unit model	Branching pipe	Branching pipe set type	Liquid branching pipe	Gas branching pipe
10HP	2.5HP+2.5HP+5HP	a	DIS-WB1	ID9.52 ② ① ID12.7 ③ ID9.52	ID15.88 ② ① ID25.4 ③ ID15.88
		b	DIS-WA1	Flare joint (φ6.35) Joint A Connecting pipe (φ9.52) ② ID9.52 ① ③ ⚠ CAUTION Reference Joint A Flare joint (φ6.35)	ID12.7 Joint B ① ② ID15.88 ③ Joint B ID12.7 ※A ID15.88 ② ① ID15.88 ③ ID15.88
10HP	3HP+3HP+4HP	a	DIS-WB1	ID9.52 ② ① ID12.7 ③ ID9.52	ID15.88 ② ① ID25.4 ③ ID15.88
		b	DIS-WA1	ID9.52 ② ① ID9.52 ③ ID9.52	ID15.88 ② ① ID15.88 ③ ID15.88

Note When connect the indoor unit of an old model that is shown in the model list, use the joint supplied with the branch piping set like※ A.

2-7. Double twin type

Pipes should be connected as follows for a Double twin installation (4 connected indoor units. The capacity of an outdoor unit available for this configuration is either 8HP or 10HP only):

Outdoor unit capacity	Indoor unit capacity
8HP	2HP×4 units
10HP	2.5HP×4 units



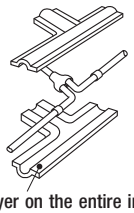
Branching pipe	Branching pipe set type	Outdoor unit model	Liquid branching pipe	Gas branching pipe
a	DIS-WB1	8HP	ID9.52 ② ① ID9.52 Joint C ③ ID9.52	ID15.88 ② ① ID25.4 ③ ID15.88
		10HP	ID9.52 ② ① ID12.7 ③ ID9.52	
b	DIS-WA1	8HP	Flare joint (φ6.35) Joint A Connecting pipe (φ9.52) ② ID9.52 ① ③ ⚠ CAUTION Reference Joint A Flare joint (φ6.35)	ID12.7 Joint B ① ② ID15.88 ③ Joint B ID12.7
		10HP		※A ID15.88 ② ① ID15.88 ③ ID15.88 ID12.7 Joint B ① ② ID15.88 ③ Joint B ID12.7

Note When connect the indoor unit of an old model that is shown in the model list, use the joint supplied with the branch piping set like※ A.

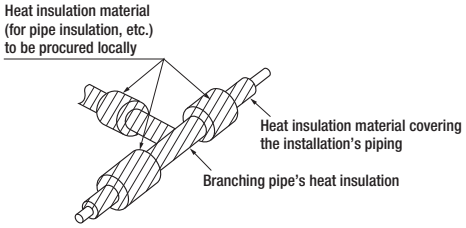
3. Heat insulation work

(1) Condensation can also occur on liquid pipes with this model. Please provide good heat insulation to both liquid and gas pipes.

(2) For the heat insulation of a branching pipe, always use the heat insulation material supplied with the set and provide heat insulation according to the instructions set out below.



1. It has an adhesive layer on the entire inner face. Remove a separator and wrap it around the branching pipe.



2. Apply a heat insulation material (to be procured locally) to the joint between the branching pipe's heat insulation and the heat insulation material covering the installation's piping as described above and wrap a tape over the gap shown as a hatched (///) area to complete dressing of the piping.

2.10 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

2.10.1 Remote control ..... See page 116.
2.10.2 Operation control function by the wired remote control ..... See page 119.
2.10.3 Operation control function by the indoor control ..... See page 122.

2.10.4 Operation control function by the outdoor control

(I) Models FDC71, 90VNP

(1) Compressor command speed

Unit: rps

Item \ Model	Cooling		Heating	
	FDC71	FDC90	FDC71	FDC90
Upper limit	120 (80)	120 (74)	120 (90)	120 (70)
Lower limit	12		12	

Note (1) Valuc in ( ) are for the silent mode.

(2) Compressor protection start

(a) Compressor protection start I

(i) Operating condition: When the compressor is turned ON from the state of OFF.

(ii) Detail of operation: During the protection start I control, the upper limit of compressor speed is restricted to the speeds as shown in the following table.

Unit: rps

			Time after establishment of operating conditions (Including acceleration time)				
			Less than 3 min	Less than 5 min	Less than 7 min	Less than 9 min	9 min or more
FDC71	Cooling		120	120	120	120	End of control
	Heating(1)	TH2≧10°C	120	120	120	120	
		TH2<10°C	48	56	56	75	
FDC90	Cooling		120	120	120	120	
	Heating(1)	TH2≧10°C	55	55	75	95	
		TH2<10°C	55	55	75	95	

Note (1) Judgment by the outdoor air temperature sensor (TH2) is made only at the start of control during heating operation.

(b) Compressor protection start II

(i) Operating condition: When the outdoor air temperature sensor (TH2) has detected lower than 10°C after starting the compressor during heating operation.

(ii) Detail of operation: During the protection start II control, the upper limit of compressor speed is restricted to the speeds as shown in the following table.

Unit: rps

		Time after compressor ON (Including acceleration time)				
		Less than 1 min	Less than 5 min	Less than 7 min	Less than 9 min	9 min or more
FDC71		40	32	90	110	End of control
FDC90	TH2≧-5°C	40	32	90	110	
	TH2<-5°C	40	45	90	110	

(3) Outdoor unit fan control

(a) Outdoor unit fan speed and fan motor speed

Unit: min^{-1}

Fan speed	1st speed	2nd speed	3rd speed	4th speed	5th speed	6th speed	7th speed	8th speed
FDC71	150	225	485	520	570	685	800	850
FDC90	150	300	500	650	740	835	890	950

(b) Outdoor unit fan control at start (Cooling operation only)

When the outdoor air temperature (TH2) is lower than 22°C at the start of compressor, the outdoor unit fan is operated at a fixed speed.

(i) When the outdoor air temperature is higher than 11°C, the compressor runs at 2nd speed for 30 seconds after the compressor ON.

(ii) When the outdoor air temperature is lower than 11°C, the compressor runs at 1st speed for 30 seconds after the compressor ON.

(c) Relationship between compressor speed and outdoor unit fan speed
Outdoor unit fan speed is controlled according to the operation mode (Heating/cooling) and the compressor speed.

Unit: rps

Fan speed		1st speed	2nd speed	3rd speed	4th speed	5th speed	6th speed	7th speed	8th speed
FDC71	Cooling	–	–	–	0-22	22-30	30-58	58-80	80-
	Heating	–	–	–	0-30	30-38	38-78	78-90	90-
FDC90	Cooling	–	–	0-30	30-46	46-64	64-70	70-75	75-
	Heating	–	–	0-30	30-46	46-70	70-90	90-	–

(d) Outdoor fan control at low outdoor temperature

(i) Cooling

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

2) Detail of operation: After the outdoor fan operates at A speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

● Value of A

	Outdoor fan
Outdoor temperature > 10˚C	12th speed
Outdoor temperature ≦ 10˚C	9th speed

a) Outdoor heat exchanger temperature ≦ 21ºC
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 21ºC, gradually reduce the outdoor fan speed by 1 speed. (Lower limit 9th speed)

b) 21ºC < Outdoor heat exchanger temperature ≦ 38ºC
After the outdoor fan speed maintains for 20 seconds; if the outdoor heat exchanger temperature is 21ºC-38ºC, maintain outdoor fan speed again.

c) Outdoor heat exchanger tempeature > 38ºC
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 38ºC, gradually increase outdoor fan speed by 1 speed. (Upper limit 15th speed)

3) Reset conditions: When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 25ºC or higher and fan speed is 15th speed.

b) The compressor command speed is 0 rps.

4) Outdoor unit fan speed and fan motor speed

Unit: min^{-1}

Fan speed	9th speed	10th speed	11th speed	12th speed	13th speed	14th speed	15th speed
FDC71	150	175	200	225	305	385	485
FDC90	200	225	250	275	300	400	500

(ii) Heating

1) Operating condition: When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation: The outdoor fan is stepped up by 2 speed step at each 20 seconds. (Upper limit 8th speed)

3) Reset conditions: When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 6ºC or higher.

b) The compressor command speed is 0 rps.

(e) Outdoor fan control at overload

(i) Cooling

1) Operating condition: When the outdoor air temperature (TH2) is 41ºC or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation: The outdoor fan is stepped up by 3 speed. (Upper limit 8th speed)

3) Reset conditions: When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 40ºC or lower.

b) The compressor command speed is 0 rps.

(ii) Heating

1) **Operating conditions:** When the outdoor air temperature (TH2) is 13ºC or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

2) **Detail of operation:** After the outdoor fan operates at -3 speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

a) Outdoor heat exchanger temperature ≦ 10ºC
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 10ºC, gradually increase the outdoor fan speed by 1 speed.

b) 10ºC < Outdoor heat exchanger temperature ≦ 13ºC
After the outdoor fan speed maintains for 20 seconds; if the outdoor heat exchanger temperature is 10ºC~13ºC, maintain outdoor fan speed again.

c) Outdoor heat exchanger tempeature > 13ºC
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 38ºC, gradually reduce outdoor fan speed by 1 speed. (Lower limit 2nd speed)

3) **Reset conditions:** When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 11ºC or lower.

b) The compressor command speed is 0 rps.

(f) Outdoor fan motor protection

If the outdoor fan motor has operated at 75 min^{-1} or lower for more than 30 seconds, the compressor and fan motor are stopped.

(4) Defrost operation

(a) Starting conditions (Defrost operation can be started only when all of the following conditions are satisfied.)

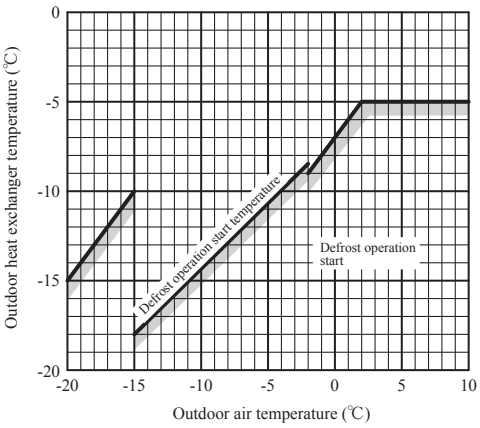
(i) After start of heating operation
When it elapsed 35 minutes. (Accumulated compressor operation time)

(ii) After end of defrost operation
When it elapsed 35 minutes. (Accumulated compressor operation time)

(iii) Outdoor heat exchanger sensor (TH1) temperature
When the temperature has been below −5ºC for 3 minutes continuously.

(iv) The difference between the outdoor air sensor temperature and the outdoor heat exchanger sensor temperature (TH2-TH1)

- The outdoor air temperature ≧ −2ºC : 7ºC or higher
- −15ºC ＜ The outdoor air temperature ＜ −2ºC : 4/15 × The outdoor air temperature + 7ºC or higher
- The outdoor air temperature ≦ −15ºC : −5ºC or higher

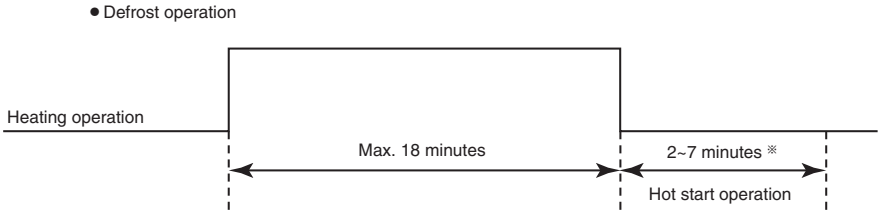


(v) During continuous compressor operation
In addition, when the speed command from the indoor control of the indoor unit during heating operation has counted 0 rps 10 times or more and all conditions of (i), (ii) above and the outdoor air temperature is 3ºC or less and the temperature for outdoor heat exchanger sensor (TH1) is −5ºC or less: 62 rps or more, −4ºC or less: less than 62 rps are satisfied, defrost operation is started.

(b) Ending conditions (Operation returns to the heating cycle when either one of the following is satisfied.)

(i) Outdoor heat exchanger sensor (TH1) temperature: 20ºC or higher

(ii) Continued operation time of defrost operation → For more than 18 minutes.

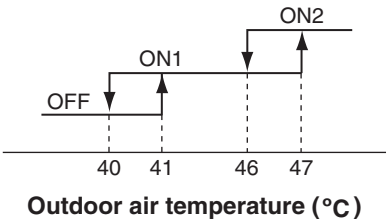


※Depends on an operation condition, the time can be longer than 7 minutes.

(5) Cooling overload protective control

(a) Operating conditions: When the outdoor air temperature (TH2) has become continuously for 30 seconds at 41ºC or more, or 47ºC or more with the compressor running, the lower limit speed of compressor is brought up.

Item \ Model	FDC71, 90VNP	
Outdoor air temperature	41°C or more	47°C or more
Lower limit speed	30 rps	40 rps



(b) Detail of operation

The lower limit of compressor command speed is set to 30 or 40 rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30 or 40 rps. However, when the thermo OFF, the speed is reduced to 0 rps.

(c) Reset conditions: When either of the following condition is satisfied.

1) The outdoor air temperature is lower than 40ºC.

2) The compressor command speed is 0 rps.

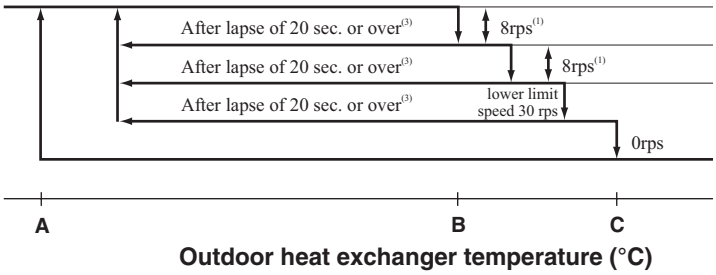
(6) Cooling high pressure control

(a) Purpose: Prevents anomalous high pressure operation during cooling.

(b) Detector: Outdoor heat exchanger sensor (TH1)

(c) Detail of operation:

(Example) Fuzzy



Outdoor air temperature(TH2)	A	B	C
TH2 ≧ 32ºC	53	58	63
TH2 < 32ºC	51	53	56

Notes (1) When the outdoor heat exchanger temperature is in the range of B-Cºc, the compressor command speed is reduced by 8 rps at each 20 seconds.
(2) When the temperature is C ºC or higher, the compressor is stopped.
(3) When the outdoor heat exchanger temperature is in the range of A-Bºc, if the compressor command speed is been maintained and the operation has continued for more than 20 seconds at the same speed, it returns to the normal cooling operation.

(7) Cooling low outdoor temperature protective control

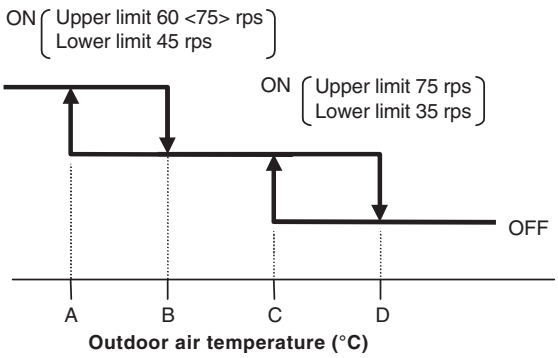
(a) Operating conditions: When the outdoor air temperature (TH2) is Cºc or lower continues for 20 seconds while the compressor command speed is other than 0 rps.

(b) Detail of operation:

(i) The lower limit of the compressor command speed is set to 45 (35) rps and even if the speed becomes lower than 45 (35) rps, the speed is kept to 45 (35) rps. However, when the thermo OFF, the speed is reduced to 0 rps.

(ii) The upper limit of the compressor command speed is set to 60 <75> (75) rps and even if the calculated result becomes higher than that after fuzzy calculation, the speed is kept to 60 <75> (75) rps.

Notes (1) Values in ( ) are for outdoor air temperature is C or D
(2) Values in < > are for the model FDC90



● Values of A, B, C, D
Model FDC71VNP

	Outdoor air temp. (˚C)			
	A	B	C	D
First time	9	11	22	25
After the second time	16	19	25	28

Model FDC90VNP

Outdoor air temp. (˚C)			
A	B	C	D
9	11	22	25

(iii) Reset conditions: When either of the following condition is satisfied

1) The outdoor air temperature (TH2) is D ºC or higher.

2) The compressor command speed is 0 rps.

(8) Heating high pressure control

(a) Starting condition: When the indoor heat exchanger temperature (ThI-R1, R2) has risen to a specified temperature while the compressor is turned on.

(b) Compressor command speed is controlled according to the zones of indoor heat exchanger temperature as shown by the following table.

	ThI-R < P1	P1 ≦ ThI-R < P2	P2 ≦ ThI-R < P3	P3 ≦ ThI-R
Protection control speed (NP)	Normal	Retention	NP−4rps	NP−8rps
Sampling time (s)	Normal	10	10	10

Model FDC71VNP Unit: °C

NP \ ThI-R	P1	P2	P3
10 ≦ NP < 50	45	52	54.5
50 ≦ NP < 115	45	52	57
115 ≦ NP < 120	45 - 43	52 - 50	57 - 55
120 ≦ NP	43	50	55

Model FDC90VNP Unit: °C

NP \ ThI-R	P1	P2	P3
10 ≦ NP < 90	45	52	57
90 ≦ NP < 120	45 - 43	52 - 45	57 - 48
120 ≦ NP	43	45	48

(9) Heating overload protective control

(a) Operating conditions : When the outdoor air temperature (TH2) is 13ºC or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

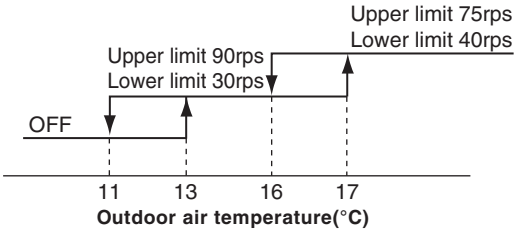
(b) Detail of operation

(i) Taking the upper limit of compressor command speed range at 90(75)rps, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

(ii) The lower limit of compressor command speed is set to 30(40)rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30(40)rps. However, when the thermo OFF, the speed is reduced to 0 prs

Note (1) Values in ( ) are for outdoor air temperature at 17ºC.

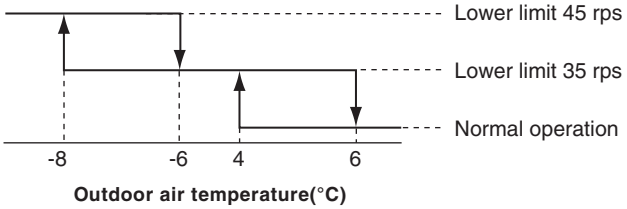
(c) Reset conditions: The outdoor air temperature (TH2) is lower than 11ºC



(10) Heating low outdoor temperature protective control

(a) Operating conditions: When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

(b) Detail of operation: The lower limit compressor command speed is change as shown in the figure below.



(c) Reset conditions: When either of the following condition is satisfied.

(i) The outdoor air temperature (TH2) is higher than 6ºC

(ii) The compressor command speed is 0 rps.

(iii) Compressor protection start II is activate.

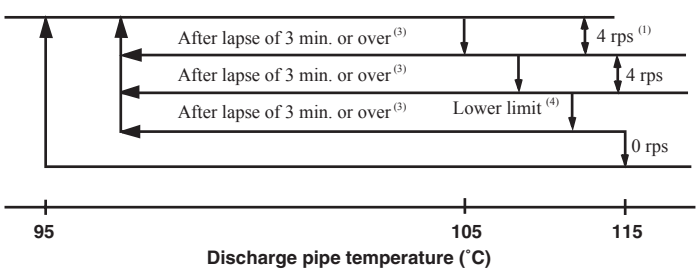
(11) Compressor overheat protection

(a) Purpose: It is designed to prevent deterioration of oil, burnout of motor coil and other trouble resulting from the compressor overheat.

(b) Detail of operation

(i) Speeds are controlled with temperature detected by the sensor mounted on the discharge pipe.

(Example) Fuzzy



Notes (1) When the discharge pipe temperature is in the range of 105-115ºC, the speed is reduced by 4 rps.

(2) When the discharge pipe temperature is raised and continues operation for 20 seconds without changing, then the speed is reduced again by 4 rps.

(3) If the discharge pipe temperature is in the range of 95-105ºC even when the compressor command speed is maintained for 3 minutes when the temperature is in the range of 95-105ºC, the speed is raised by 1 rps and kept at that speed for 3 minutes. This process is repeated until the command speed is reached.

(4) Lower limit speed

	Cooling	Heating
Lower limit speed	25 rps	32 rps

(ii) If the temperature of 115ºC is detected by the sensor on the discharge pipe, then the compressor will stop immediately. When the discharge pipe temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

(12) Current safe

(a) Purpose: Current is controlled not to exceed the upper limit of the setting operation current.

(b) Detail of operation: Input current to the converter is monitored with the current sensor fixed on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the compressor command speed is reduced.

If the mechanism is actuated when the compressor command speed is less than 30 rps, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(13) Current cut

(a) Purpose: Inverter is protected from overcurrent.

(b) Detail of operation: Output current from the inverter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(14) Outdoor unit failure

This is a function for determining when there is trouble with the outdoor unit during air conditioning.

The compressor is stopped if any one of the following in item (a), (b) is satisfied. Once the unit is stopped by this function, it is not restarted.

(a) When the input current is measured at 1 A or less for 3 continuous minutes or more.

(b) If the outdoor unit sends a 0 rps signal to the indoor unit 3 times or more within 20 minutes of the power being turned on.

(15) Serial signal transmission error protection

(a) Purpose: Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

(b) Detail of operation: If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continues for 7 minute and 35 seconds, the compressor is stopped.

After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

(16) Rotor lock

If the motor for the compressor does not turn after it has been started, it is determined that a compressor lock has occurred and the compressor is stopped.

(17) Refrigeration cycle system protection

(a) Starting conditions

(i) When 5 (Heating: 9) minutes have elapsed after the compressor ON or the completion of the defrost control

(ii) Other than the defrost control

(iii) When, after satisfying the conditions of (i) and (ii) above, the compressor speed, indoor air temperature (ThI-A) and indoor heat exchanger temperature (ThI-R) have satisfied the conditions in the following table for 5 minutes:

Operation mode	Compressor speed (N)	Indoor air temperature (ThI-A)	Indoor air temperature (ThI-A)/ Indoor heat exchanger temperature (ThI-R)
Cooling	40≦N	10≦ThI-A≦40	ThI-A−4<ThI-R
Heating	40≦N	0≦ThI-A≦40	ThI-R<ThI-A+4

(b) Contents of control

(i) When the conditions of (a) above are satisfied, the compressor stops.

(ii) Error stop occurs when the compressor has stopped 3 times within 60 minutes.

(c) Reset condition

When the compressor has been turned OFF

(18) Silent mode

As “Silent mode start” signal is received from the remote control, it operates by dropping the outdoor fan tap.

Model \ Item	Outdoor fan tap (Upper limit)
FDC71VNP	Cooling: 7th speed, Heating: 7th speed
FDC90VNP	Cooling: 7th speed, Heating: 5th speed

(19) Broken wire detection on temperature sensor

(a) Outdoor unit heat exchanger sersor, outdoor air sensor

If the following is detected for 5 second continuously within 2 minutes to 2 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop. Or with in 20 seconds after power ON.

Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.

- Outdoor unit heat exchanger sensor: -55°C or lower
- Outdoor air temperature sensor: -55 or lower

(b) Discharge pipe temperature sensor

If the following is detected for 5 second continuously within 10 minutes to 10 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop.

Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.

- Discharge pipe temperature sensor: -25°C or lower

(Ⅱ) Models FDC100-140VN, 100-140VS

(1) Determination of compressor speed (Frequency)

Required frequency

(a) Cooling/dehumidifying operation

Unit: rps

Model		FDC100	FDC125	FDC140
Max. required frequency	Usual operation	90	105 (92)	105 (92)
	Silent mode, outdoor temperature ≦ 15°C	60	80	85
Min. required frequency		20	20	20

Note (1) Valuc in ( ) are for the 3 phase models.

(b) Heating operation

Unit: rps

Model		FDC100	FDC125	FDC140
Max. required frequency	Usual operation	90	105 (120)	110 (120)
	Silent mode	60	80	85
Min. required frequency		20	20	20

Note (1) Valuc in ( ) are for the 3 phase models.

(c) If the indoor unit fan speed becomes “Me” or “Lo”, Max required frequentcy goes down accordingly depending on indoor unit model.

(d) Max. required frequency under high outdoor air temperature in cooling mode
Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

Unit: rps

Model		FDC100	FDC125	FDC140
Max. required frequency	Outdoor air temperature is 40°C or higher	75	90	96
	Outdoor air temperature is 46°C or higher	75	75	75

(e) Max. required frequency under outdoor air temperature in heating mode
Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

Unit: rps

Model		FDC100	FDC125	FDC140
Max. required frequency	Outdoor air temperature is 18°C or higher	60	80	85

(f) Selection of max. required frequency by heat exchanger temperature

(i) Maximum required frequency is selected according to the outdoor unit heat exchanger temperature (Tho-R) during cooling/dehumidifying or according to the indoor unit heat exchanger temperature (ThI-R) during heating mode.

(ii) When there are 3 indoor unit heat exchanger temperatures (ThI-R), whichever the highest applies,

Unit: rps

Model			FDC100	FDC125	FDC140
Max. required frequency	Cooling/ dehumidifying	Outdoor unit heat exchanger temperature is 56°C or higher	90	100 (92)	100 (92)
	Heating	Indoor unit heat exchanger temperature is 56°C or higher	90	100	100

Note (1) Value in ( ) are for the 3 phase models.

(g) When any of the controls from (a) to (f) above may duplicate, whichever the smallest value among duplicated controls is taken as the maximum required frequency.

(h) During heating, it is operated with the maximum required frequency until the indoor unit heat exchanger temperature becomes 40°C or higher.

(2) Compressor start control

(a) Compressor starts upon receipt of the thermostat ON signal from the indoor unit.

(b) However, at initial start after turning the power source breaker, it may enter the standby state for maximum 30 minutes (“ PREPARATION” is displayed on the remote control) in order to prevent the oil loss in the compressor.
If the cooling/dehumidifying/heating operation is selected from the remote control when the outdoor unit is in the standby state, “ PREPARATION” is displayed for 3 seconds on the remote control.

(3) Compressor soft start control

(a) Compressor protection start I

[Control condition] Normally, the compressor operation frequency is raised in this start pattern.

[Control contents] (i) Starts with the compressor's target frequency at **A** rps.
However, when the ambient air temperature (Tho-A) is 35°C or higher during cooling/dehumidifying or the indoor return air temperature (ThI-A) is 25°C or higher during heating, it starts at **C** rps.

(ii) At 30 seconds after the start of compressor, its target frequency changes to **B** rps and the compressor is operated for 2 - 4 minutes with its operation frequency fixed at **B** rps.

Model	Operation mode	A rps	B rps	C rps
FDC100-140	Cooling/Dehumidifying	55	55	30
	Heating	55	55	30

(b) Compressor protection start III

[Control condition] Number of compressor starts is only 1 counted after the power source breaker ON.

[Control contents] Operates by selecting one of following start patterns according to the operation mode and the outdoor air temperature (Tho-A).

(i) Low frequency operation control during cooling/dehumidifying

[Control condition] Upon establishing the conditions of compressor protection start III, the low frequency operation control is performed during cooling/dehumidifying.

[Control contents] ① Starts with the compressor's target frequency at **A** rps. When the outdoor air temperature (Tho-A) is 35°C or higher, it starts at **C** rps.
② At 30 seconds after the compressor start, the compressor's target frequency is changed to **B** rps and the compressor's operation frequency is fixed for 10 minutes.

Model	Operation mode	A rps	B rps	C rps
FDC100-140	Cooling/Dehumidifying	55	55	30

(ii) Low frequency operation control during heating

[Control condition] When the conditions of compressor protection start III are established and one of following conditions
① is satisfied, the low number of revolutions operation control is performed during heating.
① At 30 minutes or more after turning the power source breaker on

[Control contents] ① Starts the compressor with its target frequency at **A** rps. However, when the indoor unit return air temperature (ThI-A) is 25°C or higher, it start at **C** rps.
② At 30 seconds after the start of compressor, the compressor's target frequency is changed to **B** rps and the compressor's operation frequency is fixed for 10 minutes.

Model	Operation mode	A rps	B rps	C rps
FDC100-140	Heating	55	55	30

(4) Outdoor unit fan control

(a) Outdoor unit fan tap and fan motor speed

Unit: min^{-1}

Model	Mode	Fan motor tap						
		① speed	② speed	③ speed	④ speed	⑤ speed	⑥ speed	⑦ speed
FDC100-140	Cooling/Dehumidifying	200	350	600	740	820	870	910 (950)(1)
	Heating	200	350	600	740	820	870	910 (950)(1)

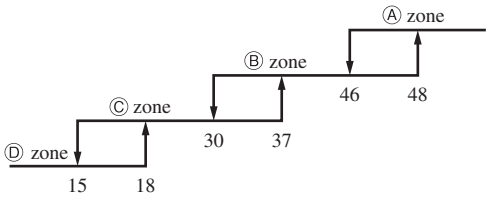
Note (1) Value in ( ) are for the model FDC125, 140.

(b) Fan tap control during Cooling/Defumidifying operation

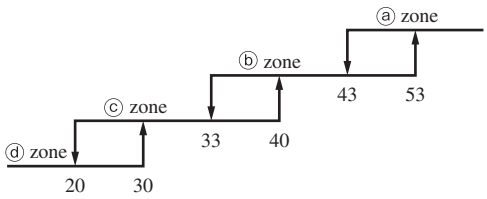
Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A).
Note (1) It is detected by Tho-R1 or R2, whichever the higher.

	Ⓐ zone	Ⓑ zone	Ⓒ zone	Ⓓ zone
ⓐ zone	Tap 5	Tap 5	Tap 5	Tap 4
ⓑ zone	Tap 5	Tap 5	Tap 4(1)	Tap 3
ⓒ zone	Tap 4	Tap 4(1)	Tap 3	Tap 2
ⓓ zone	Tap 3	Tap 3	Tap 2	Tap 1

Note (1) If the "silent mode start" signal is received from the remote control, the speed changes from Tap 4 to Tap 3.



Outdoor air temp. (˚C)



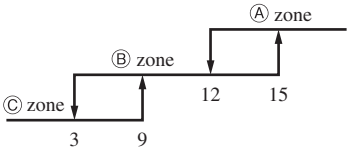
Outdoor unit heat exchanger temp. (˚C)

(c) Fan tap control during heating operation

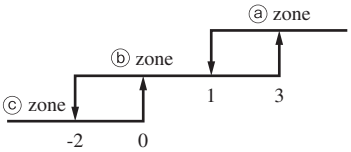
Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A).
Note (1) It is detected by Tho-R1 or R2, whichever the lower.

	Ⓐ zone	Ⓑ zone	Ⓒ zone
ⓐ zone	Tap 3	Tap 3	Tap 4
ⓑ zone	Tap 3	Tap 4(1)	Tap 5
ⓒ zone	Tap 4	Tap 5	Tap 6

Note (1) If the "silent mode start" signal is received from the remote control, the speed changes from Tap 4 to Tap 3.



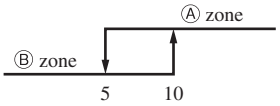
Outdoor air temp. (˚C)



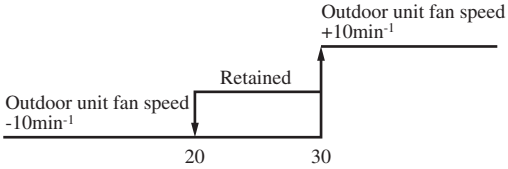
Outdoor unit heat exchanger temp. (˚C)

(d) Outdoor unit fan control at cooling low outdoor air

(i) When all the following conditions are established after the start of compressor, the following control is implemented. If the outdoor air temperature (Tho-A) is in the zone Ⓑ in the cooling/dehumidifying mode, it has elapsed 20 seconds from the start of outdoor unit fan and the outdoor unit fan is at the tap 1 speed, the outdoor unit fan speed is controlled according to the outdoor unit heat exchanger temperature (Tho-R1, R2).
Note (1) It is detected with Tho-R1 or R2, whichever the higher.



Outdoor air temp. (˚C)



Outdoor unit heat exchanger temp. (˚C)

(ii) The outdoor unit heat exchanger temperature is detected always and, when the number of revolutions of the outdoor fan speed has been increased or decreased, there is no change of fan speed for 20 seconds.

(iii) Rage of the outdoor unit fan speed under this control is as follows.
1) Lower limit: 130min^{-1}
2) Upper limit: 500min^{-1}

(iv) As any of the following conditions is established, this control terminates.
1) When the outdoor air temperature is in the zone Ⓐ and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.
2) When the outdoor fan speed is 500min^{-1} and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.
3) When the outdoor unit heat changer temperature at 45°C or higher is established for 40 seconds or more.

(e) Outdoor unit fan control by the power transistor radiator fin temperature

When all the following conditions are established later than 3 minutes after the start of compressor, the following control is implemented.

(i) Cooling/dehumidifying
  1) Outdoor air temperature Tho-A ≧ 33°C
  2) Compressor's actual frequency ≧ **A** rps
  3) Power transistor radiator fin temperature ≧ **C** °C

(ii) Heating
  1) Outdoor air temperature Tho-A ≧ 16°C
  2) Compressor's actual frequency ≧ **B** rps
  3) Power transistor radiator fin temperature ≧ **C** °C

(iii) Control contents
  1) Raises the outdoor unit fan tap by 1 tap.
  2) When the sampling is for 60 minutes and the value of power transistor radiator fin temperature (Tho-P) is as follows.
    a) When the power transistor radiator fin temperature (Tho-P) ≧ **C** °C, the outdoor unit fan tap is raised by 1 speed further.
    b) When **C** °C > power transistor radiator fin temperature (Tho-P) ≧ **D** °C, present outdoor unit fan tap is maintained.
    c) When the power transistor radiator fin temperature (Tho-P) ≧ **D** °C, the outdoor unit fan tap is dropped by 1 speed.

(iv) Ending conditions

When the operation under the condition of item (iii), c) above and with the outdoor unit fan tap, which is determined by the item (c) is detected 2 times consecutively.

- Compressor's frequency and power transistor radiator fin temperature

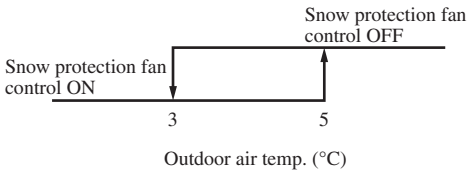
Model \ Item	A	B	C	D
FDC100-140	85	85	72	68

(f) Caution at the outdoor unit fan start control (3 phase models only)

When the outdoor unit fan is running at 400min^{-1} before operating the compressor, it may operate with the compressor only, without starting up the outdoor fan this is normal.

(g) Snow protection fan control

If the dip switch (SW3-2) on the outdoor unit control PCB is turned ON, the outdoor unit fan is operated for 30 seconds at 4 tap speed once in every 10 minutes depending on the outdoor air temperature (detected with Tho-A) in the stop mode or anomalous stop mode.



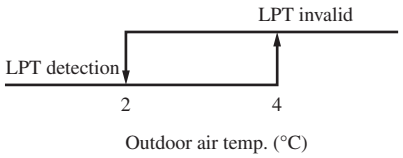
(5) Defrost operation

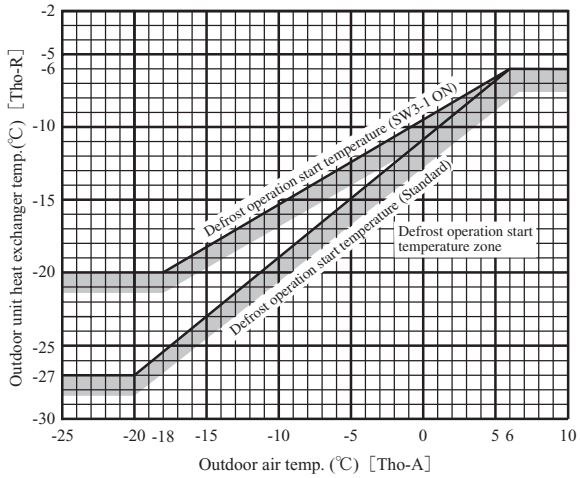
(a) Starting conditions

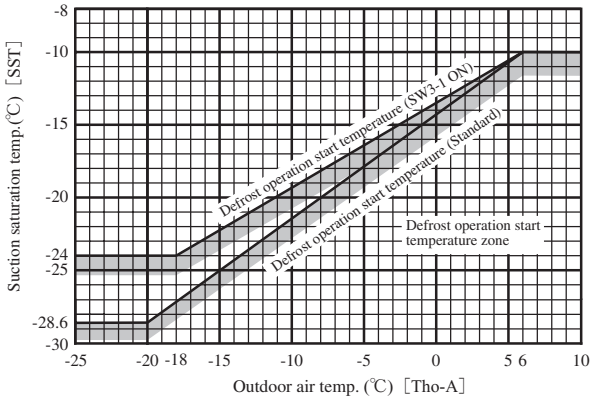
If all of the following defrost conditions A or conditions B are satisfied, the defrost operation starts.

(i) Defrost conditions A

1) Cumulative compressor operation time after the end of defrost operation has elapsed 37 minutes, and the cumulative compressor operation time after the start of heating operation (remote control ON) has elapsed 30 minutes.
2) After 5 minutes from the compressor ON
3) After 5 minutes from the start of outdoor unit fan
4) After satisfying all above conditions, if temperatures of the outdoor unit heat exchanger temperature thermistor (Tho-R1, R2) and the outdoor air temperature thermistor (Tho-A) become lower than the defrost operation temperature as shown by the right figure for 15 seconds continuously, or the suction gas saturation temperature (SST) and the outdoor air temperature (Tho-A), which are obtained from the value detected by the low pressure sensor (LPT) stay for 3 minutes within the range below the defrost operation start temperature as shown by the right figure. However, it excludes for 10 minutes after the start of compressor and the outdoor air temperature is as shown by the lower figure.







(ii) Defrost conditions B

1) When previous defrost ending condition is the time out of defrosting operation and it is in the heating operation after the cumulative compressor operation time after the end of defrost operation has become 30 minutes.
2) After 5 minutes from the start of compressor
3) After 5 minutes from the start of outdoor unit fan

(b) Ending conditions

When any of the following conditions is satisfied, the defrost ending operation starts.

(i) When it has elapsed 8 minutes and 20 seconds after the start of defrost operation.

(ii) When the outdoor unit heat exchanger temperatures (Tho-R1, R2), whichever the lower, becomes 12°C or higher for 10 seconds continuously.

(c) Switching of defrost control with SW3-1

(i) If SW3-1 on the outdoor unit control PCB is turned to ON, it becomes easier to enter the defrost operation. Use this when installing a unit at snowing regions.

(ii) Control contents

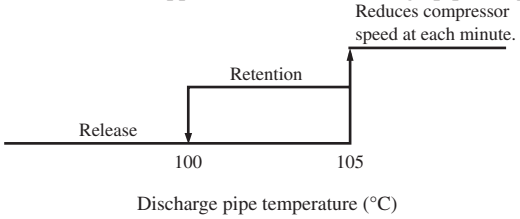
1) It allows entering the defrost operation under the defrost condition A when the cumulative heating operation time becomes 30 minutes. It is 37 minutes at SW3-1 OFF (Factory default).
2) It allows entering the defrost operation under the defrost condition B when the cumulative heating operation time becomes 25 minutes. It is 30 minutes at SW3-1 OFF (Factory default).
3) It allows the defrost operation with the outdoor unit heat exchanger temperature (Tho-R) and suction pressure saturation temperature (SST) being higher than normal.

(6) Protective control/anomalous stop control by compressor's number of revolutions

(a) Compressor discharge pipe temperature protection

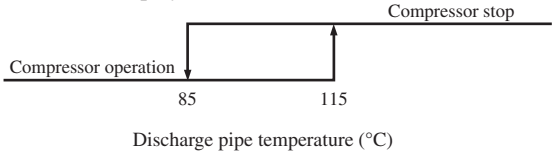
(i) Protective control

As the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of discharge pipe temperature.



(ii) Anomalous stop control

1) If the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor stops.
2) When it is detected 2 times within 60 minutes or after continuous 60 minutes, including the stop of compressor, E36 is displayed on the remote control and it enters the anomalous stop mode.



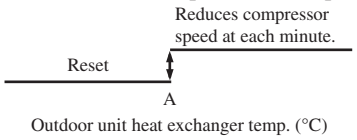
(iii) Reset of anomalous stop mode

As it drops to the reset value of 85°C or lower for 45 minutes continuously, it becomes possible to restart from the remote control.

(b) Cooling high pressure protection

(i) Protective control

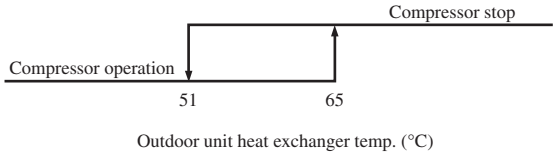
1) When the outdoor air temperature (Tho-A) is 40°C or higher and the outdoor unit heat exchanger temperature (Tho-R) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of high pressure.
2) Control value A is updated to an optimum value automatically according to the operating conditions.



Control value A
54-60°C

(ii) Anomalous stop control

1) As the outdoor unit heat exchanger temperature (Tho-R) exceeds the setting value, the compressor stops.
2) If it is detected 5 times within 60 minutes or 65°C or higher continues for 60 minutes, including the stop of compressor, E35 is displayed on the remote control and it enters the anomalous stop mode.



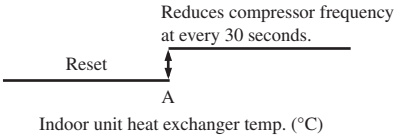
(iii) Reset of anomalous stop mode

As it reaches the reset value of 51°C or lower, it becomes possible to restart from the remote control.

(c) Heating high pressure protection

(i) Protective control

1) As the indoor unit heat exchanger temperature (ThI-R) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of high pressure.
2) Control value A is updated to an optimum value automatically according to the operating conditions.



Model	Existing piping adaptation switch: SW5-1	
	OFF (Shipping)	ON
	Control value A (°C)	
FDC100-140	48-54	46-52

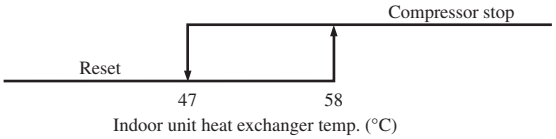
Note (1) Adaptation to existing piping is at ON.

(ii) Anomalous stop control

Operation control function by the indoor unit control - See the heating overload protection, page 129.

(iii) Adaptation to existing piping, stop control

If the existing piping adaptation switch, SW5-1, is turned ON, the compressor stops to protect existing piping when the indoor unit heat exchanger temperature (ThI-R) exceeds the setting value.

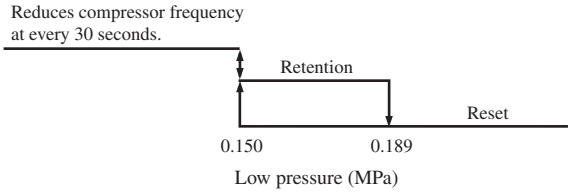


(d) Anomaly detection control by the high pressure switch (63H1)

(i) If the pressure rises and operates the high pressure switch (opens at 4.15MPa/closes at 3.15MPa), the compressor stops.
(ii) Under any of the following conditions, E40 is displayed and it enters the anomalous stop mode.
  1) When it occurs 5 times within 60 minutes that pressure rises and the compressor is stopped by 63H1.
  2) When 63H1 has been in the open state for 60 minutes continuously, including the stop of compressor.

(e) Low pressure control

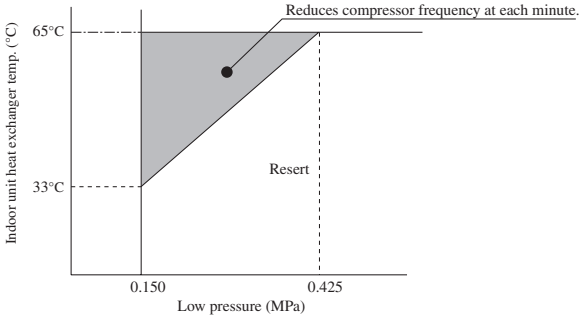
(i) Protective control
If the value detected by the low pressure sensor (LPT) exceeds the setting value, the compressor speed (frequency) is controlled to restrain the drop of pressure.



(ii) Anomalous stop control
  1) When a value detected by the low pressure sensor (LPT) satisfies any of the following conditions, the compressor stops to run for its protection.
    a) When the low pressure drops to 0.079MPa or under for 15 seconds continuously.
    b) At 10 minutes after the start of compressor, the suction overheat becomes 30°C and the low pressure becomes 0.15MPa or under for 60 seconds continuously.
  2) E49 is displayed under any of the following conditions and it enters the anomalous stop mode.
    a) When the low pressure drops 3 times within 60 minutes and the compressor stops under any of the above conditions.
    b) When a value detected with the low pressure sensor becomes 0.079MPa or under for 5 minutes, including the stop of compressor.
  3) However, when the control condition of item 2), a) is established during the compressor protection start III, E49 is displayed at initial stop and it enters the anomalous stop mode.

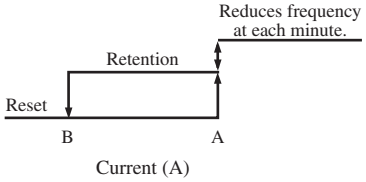
(f) Compressor pressure ratio protection control

(i) During heating operation, if the indoor unit heat exchanger temperature (ThI-R) and the low pressure sensor (LPT) exceed the setting values at 10 minutes after the start of compressor, the compressor speed (frequency) is controlled to protect the compressor.
(ii) This control is not performed during the outdoor fan ON and for 10 minutes from the start of outdoor unit fan.
(iii) This control is not performed during defrost operation and at 10 minutes after the reset of defrost operation.
(iv) When there are 3 indoor unit heat exchanger temperatures (ThI-R), the highest temperature is detected.

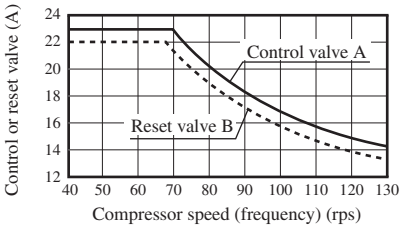


(g) Over-current protection current safe controls I, II

Detecting the outdoor unit inverter input (primary) current and the output (secondary) current, if the current values exceed setting values, the compressor speed (frequency) is controlled to protect the inverter.



(Fig. C) The control value "A" and the reset value vary depending on the compressor speed.

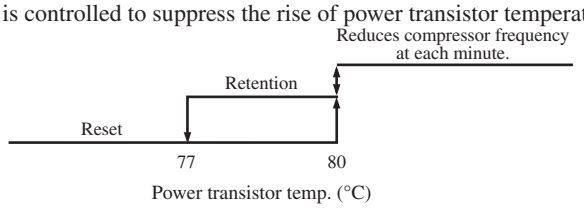


Model		Cooling		Heating	
		Control value A	Reset value B	Control value A	Reset value B
Primary current side	FDC100	13.5 (23.0)	12.5 (22.0)	13.5 (23.0)	12.5 (22.0)
	FDC125, 140	13.5 (23.0)	12.5 (22.0)	13.5 (23.0)	12.5 (22.0)
Secandary current side	FDC100	13.0 (Fig.C)	12.0 (Fig.C)	13.0 (Fig.C)	12.0 (Fig.C)
	FDC125, 140	13.0 (Fig.C)	12.0 (Fig.C)	13.0 (Fig.C)	12.0 (Fig.C)

Note (1) Value in ( ) are for the single phase models.

(h) Power transistor temperature protection

(i) Protective control (single phase model only)
If the power transistor temperature (detected with TIP) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of power transistor temperature.



(i) Anomalous power transistor current

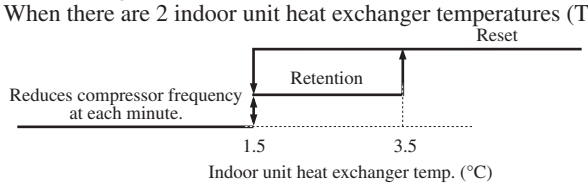
(i) Prevents over-current on the inverter. If the current value in the power transistor exceeds the setting value, the compressor stops.
(ii) If the current value in the power transistor exceeds the specified value and the compressor stops 4 times within 30 minutes, E42 is displayed on the remote control and it enters the anomalous stop mode.

(j) Anomalous inverter PCB

If the power transistor detects any anomaly for 15 minutes, including the stop of compressor, E51 is displayed on the remote control and it enters the anomalous stop mode.

(k) Anti-frost control by the compressor frequency control

(i) If the indoor unit heat exchanger temperature (detected with ThI-R) exceeds the setting value at 4 minutes after the start of compressor, the compressor speed (frequency) is controlled to initiate the anti-frost control of indoor unit heat exchanger.
(ii) When there are 2 indoor unit heat exchanger temperatures (ThI-R), the lowest temperature is detected.



(iii) Regarding the anti-frost control by the operation stop, refer to the operation control function by the indoor unit control and the cooling, dehumidifying frost prevention of page 129.

(l) Dewing prevention control

[Control condition] During cooling and dehumidifying operation, if all the following conditions are established, the compressor speed (frequency) is reduced to prevent dewing and water splash.
① Cooling electronic expansion valve aperture (EEVC) is 500 pulses.
② Suction overheat is 10°C or higher.
③Compressor speed (frequency) is 60 rps or higher.

[Control contents] ① When the suction overheat is 10°C or higher, the compressor speed (frequency) is reduced at each 1 minute.
② Compressor speed (frequency) does not rise till the cooling expansion valve becomes 460 pulses.
③ This control takes 60 rps as its lower limit so that compressor speed is not controlled when it is less than 60 rps.

(m) Refrigerant quantity shortage protection

Under the compressor protection start III control during cooling and dehumidifying operations, the following control is performed by detecting the indoor unit heat exchanger temperature (ThI-R) and the indoor unit return air temperature (Thı-A).

[Control condition] When the state that the indoor unit heat exchanger temperature (ThI-R) does not become lower than the indoor unit return air temperature (ThI-A) by 4°C or more continues for 1 minute.

[Control contents] It judges that the flowing of refrigerant in to the indoor unit is insufficient so that the compressor is stopped and E57 is displayed on the remote control.

(n) Broken wire detection on temperature thermistor and low pressure sensor

(i) Outdoor unit heat exchanger thermistor, outdoor air thermistor and low pressure sensor
If the following is detected for 5 second continuously within 2 minutes to 2 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop.
Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.
- Outdoor unit heat exchanger thermistor: -50°C or lower
- Outdoor air temperature thermistor: -45 or lower
- Low pressure sensor: 0V or under or 4.0V or over

(ii) Discharge pipe temperature thermistor, suction pipe temperature thermistor
If the following is detected for 5 second continuously within 10 minutes to 10 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop.
Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.
- Discharge pipe temperature thermistor: -10°C or lower
- Suction pipe temperature thermistor: -50 or lower

(o) Fan motor error

(i) If the fan speed of 100min^{-1} or under is detected for 30 second continuously under the outdoor unit fan control (with the operation command of fan tap at ① speed or higher), the compressor stops.

(ii) When the fan motor speed drops to 100min^{-1} or under 5 times within 60 minutes and the compressor stops, it enters the anomalous stop mode with E48 displayed on the remote control.

(p) Anomalous stop by the compressor start stop

(i) When it fails to shift to the compressor DC motor's rotor position defection operation at 5 seconds after establishing the compressor start condition, the compressor stops temporarily and restarts 3 minutes later.

(ii) If it fails to shift to the position detection operation again at second time, it judges the anomalous compressor start and stops the compressor by the anomalous stop (E59).

(7) Silent mode

(a) As "Silent mode start" signal is received from the remote control, it operates by dropping the outdoor unit fan tap and the compressor speed (frequency).

(b) For details, refer to items (1) and (4) above.

(8) Test run

(a) It is possible to operate from the outdoor unit using the dip switch on the outdoor unit control PCB.

SW3-3	ON	SW3-4	OFF	Cooling test run
			ON	Heating test run
	OFF	Normal and end of test run		

Make sure to turn SW3-3 to OFF after the end of operation.

(b) Test run control

(i) Operation is performed at the maximum compressor speed (frequency), which is determined for each model.

(ii) Each protective control and error detection control are effective.

(iii) If SW3-4 is switched during test run, the compressor is stoped for once by the stop control and the cooling/heating operation is switched.

(iv) Setting and display of remote control during test run

Item / Mode	Contents of remote control setting/display
Cooling test run	Setting temperature of cooling is 5°C.
Heating test run	Setting temperature of heating (preparation) is 30°C.

(9) Pump-down control

Turning ON the pump-down switch SW1 for 2 seconds during the operation stop or anomalous stop (excluding the thermostat OFF), the pump-down operation is performed. (This is invalid when the indoor unit is operating. This is effective even when the indoor unit is stopped by the anomalous stop or the power source is turned OFF.)

(a) Control contents

(i) Close the service valve at the liquid side. (It is left open at the gas side.)
(ii) Compressor is started with the target speed (frequency) at 55 rps in the cooling mode.
(iii) Red and green lamps (LED) keeps flashing continuously on the outdoor unit control PCB.
(iv) Each of protection and error detection controls, excluding the low pressure control, anti-frost control and dewing prevention control, is effective.
(v) Outdoor unit fan is controlled as usual.
(vi) Electronic expansion valve is fully opened.

(b) Control ending conditions

Stop control is initiated depending on any of the following conditions.

(i) Low pressure of 0.087MPa or lower is detected for 5 seconds continuously.
  1) Red LED: Light, Green LED: Flashing, Remote control: Displays stop.
  2) It is possible to restart when the low pressure is 0.087MPa or higher.
  3) Electronic expansion valve (cooling/heating) is kept fully open.

(ii) Stop by the error detection control
  1) Red LED: Keeps flashing, Green LED: Flashing
  2) Restart is prohibited. To return to normal operation, reset the power source.
  3) Electronic expansion valve (cooling/heating) is left fully open.

(iii) When the cumulative operation time of compressor under the pump-down control becomes 5 minutes.
  1) Red LED: Stays OFF, Green LED: Flashing, Remote control: Stop
  2) It is possible to pump-down again.
  3) Electronic expansion valve (cooling/heating) is left fully open.

Note (1) After the stop of compressor, close the service valve at the gas side.

Caution: Since pressing the pump-down switch cancels communications with the indoor unit, the indoor unit and the remote control display "Transmission error – E5". This is normal.

(10) Base heater ON/OFF output control (Option)

(a) Base heater ON conditions

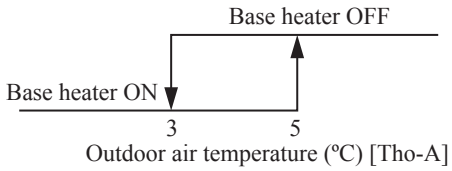
When all of following conditions are satisfied, the base heater is turned ON.

(i) Outdoor air temperature (detected with Tho-A) is 3ºC or lower.
(ii) In the heating mode
(iii) When the compressor is turned ON

(b) Base heater OFF conditions

When either one of following conditions is satisfied, the base heater is turned OFF.

(i) Outdoor air temperature (detected with Tho-A) is 5ºC or higher.
(ii) When the compressor stop has been detected for 30 minutes continuously
(iii) In the cooling or dehumidifying mode



(Ⅲ) Models FDC200, 250VSA

(1) Determination of compressor speed (Frequency)

Required frequency

(a) Cooling/dehumidifying operation. Unit: rps

Model		FDC200	FDC250
Max. required frequency	Usual operation	120	120
	Outdoor air temperature ≦ 15°C or indoor return air temperature ≦ 20°C	100	100
	Silent mode	80 (100)	70 (100)
Min. required frequency		15	20

Note(1) Value in ( ) are for the SW7-3 OFF.

(b) Heating operation. Unit: rps

Model		FDC200	FDC250
Max. required frequency	Usual operation	120	120
	Silent mode	80 (100)	70 (100)
Min. required frequency		15	20

Note(1) Value in ( ) are for the SW7-3 OFF.

(c) If the indoor unit fan speed becomes “Me” or “Lo”, Max required frequency goes down accordingly depending on indoor unit model.

(d) Max. required frequency under high outdoor air temperature in cooling mode.
Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

Unit: rps

Model		FDC200	FDC250
Max. required frequency	Outdoor air temperature is 40°C or higher	100	120

(e) Max. required frequency under outdoor air temperature in heating mode.
Maximum required frequency is selected according to the outdoor air temperature (Tho-A).

Unit: rps

Model		FDC200	FDC250
Max. required frequency	Outdoor air temperature is 10°C or higher	120	120
	Outdoor air temperature is 18°C or higher	100	120

(f) Selection of max. required frequency by heat exchanger temperature.

(i) Maximum required frequency is selected according to the outdoor unit heat exchanger temperature (Tho-R) during cooling/dehumidifying or according to the indoor unit heat exchanger temperature (ThI-R) during heating mode.

(ii) When there are 3 indoor unit heat exchanger temperatures (ThI-R), whichever the highest applies,

Unit: rps

Model			FDC200	FDC250
Max. required frequency	Cooling/ dehumidifying	Outdoor unit heat exchanger temperature is 56°C or higher	110	120
	Heating	Indoor unit heat exchanger temperature is 56°C or higher	120	120

(g) When any of the controls from (a) to (f) above may duplicate, whichever the smallest value among duplicated controls is taken as the maximum required frequency.

(h) During heating, it is operated with the maximum required frequency until the indoor unit heat exchanger temperature becomes 40°C or higher.

(2) Compressor start control

(a) Compressor starts upon receipt of the thermostat ON signal from the indoor unit.

(b) However, at initial start after turning the power source breaker, it may enter the standby state for maximum 30 minutes (“ PREPARATION” is displayed on the remote control) in order to prevent the oil loss in the compressor.
If the cooling/dehumidifying/heating operation is selected from the remote control when the outdoor unit is in the standby state, “ PREPARATION” is displayed for 3 seconds on the remote control.

(3) Compressor soft start control

(a) Compressor protection start I

[Control condition] Normally, the compressor operation frequency is raised in this start pattern.

[Control contents] 1) Starts with the compressor's target frequency at **A** rps.
However, when the ambient air temperature (Tho-A) is 35°C or higher during cooling/dehumidifying or the indoor return air temperature (ThI-A) is 25°C or higher during heating, it starts at **C** rps.

2) At 30 seconds after the start of compressor, its target frequency changes to **B** rps and the compressor is operated for 2 - 4 minutes with its operation frequency fixed at **B** rps.

Model	Operation mode	**A** rps	**B** rps	**C** rps
FDC200	Cooling/Dehumidifying	45	45	25
	Heating	45	45	25
FDC250	Cooling/Dehumidifying	55	55	30
	Heating	55	55	30

(b) Compressor protection start III

[Control condition] Number of compressor starts is only 1 counted after the power source breaker ON.

[Control contents] Operates by selecting one of following start patterns according to the operation mode and the outdoor air temperature (Tho-A).

(i) Low frequency operation control during cooling/dehumidifying.

[Control condition] Upon establishing the conditions of compressor protection start III, the low frequency operation control is performed during cooling/dehumidifying.

[Control contents] a) Starts with the compressor's target frequency at **A** rps. When the outdoor air temperature (Tho-A) is 35°C or higher, it starts at **C** rps.

b) At 30 seconds after the compressor start, the compressor's target frequency is changed to **B** rps and the compressor's operation frequency is fixed for 10 minutes.

Model	Operation mode	**A** rps	**B** rps	**C** rps
FDC200	Cooling/Dehumidifying	45	45	25
FDC250	Cooling/Dehumidifying	55	55	30

(ii) Low frequency operation control during heating.

[Control condition] When the conditions of compressor protection start III are established and one of following conditions.
a) is satisfied, the low frequncy operation control is performed during heating.
a) At 30 minutes or more after turning the power source breaker on.

[Control contents] a) If the compressor stats with 6 hours after the power source breaker turns on, and outdoor air temperature is lower than -2°C, unit starts by cooling mode for 3 minutes to prevent the liquid refrigerant from returning to compressor. (model FDC200 only)

b) Starts the compressor with its target frequency at **A** rps. However, when the indoor unit return air temperature (ThI-A) is 25°C or higher, it start at **C** rps.

c) At 30 seconds after the start of compressor, the compressor's target frequency is changed to **B** rps and the compressor's operation frequency is fixed for 6-10 minutes.

Model	Operation mode	**A** rps	**B** rps	**C** rps
FDC200	Heating	45	30	25
FDC250	Heating	55	30	30

(4) Outdoor unit fan control

(a) Outdoor unit fan tap and fan motor speed

Unit: min^{-1}

Model	Mode	Fan motor tap						
FDC200		① speed	② speed	③ speed	④ speed	⑤ speed	⑥ speed	⑦ speed
	Cooling/Dehumidifying	200	390	560	830	870	910	950
	Heating	200	390	560	830	870	910	950
FDC250		① speed	② speed	③ speed	④ speed	⑤ speed	⑥ speed	⑦ speed
	Cooling/Dehumidifying	200	370	600	750	850	900	950
	Heating	200	370	600	820	850	910	950

(b) Fan tap control during Cooling/Defumidifying operation

Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A).

Note (1) It is detected by Tho-R1 or R2, whichever the higher.

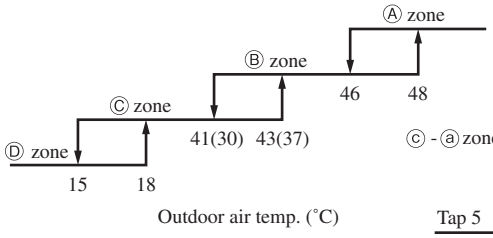
	Ⓐ zone	Ⓑ zone	Ⓒ zone	Ⓓ zone
ⓐ zone	Tap 5(6)	Tap 5(6)	Tap 6(5/6)	Tap 4
ⓑ zone	Tap 5	Tap 5	Tap 4	Tap 3
ⓒ zone	Tap 4	Tap 4	Tap 3	Tap 2
ⓓ zone	Tap 3	Tap 3	Tap 2	Tap 1

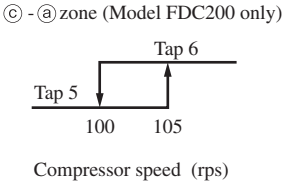
Note (1) Value in ( ) are for the model FDC200.

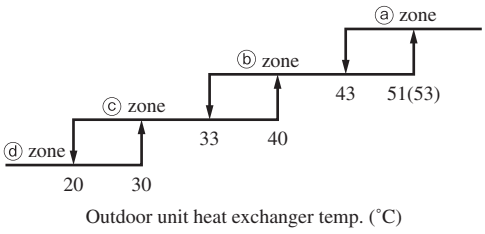
• Silent mode only

	Ⓐ zone	Ⓑ zone	Ⓒ zone	Ⓓ zone
ⓐ zone	Tap 5	Tap 5	Tap 4(5)	Tap 4
ⓑ zone	Tap 4	Tap 4	Tap 3	Tap 3
ⓒ zone	Tap 4	Tap 3	Tap 3	Tap 2
ⓓ zone	Tap 3	Tap 3	Tap 2	Tap 1

Note (1) Value in ( ) is for the model FDC200.







Note (1) Value in ( ) are for the model FDC200.

(c) Fan tap control during heating operation

Fan taps are selected depending on the outdoor unit heat exchanger temperature (Tho-R1, R2) and the outdoor air temperature (Tho-A).

Note (1) It is detected by Tho-R1 or R2, whichever the lower.

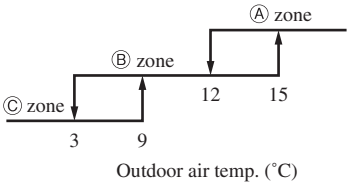
	Ⓐ zone	Ⓑ zone	Ⓒ zone
ⓐ zone	Tap 3	Tap 3	Tap 4
ⓑ zone	Tap 3	Tap 4	Tap 5
ⓒ zone	Tap 4	Tap 7(5)	Tap 7(6)

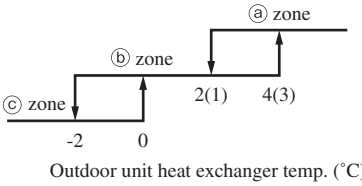
Note (1) Value in ( ) are for the model FDC200.

• Silent mode only

	Ⓐ zone	Ⓑ zone	Ⓒ zone
ⓐ zone	Tap 3	Tap 3	Tap 3
ⓑ zone	Tap 3	Tap 3	Tap 4
ⓒ zone	Tap 3(4)	Tap 5(4)	Tap 6(5)

Note (1) Value in ( ) are for the model FDC200.



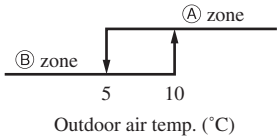


Note (1) Value in ( ) are for the model FDC200.

(d) Outdoor unit fan control at cooling low outdoor air

(i) When all the following conditions are established after the start of compressor, the following control is implemented. If the outdoor air temperature (Tho-A) is in the zone Ⓑ in the cooling/dehumidifying mode, it has elapsed 20 seconds from the start of outdoor unit fan and the outdoor unit fan is at the tap 1 speed, the outdoor unit fan speed is controlled according to the outdoor unit heat exchanger temperature (Tho-R1, R2).

Note (1) It is detected with Tho-R1 or R2, whichever the higher.



(ii) The outdoor unit heat exchanger temperature is detected always and, when the number of revolutions of the outdoor fan speed has been increased or decreased, there is no change of fan speed for 20 seconds.

(iii) Rage of the outdoor unit fan speed under this control is as follows.

1) Lower limit: 130min^{-1}
2) Upper limit: 500min^{-1}

(iv) As any of the following conditions is established, this control terminates.

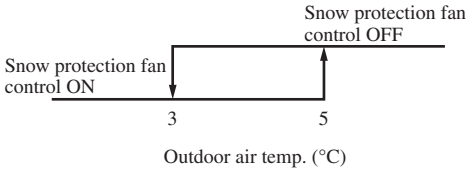
1) When the outdoor air temperature is in the zone Ⓐ and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.
2) When the outdoor fan speed is 500min^{-1} and the outdoor unit heat exchanger temperature at 30°C or higher is established for 40 seconds or more continuously.
3) When the outdoor unit heat changer temperature at 45°C (model FDC250:50°C) or higher is established for 40 seconds or more.

(e) Caution at the outdoor unit fan start control

When the outdoor unit fan is running at 400min^{-1} before operating the compressor, it may operate with the compressor only, without starting up the outdoor fan. This is normal.

(f) Snow protection fan control

If the dip switch (SW3-2) on the outdoor unit control PCB is turned ON, the outdoor unit fan is operated for 30 seconds at 4 tap speed once in every 10 minutes depending on the outdoor air temperature (detected with Tho-A) in the stop mode or anomalous stop mode.



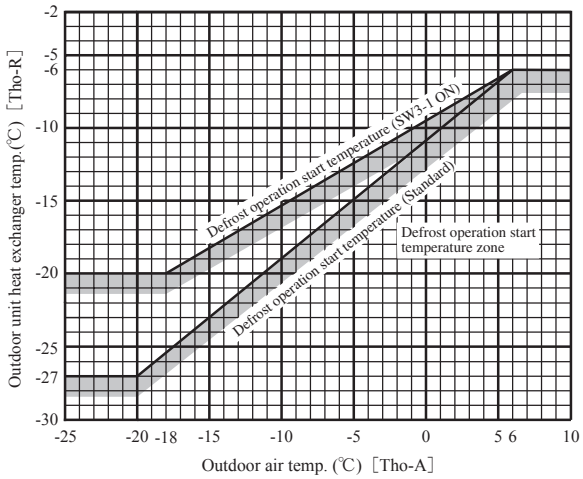
(5) Defrost operation

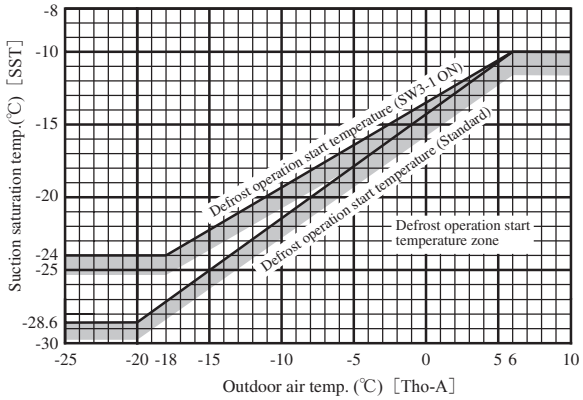
(a) Starting conditions

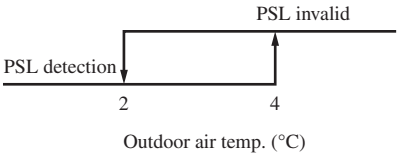
If all of the following defrost conditions A or conditions B are satisfied, the defrost operation starts.

(i) Defrost conditions A

1) Cumulative compressor operation time after the end of defrost operation has elapsed 37 minutes, and the cumulative compressor operation time after the start of heating operation (remote control ON) has elapsed 30 minutes.
2) After 5 minutes from the compressor ON
3) After 5 minutes from the start of outdoor unit fan
4) After satisfying all above conditions, if temperatures of the outdoor unit heat exchanger temperature thermistor (Tho-R1, R2) and the outdoor air temperature thermistor (Tho-A) become lower than the defrost operation start temperature as shown by the right figure for 15 seconds continuously, or the suction gas saturation temperature (SST) and the outdoor air temperature (Tho-A), which are obtained from the value detected by the low pressure sensor (PSL) stay for 3 minutes within the range below the defrost operation start temperature as shown by the right figure. However, it excludes for 10 minutes after the start of compressor and the outdoor air temperature is as shown by the lower figure.







(ii) Defrost conditions B

1) When previous defrost end condition is the time out of defrost operation and it is in the heating operation after the cumulative compressor operation time after the end of defrost operation has become 30 minutes.
2) After 5 minutes from the start of compressor.
3) After 5 minutes from the start of outdoor unit fan.

(b) Ending conditions

When any of the following conditions is satisfied, the defrost end operation starts.

(i) When it has elapsed 8 minutes and 20 seconds after the start of defrost. (After 10 minutes and 20 seconds for FDC250 model)

(ii) When the outdoor unit heat exchanger temperatures (Tho-R1, R2), whichever the lower, becomes 16 (FDC250:12)°C or higher for 10 seconds continuously.

(c) Switching of defrost control with SW3-1

(i) If SW3-1 on the outdoor unit control PCB is turned to ON, it becomes easier to enter the defrost operation. Use this when installing a unit at snowing regions.

(ii) Control contents

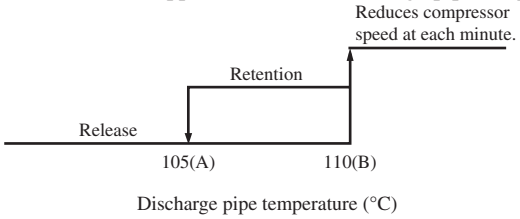
1) It allows entering the defrost operation under the defrost condition A when the cumulative heating operation time becomes 30 minutes. It is 37 minutes at SW3-1 OFF (Factory default).
2) It allows entering the defrost operation under the defrost condition B when the cumulative heating operation time becomes 25 minutes. It is 30 minutes at SW3-1 OFF (Factory default).
3) It allows the defrost operation with the outdoor unit heat exchanger temperature (Tho-R) and suction pressure saturation temperature (SST) being higher than normal.

(6) Protective control/anomalous stop control by compressor's number of revolutions

(a) Compressor discharge pipe temperature protection

(i) Protective control

As the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of discharge pipe temperature.

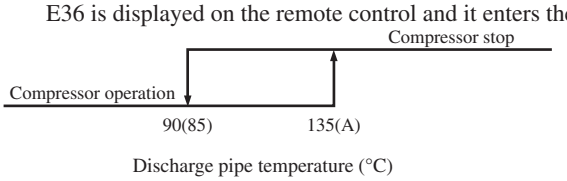


Note (1) Value in ( ) are for the model FDC200.

Super heat	A	B
25°C or more	95	100
20°C or less	100	105

(ii) Anomalous stop control

1) If the discharge pipe temperature (detected with Tho-D) exceeds the setting value, the compressor stops.
2) When it is detected 2 times within 60 minutes or after continuous 60 minutes, including the stop of compressor, E36 is displayed on the remote control and it enters the anomalous stop mode.



Note (1) Value in ( ) are for the model FDC200.

Super heat	A
25°C or more	110
20°C or less	115

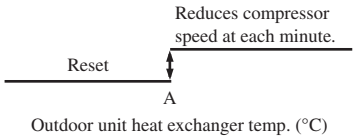
(iii) Reset of anomalous stop mode

As it drops to the reset value of 90 (85)°C or lower for 45 minutes continuously, it becomes possible to restart from the remote control.

(b) Cooling high pressure protection

(i) Protective control

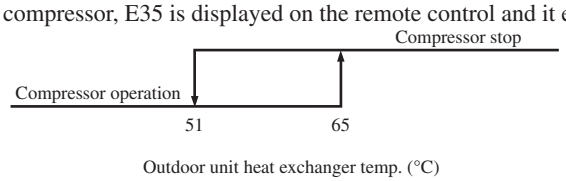
1) Outdoor unit heat exchanger temperature (Tho-R) exceds the setting value A.
2) When the outdoor air temperature (Tho-A) is 40°C or higher and the outdoor unit heat exchanger temperature (Tho-R) exceeds certain value (depends on compressor frequency).
3) Control value A is updated to an optimum value automatically according to the operating conditions.



Control value A
54-60°C

(ii) Anomalous stop control

1) As the outdoor unit heat exchanger temperature (Tho-R) exceeds the setting value, the compressor stops.
2) If it is detected 5 times within 60 minutes or 65°C or higher continues for 60 minutes, including the stop of compressor, E35 is displayed on the remote control and it enters the anomalous stop mode.



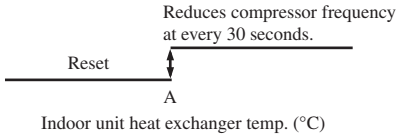
(iii) Reset of anomalous stop mode

As it reaches the reset value of 51°C or lower, it becomes possible to restart from the remote control.

(c) Heating high pressure protection

(i) Protective control

1) As the indoor unit heat exchanger temperature (ThI-R) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of high pressure.
2) Control value A is updated to an optimum value automatically according to the operating conditions.

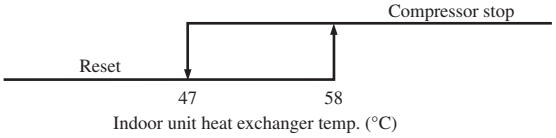


Model	Existing piping adaptation switch: SW5-1	
	OFF (Shipping)	ON
	Control value A (°C)	
FDC200	48-54	46-52
FDC250	52-58	

Note (1) Adaptation to existing piping is at ON.

(ii) Anomalous stop control
Operation control function by the indoor unit control - See the heating overload protection, page 129.

(iii) Adaptation to existing piping, stop control
If the existing piping adaptation switch, SW5-1, is turned ON, the compressor stops to protect existing piping when the indoor unit heat exchanger temperature (ThI-R) exceeds the setting value.

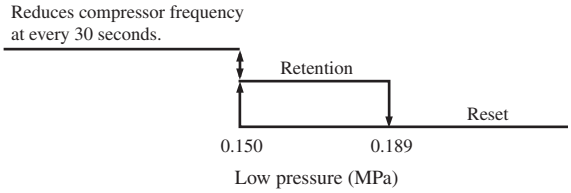


(d) Anomaly detection control by the high pressure switch (63H1)

(i) If the pressure rises and operates the high pressure switch (opens at 4.15MPa/closes at 3.15MPa), the compressor stops.
(ii) Under any of the following conditions, E40 is displayed and it enters the anomalous stop mode.
1) When it occurs 5 times within 60 minutes that pressure rises and the compressor is stopped by 63H1.
2) When 63H1 has been in the open state for 60 minutes continuously, including the stop of compressor.

(e) Low pressure control

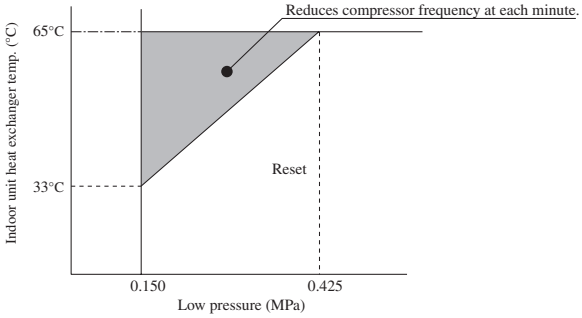
(i) Protective control
If the value detected by the low pressure sensor (PSL) exceeds the setting value, the compressor speed (frequency) is controlled to restrain the drop of pressure.



(ii) Anomalous stop control
1) When a value detected by the low pressure sensor (PSL) satisfies any of the following conditions, the compressor stops for its protection.
a) When the low pressure drops to 0.079MPa or under for 15 seconds continuously.
b) At 10 minutes after the start of compressor, the suction overheat becomes 30°C and the low pressure becomes 0.15MPa or under for 60 seconds continuously.
2) E49 is displayed under any of the following conditions and it enters the anomalous stop mode.
a) When the low pressure drops 5 times within 60 minutes and the compressor stops under any of the above conditions.
b) When a value detected with the low pressure sensor becomes 0.079MPa or under for 5 minutes, including the stop of compressor.
3) However, when the control condition 1). a) is established during the compressor protection start III, E49 is displayed at initial stop and it enters the anomalous stop mode.

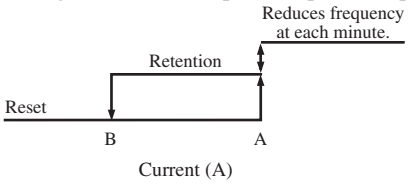
(f) Compressor pressure ratio protection control

(i) During heating operation, if the indoor unit heat exchanger temperature (ThI-R) and low pressure sensor (PSL) exceed the setting values at 10 minutes after the start of compressor, the compressor speed (frequency) is controlled to protect the compressor.
(ii) This control is not performed during the outdoor fan ON and for 10 minutes from the start of outdoor unit fan.
(iii) This control is not performed during defrosting operation and at 10 minutes after the reset of defrost operation.
(iv) When there are 3 indoor unit heat exchanger temperatures (ThI-R), the highest temperature is detected.



(g) Over-current protection current safe controls I, II

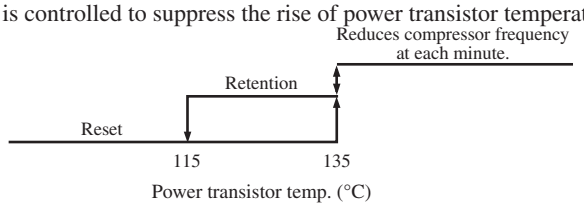
Detecting the outdoor unit inverter input (primary) current and the output (secondary) current, if the current values exceed setting values, the compressor speed (frequency) is controlled to protect the inverter.



Model		Cooling		Heating	
		Control value A	Reset value B	Control value A	Reset value B
Primary current side	FDC200	16.0	15.0	16.0	15.0
	FDC250	18.0	17.0	18.0	17.0
Secandary current side	FDC200	15.5	14.5	15.5	14.5
	FDC250	17.0	16.0	17.0	16.0

(h) Power transistor temperature protection (model FDC250 only)

(i) Protective control
If the power transistor temperature (detected with TIP) exceeds the setting value, the compressor speed (frequency) is controlled to suppress the rise of power transistor temperature.



(ii) Anomalous stop control
1) If the power transistor temperature increases further, the protective switch in the power transistor trips and stops the compressor to protect the power transistor.
2) It enters the anomalous stop mode depending on one of the following conditions.
a) When the protective switch in the power transistor trips and stops the compressor 5 times within 60 minutes (Displays E41.)
b) When the protective switch in the power transistor trips and the state continues for 15 minutes, including the stop of compressor (Displays E51.)

(iii) Anomalous inverter PCB
1) If the power transistor detects anomaly 5 times within 60 minutes with compressor stop, E41 is displayed on the remote control and it enters the anomalous stop mode.
2) If the power transistor detects any anomaly for 15 minutes, including the stop of compressor, E51 is displayed on the remote control and it enters the anomalous stop mode.

(i) Anomalous power transistor current

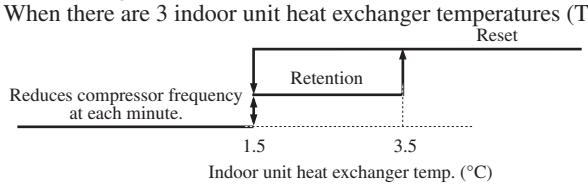
(i) Prevents over-current on the inverter. If the current value in the power transistor exceeds the setting value, the compressor stops.
(ii) If the current value in the power transistor exceeds the specified value and the compressor stops 4 times within 30 minutes, E42 is displayed on the remote control and it enters the anomalous stop mode.

(j) Anomalous inverter communication

If the power transistor detects anomalies 4 times within 15 minutes, including the stop of compressor, E45 is displayed on the remote control and it enters the anomalous stop mode.

(k) Anti-frost control by the compressor frequency control

(i) If the indoor unit heat exchanger temperature (detected with ThI-R) exceeds the setting value at 4 minutes after the start of compressor, the compressor speed (frequency) is controlled to initiate the anti-frost control of indoor unit heat exchanger.
(ii) When there are 3 indoor unit heat exchanger temperatures (ThI-R), the lowest temperature is detected.



(iii) Regarding the anti-frost control by the operation stop, refer to the operation control function by the indoor unit control and the cooling, dehumidifying frost prevention of page 129.

(l) Dewing prevention control

[Control condition] During cooling and dehumidifying operation, if all the following conditions are established, the compressor speed (frequency) is reduced to prevent dewing and water splash.

1) Cooling electronic expansion valve aperture (EEVC) is 500 pulses.
2) Suction overheat is 10°C or higher.
3) Compressor speed (frequency) is **A** rps or higher.

[Control contents] 1) When the suction overheat is 10°C or higher, the compressor speed (frequency) is reduced at each 1 minute.

2) Compressor speed (frequency) does not rise till the cooling expansion valve becomes 460 pulses.

3) This control takes **A** rps as its lower limit so that compressor speed is not controlled when it is less than **A** rps.

Model	**A** rps
FDC200	60
FDC250	60

(m) Refrigerant quantity shortage protection

Under the compressor protection start III control during cooling and dehumidifying operations, the following control is performed by detecting the indoor unit heat exchanger temperature (ThI-R) and the indoor unit return air temperature (ThI-A).

[Control condition] When the state that the indoor unit heat exchanger temperature (ThI-R) does not become lower than the indoor unit return air temperature (ThI-A) by 4°C or more continues for 1 minute.

[Control contents] It judges that the flowing of refrigerant in to the indoor unit is insufficient so that the compressor is stopped and E57 is displayed on the remote control.

(n) Broken wire detection on temperature thermistor and low pressure sensor

(i) Outdoor unit heat exchanger thermistor, outdoor air thermistor and low pressure sensor

If the following is detected for 5 second continuously within 2 minutes to 2 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop.

Note (1) During defrosting and for 3 minutes after the end of defrosting, it is not detected.

- Outdoor unit heat exchanger thermistor: -50°C or lower
- Outdoor air temperature thermistor: -45°C or lower
- Low pressure sensor: 0V or under or 4.0V or over

(ii) Discharge pipe temperature thermistor, suction pipe temperature thermistor, compressor under dome temperature thermistor

If the following is detected for 5 second continuously within 10 minutes to 10 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop.

Note (1) During defrost operation and for 3 minutes after the end of defrost operation, it is not detected.

- Discharge pipe temperature thermistor: -10°C or lower
- Suction pipe temperature thermistor: -50°C or lower
- Compressor under dome temperature thermistor : -50°C or lower

(o) Fan motor error

(i) If the fan speed of 100min^{-1} or under is detected for 30 second continuously under the outdoor unit fan control (with the operation command of fan tap at ① speed or higher), the compressor stops.

(ii) When the fan motor speed drops to 100min^{-1} or under 5 times within 60 minutes and the compressor stops, it enters the anomalous stop mode with E48 displayed on the remote control.

(p) Anomalous stop by the compressor start stop

(i) When it fails to shift to the compressor DC motor's rotor position defection operation at 5 seconds after establishing the compressor start condition, the compressor stops temporarily and restarts 3 minutes later.

(ii) If it fails to shift to the position detection operation again 20 times, it judges the anomalous compressor start and stops the compressor by the anomalous stop (E59).

(7) Silent mode

(a) As "Silent mode start" signal is received from the remote control, it operates by dropping the outdoor unit fan tap and the compressor speed (frequency).

(b) For details, refer to items (1) and (4) above.

(8) Test run

(a) It is possible to operate from the outdoor unit using the dip switch on the outdoor unit control PCB.

SW3-3	ON	SW3-4	OFF	Cooling test run
			ON	Heating test run
	OFF	Normal and end of test run		

Make sure to turn SW3-3 to OFF after the end of operation.

(b) Test run control

(i) Operation is performed at the maximum compressor speed (frequency), which is determined for each model.

(ii) Each protective control and error detection control are effective.

(iii) If SW3-4 is switched during test run, the compressor is stoped once by the stop control and the cooling/heating operation is switched.

(iv) Setting and display of remote control during test run

Item / Mode	Contents of remote control setting/display
Cooling test run	Setting temperature of cooling is 5°C.
Heating test run	Setting temperature of heating (preparation) is 30°C.

(9) Pump-down control

Turning ON the pump-down switch SW1 for 2 seconds during the operation stop or anomalous stop (excluding the thermostat OFF), the pump-down operation is performed. (This is invalid when the indoor unit is operating. This is effective even when the indoor unit is stopped by the anomalous stop or the power source is turned OFF.)

(a) Control contents

(i) Close the service valve at the liquid side. (It is left open at the gas side.)

(ii) Compressor is started with the target speed (frequency) at FDC200:45, FDC250:55 rps in the cooling mode.

(iii) Red and green lamps (LED) keeps flashing on the outdoor unit control PCB.

(iv) Each of protection and error detection controls, excluding the low pressure control, anti-frost control and dewing prevention control, is effective.

(v) Outdoor unit fan is controlled as usual.

(vi) Electronic expansion valve is fully opened.

(b) Control ending conditions

Stop control is initiated depending on any of the following conditions.

(i) Low pressure of 0.087MPa or lower is detected for 5 seconds continuously.
  1) Red LED: Light, Green LED: keeps flashing, Remote control: Displays stop.
  2) It is possible to restart when the low pressure is 0.087MPa or higher.
  3) Electronic expansion valve (cooling/heating) is kept fully open.

(ii) Stop by the error detection control
  1) Red LED: keeps flashing, Green LED: keeps flashing
  2) Restart is prohibited. To return to normal operation, reset the power source.
  3) Electronic expansion valve (cooling/heating) is left fully open.

(iii) When the cumulative operation time of compressor under the pump-down control becomes 5 minutes.
  1) Red LED: stays OFF, Green LED: keeps flashing, Remote control: Stop
  2) It is possible to pump-down again.
  3) Electronic expansion valve (cooling/heating) is left fully open.

Note (1) After the stop of compressor, close the service valve at the gas side.

Caution: Since pressing the pump-down switch cancels communications with the indoor unit, the indoor unit and the remote control display "Transmission error – E5". This is normal.

(10) Base heater ON/OFF output control (Option)

(i) Base heater ON conditions

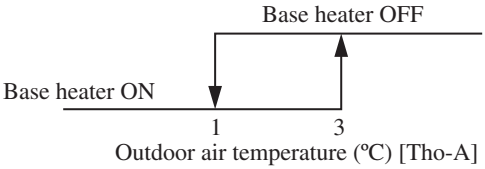
When all of following conditions are met, the base heater is turned ON.

· Outdoor air temperature (detected with Tho-A) is 1ºC or lower.
· In the heating mode
· When the compressor is turned ON

(ii) Base heater OFF conditions

When either one of following conditions is met, the base heater is turned OFF.

· Outdoor air temperature (detected with Tho-A) is 3ºC or higher.
· When the compressor stop has been detected for 30 minutes continuously
· In the cooling or dehumidifying mode



2.11 MAINTENANCE DATA

See page 154 of 1.11 chapter.

2.12 TECHNICAL INFORMATION

Model FDE71VNPVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	**FDE71VG**
Outdoor unit model name	**FDC71VNP**

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)	
cooling	**Yes**
heating	**Yes**

Average(mandatory)	**Yes**
Warmer(if designated)	**No**
Colder(if designated)	**No**

Item	symbol	value	unit
Design load			
cooling	Pdesignc	**7.1**	kW
heating / Average	Pdesignh	**5.8**	kW
heating / Warmer	Pdesignh	**-**	kW
heating / Colder	Pdesignh	**-**	kW

Item	symbol	value	class
Seasonal efficiency and energy efficiency class			
cooling	SEER	**6.35**	A++
heating / Average	SCOP/A	**4.22**	A+
heating / Warmer	SCOP/W	**-**	-
heating / Colder	SCOP/C	**-**	-

Declared capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	Pdh	**5.8**	kW
heating / Warmer (2℃)	Pdh	**-**	kW
heating / Colder (-22℃)	Pdh	**-**	kW

Back up heating capacity at outdoor temperature Tdesignh			unit
heating / Average (-10℃)	elbu	**0**	kW
heating / Warmer (2℃)	elbu	**-**	kW
heating / Colder (-22℃)	elbu	**-**	kW

Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	**7.10**	kW
Tj=30℃	Pdc	**5.23**	kW
Tj=25℃	Pdc	**3.37**	kW
Tj=20℃	Pdc	**1.55**	kW

Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	EERd	**2.84**	-
Tj=30℃	EERd	**4.43**	-
Tj=25℃	EERd	**7.49**	-
Tj=20℃	EERd	**15.50**	-

Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	**5.13**	kW
Tj=2℃	Pdh	**3.12**	kW
Tj=7℃	Pdh	**2.01**	kW
Tj=12℃	Pdh	**1.02**	kW
Tj=bivalent temperature	Pdh	**5.80**	kW
Tj=operating limit	Pdh	**5.17**	kW

Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	**2.73**	-
Tj=2℃	COPd	**4.27**	-
Tj=7℃	COPd	**5.15**	-
Tj=12℃	COPd	**5.96**	-
Tj=bivalent temperature	COPd	**2.28**	-
Tj=operating limit	COPd	**2.17**	-

Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	**-**	kW
Tj=7℃	Pdh	**-**	kW
Tj=12℃	Pdh	**-**	kW
Tj=bivalent temperature	Pdh	**-**	kW
Tj=operating limit	Pdh	**-**	kW

Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	COPd	**-**	-
Tj=7℃	COPd	**-**	-
Tj=12℃	COPd	**-**	-
Tj=bivalent temperature	COPd	**-**	-
Tj=operating limit	COPd	**-**	-

Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	**-**	kW
Tj=2℃	Pdh	**-**	kW
Tj=7℃	Pdh	**-**	kW
Tj=12℃	Pdh	**-**	kW
Tj=bivalent temperature	Pdh	**-**	kW
Tj=operating limit	Pdh	**-**	kW
Tj=-15℃	Pdh	**-**	kW

Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	**-**	-
Tj=2℃	COPd	**-**	-
Tj=7℃	COPd	**-**	-
Tj=12℃	COPd	**-**	-
Tj=bivalent temperature	COPd	**-**	-
Tj=operating limit	COPd	**-**	-
Tj=-15℃	COPd	**-**	-

Bivalent temperature			
heating / Average	Tbiv	**-10**	℃
heating / Warmer	Tbiv	**-**	℃
heating / Colder	Tbiv	**-**	℃

Operating limit temperature			
heating / Average	Tol	**-15**	℃
heating / Warmer	Tol	**-**	℃
heating / Colder	Tol	**-**	℃

Cycling interval capacity			
for cooling	Pcycc	**-**	kW
for heating	Pcych	**-**	kW

Cycling interval efficiency			
for cooling	EERcyc	**-**	-
for heating	COPcyc	**-**	-

Degradation coefficient			
cooling	Cdc	**0.25**	-

Degradation coefficient			
heating	Cdh	**0.25**	-

Electric power input in power modes other than 'active mode'			
off mode	Poff	**9**	W
standby mode	Psb	**9**	W
thermostat-off mode	Pto	**20**	W
crankcase heater mode	Pck	**0**	W

Annual electricity consumption			
cooling	Qce	**392**	kWh/a
heating / Average	Qhe	**1925**	kWh/a
heating / Warmer	Qhe	**-**	kWh/a
heating / colder	Qhe	**-**	kWh/a

Capacity control(indicate one of three options)	
fixed	**No**
staged	**No**
variable	**Yes**

Other items			
Sound power level(indoor)	Lwa	**60**	dB(A)
Sound power level(outdoor)	Lwa	**67**	dB(A)
Global warming potential	GWP	**1975**	kgCO2eq.
Rated air flow(indoor)	-	**1200**	m3/h
Rated air flow(outdoor)	-	**2160**	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

B	PFA004Z024⚠

Model FDE90VNPVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE100VG
Outdoor unit model name	FDC90VNP

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	9.0	kW	cooling	SEER	6.63	A++
heating / Average	Pdesignh	8.2	kW	heating / Average	SCOP/A	4.25	A+
heating / Warmer	Pdesignh	-	kW	heating / Warmer	SCOP/W	-	-
heating / Colder	Pdesignh	-	kW	heating / Colder	SCOP/C	-	-

Declared capacity at outdoor temperature Tdesignh				Back up heating capacity at outdoor temperature Tdesignh			unit
heating / Average (-10℃)	Pdh	8.2	kW	heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	Pdh	-	kW	heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	Pdh	-	kW	heating / Colder (-22℃)	elbu	-	kW

Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	9.00	kW	Tj=35℃	EERd	3.27	-
Tj=30℃	Pdc	6.63	kW	Tj=30℃	EERd	5.10	-
Tj=25℃	Pdc	4.27	kW	Tj=25℃	EERd	8.54	-
Tj=20℃	Pdc	2.20	kW	Tj=20℃	EERd	10.63	-

Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	7.26	kW	Tj=-7℃	COPd	2.90	-
Tj=2℃	Pdh	4.41	kW	Tj=2℃	COPd	4.20	-
Tj=7℃	Pdh	2.84	kW	Tj=7℃	COPd	5.30	-
Tj=12℃	Pdh	1.45	kW	Tj=12℃	COPd	5.58	-
Tj=bivalent temperature	Pdh	8.20	kW	Tj=bivalent temperature	COPd	2.60	-
Tj=operating limit	Pdh	7.20	kW	Tj=operating limit	COPd	2.31	-

Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-

Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW	Tj=-7℃	COPd	-	-
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-

Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-10	℃	heating / Average	Tol	-15	℃
heating / Warmer	Tbiv	-	℃	heating / Warmer	Tol	-	℃
heating / Colder	Tbiv	-	℃	heating / Colder	Tol	-	℃

Cycling interval capacity				Cycling interval efficiency			
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-

Degradation coefficient				Degradation coefficient			
cooling	Cdc	0.25	-	heating	Cdh	0.25	-

Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode	Poff	9	W	cooling	Qce	475	kWh/a
standby mode	Psb	9	W	heating / Average	Qhe	2704	kWh/a
thermostat-off mode	Pto	30	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	0	W	heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)		Other items			
		Sound power level(indoor)	Lwa	64	dB(A)
		Sound power level(outdoor)	Lwa	69	dB(A)
fixed	No	Global warming potential	GWP	1975	kgCO2eq.
staged	No	Rated air flow(indoor)	-	1920	m3/h
variable	Yes	Rated air flow(outdoor)	-	3780	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

B	PFA004Z024

Model FDE100VNVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE100VG
Outdoor unit model name	FDC100VN

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	10.0	kW	cooling	SEER	5.43	A
heating / Average	Pdesignh	7.9	kW	heating / Average	SCOP/A	3.91	A
heating / Warmer	Pdesignh	-	kW	heating / Warmer	SCOP/W	-	-
heating / Colder	Pdesignh	-	kW	heating / Colder	SCOP/C	-	-
							unit
Declared capacity at outdoor temperature Tdesignh				Back up heating capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	Pdh	7.9	kW	heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	Pdh	-	kW	heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	Pdh	-	kW	heating / Colder (-22℃)	elbu	-	kW
Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	10.0	kW	Tj=35℃	EERd	3.51	-
Tj=30℃	Pdc	7.37	kW	Tj=30℃	EERd	5.01	-
Tj=25℃	Pdc	4.74	kW	Tj=25℃	EERd	7.65	-
Tj=20℃	Pdc	4.35	kW	Tj=20℃	EERd	10.71	-
Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	6.99	kW	Tj=-7℃	COPd	2.91	-
Tj=2℃	Pdh	4.25	kW	Tj=2℃	COPd	3.66	-
Tj=7℃	Pdh	2.84	kW	Tj=7℃	COPd	5.06	-
Tj=12℃	Pdh	3.35	kW	Tj=12℃	COPd	6.20	-
Tj=bivalent temperature	Pdh	7.90	kW	Tj=bivalent temperature	COPd	2.59	-
Tj=operating limit	Pdh	6.45	kW	Tj=operating limit	COPd	2.40	-
Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW	Tj=-7℃	COPd	-	-
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-
Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-10	℃	heating / Average	Tol	-20	℃
heating / Warmer	Tbiv	-	℃	heating / Warmer	Tol	-	℃
heating / Colder	Tbiv	-	℃	heating / Colder	Tol	-	℃
Cycling interval capacity				Cycling interval efficiency			
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-
Degradation coefficient				Degradation coefficient			
cooling	Cdc	0.25	-	heating	Cdh	0.25	-
Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode	Poff	20	W	cooling	Qce	645	kWh/a
standby mode	Psb	20	W	heating / Average	Qhe	2830	kWh/a
thermostat-off mode	Pto	30	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	25	W	heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)		Other items			
		Sound power level(indoor)	Lwa	64	dB(A)
		Sound power level(outdoor)	Lwa	70	dB(A)
fixed	No	Global warming potential	GWP	1975	kgCO2eq.
staged	No	Rated air flow(indoor)	-	1920	m3/h
variable	Yes	Rated air flow(outdoor)	-	4500	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

PFA004Z024⚠

Model FDE100VSVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE100VG
Outdoor unit model name	FDC100VS

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)	
cooling	Yes
heating	Yes

Average(mandatory)	Yes
Warmer(if designated)	No
Colder(if designated)	No

Item	symbol	value	unit
Design load			
cooling	Pdesignc	10.0	kW
heating / Average	Pdesignh	7.9	kW
heating / Warmer	Pdesignh	-	kW
heating / Colder	Pdesignh	-	kW

Item	symbol	value	class
Seasonal efficiency and energy efficiency class			
cooling	SEER	5.39	A
heating / Average	SCOP/A	3.90	A
heating / Warmer	SCOP/W	-	-
heating / Colder	SCOP/C	-	-

Declared capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	Pdh	7.9	kW
heating / Warmer (2℃)	Pdh	-	kW
heating / Colder (-22℃)	Pdh	-	kW

Back up heating capacity at outdoor temperature Tdesignh			unit
heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	elbu	-	kW

Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	10.0	kW
Tj=30℃	Pdc	7.37	kW
Tj=25℃	Pdc	4.74	kW
Tj=20℃	Pdc	4.35	kW

Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	EERd	3.51	-
Tj=30℃	EERd	5.01	-
Tj=25℃	EERd	7.65	-
Tj=20℃	EERd	10.71	-

Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	6.99	kW
Tj=2℃	Pdh	4.25	kW
Tj=7℃	Pdh	2.84	kW
Tj=12℃	Pdh	3.35	kW
Tj=bivalent temperature	Pdh	7.90	kW
Tj=operating limit	Pdh	6.45	kW

Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	2.91	-
Tj=2℃	COPd	3.66	-
Tj=7℃	COPd	5.06	-
Tj=12℃	COPd	6.20	-
Tj=bivalent temperature	COPd	2.59	-
Tj=operating limit	COPd	2.40	-

Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW

Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-

Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW
Tj=2℃	Pdh	-	kW
Tj=7℃	Pdh	-	kW
Tj=12℃	Pdh	-	kW
Tj=bivalent temperature	Pdh	-	kW
Tj=operating limit	Pdh	-	kW
Tj=-15℃	Pdh	-	kW

Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	COPd	-	-
Tj=2℃	COPd	-	-
Tj=7℃	COPd	-	-
Tj=12℃	COPd	-	-
Tj=bivalent temperature	COPd	-	-
Tj=operating limit	COPd	-	-
Tj=-15℃	COPd	-	-

Bivalent temperature			
heating / Average	Tbiv	-10	℃
heating / Warmer	Tbiv	-	℃
heating / Colder	Tbiv	-	℃

Operating limit temperature			
heating / Average	Tol	-20	℃
heating / Warmer	Tol	-	℃
heating / Colder	Tol	-	℃

Cycling interval capacity			
for cooling	Pcycc	-	kW
for heating	Pcych	-	kW

Cycling interval efficiency			
for cooling	EERcyc	-	-
for heating	COPcyc	-	-

Degradation coefficient			
cooling	Cdc	0.25	-

Degradation coefficient			
heating	Cdh	0.25	-

Electric power input in power modes other than 'active mode'			
off mode	Poff	20	W
standby mode	Psb	20	W
thermostat-off mode	Pto	50	W
crankcase heater mode	Pck	25	W

Annual electricity consumption			
cooling	Qce	649	kWh/a
heating / Average	Qhe	2833	kWh/a
heating / Warmer	Qhe	-	kWh/a
heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)	
fixed	No
staged	No
variable	Yes

Other items			
Sound power level(indoor)	Lwa	64	dB(A)
Sound power level(outdoor)	Lwa	70	dB(A)
Global warming potential	GWP	1975	kgCO2eq.
Rated air flow(indoor)	-	1920	m3/h
Rated air flow(outdoor)	-	4500	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

PFA004Z024

Model FDE100VNPVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE50VGx2
Outdoor unit model name	FDC100VN

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	10.0	kW	cooling	SEER	5.16	A
heating / Average	Pdesignh	7.8	kW	heating / Average	SCOP/A	3.81	A
heating / Warmer	Pdesignh	-	kW	heating / Warmer	SCOP/W	-	-
heating / Colder	Pdesignh	-	kW	heating / Colder	SCOP/C	-	-
							unit
Declared capacity at outdoor temperature Tdesignh				Back up heating capacity at outdoor temperature Tdesignh			
heating / Average (-10℃)	Pdh	7.8	kW	heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	Pdh	-	kW	heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	Pdh	-	kW	heating / Colder (-22℃)	elbu	-	kW
Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	10.0	kW	Tj=35℃	EERd	3.21	-
Tj=30℃	Pdc	7.37	kW	Tj=30℃	EERd	4.85	-
Tj=25℃	Pdc	4.74	kW	Tj=25℃	EERd	6.97	-
Tj=20℃	Pdc	4.15	kW	Tj=20℃	EERd	10.25	-
Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	6.90	kW	Tj=-7℃	COPd	2.78	-
Tj=2℃	Pdh	4.20	kW	Tj=2℃	COPd	3.62	-
Tj=7℃	Pdh	2.79	kW	Tj=7℃	COPd	4.89	-
Tj=12℃	Pdh	3.29	kW	Tj=12℃	COPd	5.84	-
Tj=bivalent temperature	Pdh	7.80	kW	Tj=bivalent temperature	COPd	2.52	-
Tj=operating limit	Pdh	6.77	kW	Tj=operating limit	COPd	2.55	-
Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW	Tj=-7℃	COPd	-	-
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-
Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-10	℃	heating / Average	Tol	-20	℃
heating / Warmer	Tbiv	-	℃	heating / Warmer	Tol	-	℃
heating / Colder	Tbiv	-	℃	heating / Colder	Tol	-	℃
Cycling interval capacity				Cycling interval efficiency			
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-
Degradation coefficient				Degradation coefficient			
cooling	Cdc	0.25	-	heating	Cdh	0.25	-
Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode	Poff	20	W	cooling	Qce	679	kWh/a
standby mode	Psb	20	W	heating / Average	Qhe	2868	kWh/a
thermostat-off mode	Pto	26	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	25	W	heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)		Other items			
		Sound power level(indoor)	Lwa	60	dB(A)
		Sound power level(outdoor)	Lwa	70	dB(A)
fixed	No	Global warming potential	GWP	1975	kgCO2eq.
staged	No	Rated air flow(indoor)	-	780	m3/h
variable	Yes	Rated air flow(outdoor)	-	4500	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

PFA004Z024⚠

Model FDE100VSPVG

Information to identify the model(s) to which the information relates to:	
Indoor unit model name	FDE50VGx2
Outdoor unit model name	FDC100VS

If function includes heating: Indicate the heating season the information relates to. Indicated values should relate to one heating season at a time. Include at least the heating season 'Average'.

Function(indicate if present)			
cooling	Yes	Average(mandatory)	Yes
heating	Yes	Warmer(if designated)	No
		Colder(if designated)	No

Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	10.0	kW	cooling	SEER	5.13	A
heating / Average	Pdesignh	7.8	kW	heating / Average	SCOP/A	3.80	A
heating / Warmer	Pdesignh	-	kW	heating / Warmer	SCOP/W	-	-
heating / Colder	Pdesignh	-	kW	heating / Colder	SCOP/C	-	-

Declared capacity at outdoor temperature Tdesignh				Back up heating capacity at outdoor temperature Tdesignh			unit
heating / Average (-10℃)	Pdh	7.8	kW	heating / Average (-10℃)	elbu	0	kW
heating / Warmer (2℃)	Pdh	-	kW	heating / Warmer (2℃)	elbu	-	kW
heating / Colder (-22℃)	Pdh	-	kW	heating / Colder (-22℃)	elbu	-	kW

Declared capacity for cooling, at indoor temperature 27(19)℃ and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)℃ and outdoor temperature Tj			
Tj=35℃	Pdc	10.0	kW	Tj=35℃	EERd	3.21	-
Tj=30℃	Pdc	7.37	kW	Tj=30℃	EERd	4.85	-
Tj=25℃	Pdc	4.74	kW	Tj=25℃	EERd	6.97	-
Tj=20℃	Pdc	4.15	kW	Tj=20℃	EERd	10.25	-

Declared capacity for heating / Average season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	6.90	kW	Tj=-7℃	COPd	2.78	-
Tj=2℃	Pdh	4.20	kW	Tj=2℃	COPd	3.62	-
Tj=7℃	Pdh	2.79	kW	Tj=7℃	COPd	4.89	-
Tj=12℃	Pdh	3.29	kW	Tj=12℃	COPd	5.84	-
Tj=bivalent temperature	Pdh	7.80	kW	Tj=bivalent temperature	COPd	2.52	-
Tj=operating limit	Pdh	6.77	kW	Tj=operating limit	COPd	2.55	-

Declared capacity for heating / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-

Declared capacity for heating / Colder season, at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20℃ and outdoor temperature Tj			
Tj=-7℃	Pdh	-	kW	Tj=-7℃	COPd	-	-
Tj=2℃	Pdh	-	kW	Tj=2℃	COPd	-	-
Tj=7℃	Pdh	-	kW	Tj=7℃	COPd	-	-
Tj=12℃	Pdh	-	kW	Tj=12℃	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Tj=-15℃	Pdh	-	kW	Tj=-15℃	COPd	-	-

Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-10	℃	heating / Average	Tol	-20	℃
heating / Warmer	Tbiv	-	℃	heating / Warmer	Tol	-	℃
heating / Colder	Tbiv	-	℃	heating / Colder	Tol	-	℃

Cycling interval capacity				Cycling interval efficiency			
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcych	-	kW	for heating	COPcyc	-	-

Degradation coefficient				Degradation coefficient			
cooling	Cdc	0.25	-	heating	Cdh	0.25	-

Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode	Poff	20	W	cooling	Qce	683	kWh/a
standby mode	Psb	20	W	heating / Average	Qhe	2872	kWh/a
thermostat-off mode	Pto	46	W	heating / Warmer	Qhe	-	kWh/a
crankcase heater mode	Pck	25	W	heating / colder	Qhe	-	kWh/a

Capacity control(indicate one of three options)		Other items			
		Sound power level(indoor)	Lwa	60	dB(A)
		Sound power level(outdoor)	Lwa	70	dB(A)
fixed	No	Global warming potential	GWP	1975	kgCO2eq.
staged	No	Rated air flow(indoor)	-	1920	m3/h
variable	Yes	Rated air flow(outdoor)	-	4500	m3/h

Contact details for obtaining more information	Name and address of the manufacturer or of its authorised representative. Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 7 Roundwood Avenue, Stockley Park, Uxbridge, Middlesex, UB11 1AX, United Kingdom

PFA004Z024

3. V MULTI SYSTEM

TABLE OF CONTENTS

3.1 HYPER INVERTER PACKAGED AIR-CONDITIONERS 408
3.2 MICRO INVERTER PACKAGED AIR-CONDITIONERS 425

3.1 HYPER INVERTER PACKAGED AIR-CONDITIONERS

CONTENTS

3.1.1 GENERAL INFORMATION 409
(1) How to read the model name 409
(2) Table of models 409
(3) Table of system combinations 409
3.1.2 SPECIFICATIONS 410
(1) Indoor units 410
(2) Outdoor units 414
(3) Operation chart 421
3.1.3 EXTERIOR DIMENSIONS 424
3.1.4 ELECTRICAL WIRING 424
3.1.5 NOISE LEVEL 424
3.1.6 TEMPERATURE AND VELOCITY DISTRIBUTION 424
3.1.7 PIPING SYSTEM 424
3.1.8 RANGE OF USAGE & LIMITATIONS 424
3.1.9 SELECTION CHART 424
3.1.10 APPLICATION DATA 424
3.1.11 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER 424
3.1.12 MAINTENANCE DATA 424

3.1.1 GENERAL INFORMATION

(1) How to read the model name

Example: FDE 40 VG

- VG — Series code
- 40 — Product capacity
- FDE — Model name (Ceiling suspended type)

Example: FDC 100 VNX

- VNX — Applicable power source···See the specification
- 100 — Product capacity
- FDC — Model name (Outdoor unit)

(2) Table of models

Model \ Capacity	40	50	60	71
Ceiling suspended type (FDE)	○	○	○	○
Outdoor unit to be combined (FDC)	FDC71VNX (3 Horse Power)	FDC100VNX FDC100VSX (4 Horse Power)	FDC125VNX FDC125VSX (5 Horse Power)	FDC140VNX FDC140VSX (6 Horse Power)

(3) Table of system combinations

Outdoor unit	Type	Indoor unit assembly capacity	Branch pipe set (Option)
FDC71VNX	Twin	40+40	DIS-WA1
FDC100VNX FDC100VSX		50+50	
FDC125VNX FDC125VSX		60+60 50+71	
FDC140VNX FDC140VSX	Twin	71+71	
	Triple	50+50+50	DIS-TA1 or DIS-WA1×2set

Notes(1) Always use the branch piping set (option) at branches in the refrigerant piping.
(2) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.
(3) The combinations except the above table forbids.

3.1.2 SPECIFICATIONS

(1) Indoor units

Item			Model	FDE40VG
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity		kW	4.0
	Nominal heating capacity		kW	4.5
	Sound power level	Cooling	dB(A)	60
		Heating		
	Sound pressure level	Cooling	dB(A)	P-Hi : 46 Hi : 38 Me : 36 Lo : 31
		Heating		
	Silent mode sound pressure level		dB(A)	—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent
Net weight			kg	28
Heat exchanger				Louver fin & inner grooved tubing
Fan type & Q'ty				Centrifugal fan ×2
Fan motor (Starting method)			W	30 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7
		Heating		
Available external static pressure			Pa	0
Outside air intake				Not possible
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)
Shock & vibration absorber				Rubber sleeve(for fan motor)
Electric heater			W	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R
	Room temperature control			Thermostat by electronics
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow
Safety equipments				Internal thermostat for fan motor. Frost protection thermostat.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ6.35 (1/4")
				Gas line: ϕ12.7 (1/2")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Drain hose			Hose connectable VP20(O.D.26)
Drain pump, max lift height			mm	—
IP number				IPX0
Standard accessories				Mounting kit, Drain hose
Option parts				—

Note (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	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(5) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE50VG
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity		kW	5.0
	Nominal heating capacity		kW	5.4
	Sound power level	Cooling	dB(A)	60
		Heating		
	Sound pressure level	Cooling		P-Hi : 46 Hi : 38 Me : 36 Lo : 31
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,070 × 690
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent
Net weight			kg	28
Heat exchanger				Louver fin & inner grooved tubing
Fan type & Q'ty				Centrifugal fan ×2
Fan motor (Starting method)			W	30 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7
		Heating		
Available external static pressure			Pa	0
Outside air intake				Not possible
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)
Shock & vibration absorber				Rubber sleeve(for fan motor)
Electric heater			W	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R
	Room temperature control			Thermostat by electronics
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow
Safety equipments				Internal thermostat for fan motor. Frost protection thermostat.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ6.35 (1/4")
				Gas line: ϕ12.7 (1/2")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Drain hose			Hose connectable VP20(O.D.26)
Drain pump, max lift height			mm	—
IP number				IPX0
Standard accessories				Mounting kit, Drain hose
Option parts				—

Note (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	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(5) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE60VG
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity		kW	5.6
	Nominal heating capacity		kW	6.7
	Sound power level	Cooling	dB(A)	60
		Heating		
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent
Net weight			kg	33
Heat exchanger				Louver fin & inner grooved tubing
Fan type & Q'ty				Centrifugal fan ×4
Fan motor (Starting method)			W	50 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10
		Heating		
Available external static pressure			Pa	0
Outside air intake				Not possible
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)
Shock & vibration absorber				Rubber sleeve(for fan motor)
Electric heater			W	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R
	Room temperature control			Thermostat by electronics
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow
Safety equipments				Internal thermostat for fan motor. Frost protection thermostat.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ6.35 (1/4")
				Gas line: ϕ12.7 (1/2")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Drain hose			Hose connectable VP20(O.D.26)
Drain pump, max lift height			mm	—
IP number				IPX0
Standard accessories				Mounting kit, Drain hose
Option parts				—

Note (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	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(5) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDE71VG
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity (range)		kW	7.1
	Nominal heating capacity (range)		kW	8.0
	Sound power level	Cooling	dB(A)	60
		Heating		
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	210 × 1,320 × 690
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent
Net weight			kg	33
Heat exchanger				Louver fin & inner grooved tubing
Fan type & Q'ty				Centrifugal fan ×4
Fan motor (Starting method)			W	50 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10
		Heating		
Available external static pressure			Pa	0
Outside air intake				Not possible
Air filter, Quality / Quantity				Pocket plastic net ×2(Washable)
Shock & vibration absorber				Rubber sleeve(for fan motor)
Electric heater			W	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R
	Room temperature control			Thermostat by electronics
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow
Safety equipments				Internal thermostat for fan motor. Frost protection thermostat.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Drain hose			Hose connectable VP20(O.D.26)
Drain pump, max lift height			mm	—
IP number				IPX0
Standard accessories				Mounting kit, Drain hose
Option parts				—

Note (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	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(5) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

(2) Outdoor units

Item			Model	FDC71VNX
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity (range)		kW	7.1 [3.2(Min.)-8.0(Max.)]
	Nominal heating capacity (range)		kW	8.0 [3.6(Min.)-9.0(Max.)]
	Sound power level	Cooling	dB(A)	66
		Heating		
	Sound pressure level	Cooling		51
		Heating		48
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	750×880(+88)×340
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	60
Compressor type & Q'ty				RMT5118MDE2×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.675 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 2.95kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×1
Fan motor (Starting method)			W	86 < Direct line start >
Air flow		Cooling	m^3/min	60
		Heating		50
Shock & vibration absorber				Rubber sleeve(for compressor)
Electric heater			W	20(Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.50m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 x 3pcs
IP number				IP24
Standard accessories				—
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDC100VNX
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-12.5(Max.)]
	Sound power level	Cooling	dB(A)	70
		Heating		
	Sound pressure level	Cooling		48
		Heating		50
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	1300×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	105
Compressor type & Q'ty				RMT5134MDE2×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×2
Fan motor (Starting method)			W	86 x 2 < Direct line start >
Air flow		Cooling	m^3/min	100
		Heating		
Shock & vibration absorber				Rubber sleeve(for compressor)
Electric heater			W	20(Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.100m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 x 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item				Model: FDC100VSX
Power source				3 Phase 380-415V 50Hz / 380V 60Hz
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-16.0(Max.)]
	Sound power level	Cooling	dB(A)	70
		Heating		
	Sound pressure level	Cooling		48
		Heating		50
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	1300×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	105
Compressor type & Q'ty				RMT5134MDE3×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×2
Fan motor (Starting method)			W	86 x 2 < Direct line start >
Air flow		Cooling	m^3/min	100
		Heating		
Shock & vibration absorber				Rubber sleeve(for compressor)
Electric heater			W	20(Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.100m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 x 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item			Model	FDC125VNX
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-17.0(Max.)]
	Sound power level	Cooling	dB(A)	70
		Heating		
	Sound pressure level	Cooling		48
		Heating		50
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	1300×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	105
Compressor type & Q'ty				RMT5134MDE2×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×2
Fan motor (Starting method)			W	86 x 2 < Direct line start >
Air flow		Cooling	m^3/min	100
		Heating		
Shock & vibration absorber				Rubber sleeve(for compressor)
Electric heater			W	20(Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.100m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 x 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDC125VSX
Power source				3 Phase 380-415V 50Hz / 380V 60Hz
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-18.0(Max.)]
	Sound power level	Cooling	dB(A)	70
		Heating		
	Sound pressure level	Cooling		48
		Heating		50
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	1300×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	105
Compressor type & Q'ty				RMT5134MDE3×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×2
Fan motor (Starting method)			W	86 x 2 < Direct line start >
Air flow		Cooling	m^3/min	100
		Heating		
Shock & vibration absorber				Rubber sleeve(for compressor)
Electric heater			W	20(Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.100m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 x 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item			Model	FDC140VNX
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-16.0(Max.)]
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-18.0(Max.)]
	Sound power level	Cooling	dB(A)	72
		Heating		
	Sound pressure level	Cooling		49
		Heating		52
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	1300×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	105
Compressor type & Q'ty				RMT5134MDE2×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 4.5kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×2
Fan motor (Starting method)			W	86 x 2 < Direct line start >
Air flow		Cooling	m^3/min	100
		Heating		
Shock & vibration absorber				Rubber sleeve(for compressor)
Electric heater			W	20(Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.100m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 x 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	—	7°C	6°C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item			Model	FDC140VSX
Power source				3 Phase 380-415V 50Hz / 380V 60Hz
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-16.0(Max.)]
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-20.0(Max.)]
	Sound power level	Cooling	dB(A)	72
		Heating		
	Sound pressure level	Cooling		49
		Heating		52
	Silent mode sound pressure level			—
Exterior dimensions (Height x Width x Depth)			mm	1300×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	105
Compressor type & Q'ty				RMT5134MDE3×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Heat exchanger				M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×2
Fan motor (Starting method)			W	86 x 2 < Direct line start >
Air flow		Cooling	m^3/min	100
		Heating		
Shock & vibration absorber				Rubber sleeve(for compressor)
Electric heater			W	20(Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.100m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 x 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

(3) Operation chart

The V Multi is a system that allows for different models and capacities of indoor units to be connected so the individual operating characteristics of the indoor and outdoor are provided. Use the procedure shown in Item (c) to calculate the combined operating characteristics.

(a) Operating characteristic of outdoor unit

(220-240V 50Hz/220V 60Hz)

Item \ Model		FDC71VNX	FDC100VNX	FDC125VNX	FDC140VNX
Cooling power consumption	kW	1.95	2.33	3.11	4.02
Heating power consumption		1.85	2.41	3.26	4.03
Cooling running current	A	8.5/8.9	10.3/10.8	13.7/14.3	17.6/18.4
Heating running current		8.1/8.5	10.6/11.1	14.3/15.0	17.6/18.4
Inrush current <Max. running current>	A	5 <17>	5 <24>	5 <26>	

(380-415V 50Hz/380V 60Hz)

Item \ Model		FDC100VSX	FDC125VSX	FDC140VSX
Cooling power consumption	kW	2.33	3.11	4.02
Heating power consumption		2.41	3.26	4.03
Cooling running current	A	5.9/6.2	7.9/8.3	10.1/10.7
Heating running current		6.1/6.4	8.2/8.7	10.1/10.7
Inrush current <Max. running current>	A	5 <15>		

Note(1) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO5151-T1 “UNITARY AIR-CONDITIONERS”

(b) Operating characteristic of indoor unit

(220-240V 50Hz/220V 60Hz)

Item \ Model		FDE40VG	FDE50VG	FDE60VG	FDE71VG
Cooling power consumption	kW	0.05/0.05	0.05/0.05	0.08/0.08	0.08/0.08
Heating power consumption		0.05/0.05	0.05/0.05	0.08/0.08	0.08/0.08
Cooling running current	A	0.50/0.50	0.50/0.50	0.75/0.75	0.75/0.75
Heating running current		0.50/0.50	0.50/0.50	0.75/0.75	0.75/0.75

Notes(1) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO5151-T1 “UNITARY AIR-CONDITIONERS”
(2) The values shown in the above table are common to both cooling and heating operations.

(c) Calculation of total operation characteristics

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

1) 1 Phase models

a) Total power consumption

Total power consumption (kW) = Power consumption of outdoor unit + ∑ (Power consumption of indoor unit)

b) Total running current

Total running current (A) = Running current of outdoor unit + ∑ (Running current of indoor unit)

c) Total power factor

Total power factor (%) = [Total power consumption (W) / Total running current (A) × Power source] × 100

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

[Example]

(Conditions) Operation Voltage ····· Indoor unit: 220 V, 50 Hz
Outdoor unit: 220 V, 50 Hz
Operation mode ····· Cooling and Heating
Unit····· Outdoor unit: FDC140VNX × 1 unit
Indoor unit: FDE71VG × 2 units

Operation characteristics of each unit (Cooling/Heating)

Item \ Model	FDC140VNX	FDE71VG
Power consumption (kW)	4.02/4.03	0.08/0.08
Running current (A)	17.6/17.6	0.75/0.75

① Total power consumption (kW)

(Cooling) 4.02 + (0.08 × 2) = 4.18

(Heating) 4.03 + (0.08 × 2) = 4.19

② Total running current (A)

(Cooling) 17.6 + (0.75 × 2) = 19.1

(Heating) 17.6 + (0.75 × 2) = 19.1

③ Total power factor (%)

(Cooling) $\frac{4.18 \times 1000}{19.1 \times 220} \times 100 \fallingdotseq 99\ \%$

(Heating) $\frac{4.19 \times 1000}{19.1 \times 220} \times 100 \fallingdotseq 99\ \%$

2) 3 Phase models

a) Total power consumption

Total power consumption (kW) = Power consumption of outdoor unit + ∑ (Power consumption of indoor unit)

b) Total running current

Total running current (A) = Running current of outdoor unit + [∑ (Running current of indoor unit) × 1/3]

c) Total power factor

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

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

[Example]

(Conditions) Operation Voltage ····· Indoor unit: 220 V, 50 Hz
Outdoor unit: 380 V, 50 Hz
Operation mode ····· Cooling and Heating
Unit····· Outdoor unit: FDC125VSX × 1 unit
Indoor unit: FDE50VG × 1 unit, FDE71VG × 1 unit

Operation characteristics of each unit

(Cooling/Heating)

Item \ Model	FDC125VSX	FDE50VG	FDE71VG
Power consumption (kW)	3.11/3.26	0.05/0.05	0.08/0.08
Running current (A)	7.9/8.2	0.50/0.50	0.75/0.75

① Total power consumption (kW)

(Cooling) 3.11 + 0.05 + 0.08 = 3.24 (kW)

(Heating) 3.26 + 0.05 + 0.08 = 3.39 (kW)

② Total running current (A)

(Cooling) $7.9 + \left[(0.50 + 0.75) \times \frac{1}{3})\right] \fallingdotseq 8.3$ (A)

(Heating) $8.2 + \left[(0.50 + 0.75) \times \frac{1}{3})\right] \fallingdotseq 8.6$ (A)

③ Total power factor (%)

(Cooling) $\frac{3.24 \times 1000}{\sqrt{3} \times 8.3 \times 380} \times 100 \fallingdotseq 59$ %

(Heating) $\frac{3.39 \times 1000}{\sqrt{3} \times 8.6 \times 380} \times 100 \fallingdotseq 60$ %

3.1.3 EXTERIOR DIMENSIONS
(1) Indoor units .....See page 24
(2) Outdoor units .....See page 27
(3) Remote controller (Option parts) .....See page 30
3.1.4 ELECTRICAL WIRING
(1) Indoor units .....See page 33
(2) Outdoor units .....See page 34
3.1.5 NOISE LEVEL
(1) Indoor units .....See page 38
(2) Outdoor units .....See page 39
3.1.6 TEMPERATURE AND VELOCITY DISTRIBUTION .....See page 41
3.1.7 PIPING SYSTEM .....See page 45
3.1.8 RANGE OF USAGE & LIMITATIONS .....See page 48
3.1.9 SELECTION CHART .....See page 52
3.1.10 APPLICATION DATA
(1) Installation of indoor unit .....See page 67
(2) Electric wiring work installation .....See page 71
(3) Installation of wired remote control (Option) .....See page 75
(4) Installation of outdoor unit
(a) Model FDC71VNX .....See page 97
(b) Models FDC100−140VNX,100−140VSX .....See page 105
(5) Instructions for branching pipe set (DIS-WA1,WB1,TA1,TB1) .....See page 113
3.1.11 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER .....See page 116
3.1.12 MAINTENANCE DATA .....See page 154

3.2 MICRO INVERTER PACKAGED AIR-CONDITIONERS

CONTENTS

3.2.1 GENERAL INFORMATION 425
(1) How to read the model name 425
(2) Table of models 426
(3) Table of system combinations 426
3.2.2 SPECIFICATIONS 427
(1) Indoor units 427
(2) Outdoor units 432
(3) Operation chart 440
3.2.3 EXTERIOR DIMENSIONS 443
3.2.4 ELECTRICAL WIRING 443
3.2.5 NOISE LEVEL 443
3.2.6 TEMPERATURE AND VELOCITY DISTRIBUTION 443
3.2.7 PIPING SYSTEM 443
3.2.8 RANGE OF USAGE & LIMITATIONS 443
3.2.9 SELECTION CHART 443
3.2.10 APPLICATION DATE 443
3.2.11 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER 443
3.2.12 MAINTENANCE DATA 443

3.2.1 GENERAL INFORMATION

(1) How to read the model name

Example: FDE 40 VG

- VG — Series code
- 40 — Product capacity
- FDE — Model name (Ceiling suspended type)

Example: FDC 100 VN

- VN — Applicable power source···See the specification
- 100 — Product capacity
- FDC — Model name (Outdoor unit)

(2) Table of models

Model \ Capacity	50	60	71	100	125
Ceiling suspended type (FDE)	○	○	○	○	○
Outdoor unit to be combined (FDC)	FDC100VN FDC100VS (4 Horse Power)	FDC125VN FDC125VS (5 Horse Power)	FDC140VN FDC140VS (6 Horse Power)	FDC200VSA (8 Horse Power)	FDC250VSA (10 Horse Power)

(3) Table of system combinations

Outdoor unit	Type	Indoor unit assembly capacity	Branch pipe set (Option)
FDC100VN FDC100VS	Twin	50+50	DIS-WA1
FDC125VN FDC125VS		60+60 50+71	
FDC140VN FDC140VS	Twin	71+71	
	Triple	50+50+50	DIS-TA1 or DIS-WA1×2set
FDC200VSA	Twin	100+100	DIS-WB1
		71+125	
	Triple	71+71+71	DIS-TB1 or DIS-WA1×1set DIS-WB1×1set
	Double twin	50+50+50+50	DIS-WA1×2set DIS-WB1×1set
FDC250VSA	Twin	125+125	DIS-WB1
	Triple	60+60+125	DIS-TB1 or DIS-WA1×1set DIS-WB1×1set
		71+71+100	
	Double twin	60+60+60+60	DIS-WA1×2set DIS-WB1×1set

Notes(1) Always use the branch piping set (option) at branches in the refrigerant piping.
(2) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.
(3) The combinations except the above table forbids.

3.2.2 SPECIFICATIONS

(1) Indoor units

Item \ Model				FDE50VG
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Sound power level	Cooling	dB(A)	60
		Heating		
	Sound pressure level	Cooling		P-Hi : 46 Hi : 39 Me : 36 Lo : 31
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	210 × 1,070 × 690
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent
Net weight			kg	28
Heat exchanger				Louver fin & inner grooved tubing
Fan type & Q'ty				Centrifugal fan ×2
Fan motor (Starting method)			W	30 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 13 Hi : 10 Me : 9 Lo : 7
		Heating		
Available external static pressure			Pa	0
Outside air intake				Not possible
Air filter, Quality / Quantity				Pocket plastic net ×2 (Washable)
Shock & vibration absorber				Rubber sleeve (for fan motor)
Electric heater			W	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R
	Room temperature control			Thermostat by electronics
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow
Safety equipments				Internal thermostat for fan motor. Frost protection thermostat.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ6.35 (1/4")
				Gas line: ϕ12.7 (1/2")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Drain hose			Hose connectable VP20 (O.D.26)
Drain pump, max lift height			mm	—
IP number				IPX0
Standard accessories				Mounting kit, Drain hose
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(5) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item \ Model				FDE60VG
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Sound power level	Cooling	dB(A)	60
		Heating		
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	210 × 1,320 × 690
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent
Net weight			kg	33
Heat exchanger				Louver fin & inner grooved tubing
Fan type & Q'ty				Centrifugal fan ×4
Fan motor (Starting method)			W	50 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10
		Heating		
Available external static pressure			Pa	0
Outside air intake				Not possible
Air filter, Quality / Quantity				Pocket plastic net ×2 (Washable)
Shock & vibration absorber				Rubber sleeve (for fan motor)
Electric heater			W	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R
	Room temperature control			Thermostat by electronics
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow
Safety equipments				Internal thermostat for fan motor. Frost protection thermostat.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ6.35 (1/4")
				Gas line: ϕ12.7 (1/2")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Drain hose			Hose connectable VP20 (O.D.26)
Drain pump, max lift height			mm	—
IP number				IPX0
Standard accessories				Mounting kit, Drain hose
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(5) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item \ Model				FDE71VG
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Sound power level	Cooling	dB(A)	60
		Heating		
	Sound pressure level	Cooling		P-Hi : 47 Hi : 41 Me : 37 Lo : 32
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	210 × 1,320 × 690
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent
Net weight			kg	33
Heat exchanger				Louver fin & inner grooved tubing
Fan type & Q'ty				Centrifugal fan ×4
Fan motor (Starting method)			W	50 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 20 Hi : 16 Me : 13 Lo : 10
		Heating		
Available external static pressure			Pa	0
Outside air intake				Not possible
Air filter, Quality / Quantity				Pocket plastic net ×2 (Washable)
Shock & vibration absorber				Rubber sleeve (for fan motor)
Electric heater			W	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R
	Room temperature control			Thermostat by electronics
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow
Safety equipments				Internal thermostat for fan motor. Frost protection thermostat.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Drain hose			Hose connectable VP20 (O.D.26)
Drain pump, max lift height			mm	—
IP number				IPX0
Standard accessories				Mounting kit, Drain hose
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(5) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item \ Model				FDE100VG
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Sound power level	Cooling	dB(A)	64
		Heating		
	Sound pressure level	Cooling		P-Hi : 48 Hi : 43 Me : 38 Lo : 34
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	250 × 1,620 × 690
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent
Net weight			kg	43
Heat exchanger				Louver fin & inner grooved tubing
Fan type & Q'ty				Centrifugal fan ×4
Fan motor (Starting method)			W	80 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 26 Me : 21 Lo : 16.5
		Heating		
Available external static pressure			Pa	0
Outside air intake				Not possible
Air filter, Quality / Quantity				Pocket plastic net ×2 (Washable)
Shock & vibration absorber				Rubber sleeve (for fan motor)
Electric heater			W	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R
	Room temperature control			Thermostat by electronics
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow
Safety equipments				Internal thermostat for fan motor. Frost protection thermostat.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Drain hose			Hose connectable VP20 (O.D.26)
Drain pump, max lift height			mm	—
IP number				IPX0
Standard accessories				Mounting kit, Drain hose
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(5) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item \ Model				FDE125VG
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Sound power level	Cooling	dB(A)	64
		Heating		
	Sound pressure level	Cooling		P-Hi : 48 Hi : 45 Me : 40 Lo : 35
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	250 × 1,620 × 690
Exterior appearance (Munsell color)				Plaster white (6.8Y8.9/0.2) near equivalent
Net weight			kg	43
Heat exchanger				Louver fin & inner grooved tubing
Fan type & Q'ty				Centrifugal fan ×4
Fan motor (Starting method)			W	80 < Direct line start >
Air flow		Cooling	m^3/min	P-Hi : 32 Hi : 29 Me : 23 Lo : 17
		Heating		
Available external static pressure			Pa	0
Outside air intake				Not possible
Air filter, Quality / Quantity				Pocket plastic net ×2 (Washable)
Shock & vibration absorber				Rubber sleeve (for fan motor)
Electric heater			W	—
Operation control	Remote control			(option) wired : RC-EX1A , RC-E5 , RCH-E3 wireless : RCN-E1R
	Room temperature control			Thermostat by electronics
	Operation display			RUN: Green, TIMER: Yellow, CHECK: Yellow
Safety equipments				Internal thermostat for fan motor. Frost protection thermostat.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Drain hose			Hose connectable VP20 (O.D.26)
Drain pump, max lift height			mm	—
IP number				IPX0
Standard accessories				Mounting kit, Drain hose
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) When wireless remote control is used, fan is 3 speed setting (Hi-Me-Lo) only.
(5) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

(2) Outdoor units

Item			Model	FDC100VN
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-12.5(Max.)]
	Sound power level	Cooling / Heating	dB(A)	70
	Sound pressure level	Cooling / Heating	dB(A)	49
	Silent mode sound pressure level		dB(A)	—
Exterior dimensions (Height × Width × Depth)			mm	845×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	81
Compressor type & Q'ty				RMT5126MDE2×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×1
Fan motor (Starting method)			W	86 < Direct line start >
Air flow		Cooling	m^3/min	75
		Heating	m^3/min	73
Shock & vibration absorber				Rubber sleeve (for compressor)
Electric heater			W	20 (Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
			mm	Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.50m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 × 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

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	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item \ Model				FDC100VS
Power source				3 Phase 380-415V 50Hz / 380V 60Hz
Operation data	Nominal cooling capacity (range)		kW	10.0 [4.0(Min.)-11.2(Max.)]
	Nominal heating capacity (range)		kW	11.2 [4.0(Min.)-12.5(Max.)]
	Sound power level	Cooling	dB(A)	70
		Heating		
	Sound pressure level	Cooling		49
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	845×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	83
Compressor type & Q'ty				RMT5126MDE3×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×1
Fan motor (Starting method)			W	86 < Direct line start >
Air flow		Cooling	m^3/min	75
		Heating		73
Shock & vibration absorber				Rubber sleeve (for compressor)
Electric heater			W	20 (Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.50m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 × 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item			Model	FDC125VN
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-16.0(Max.)]
	Sound power level	Cooling	dB(A)	72
		Heating		
	Sound pressure level	Cooling		50
		Heating		51
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	845×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	81
Compressor type & Q'ty				RMT5126MDE2×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×1
Fan motor (Starting method)			W	86 < Direct line start >
Air flow		Cooling	m^3/min	75
		Heating		73
Shock & vibration absorber				Rubber sleeve (for compressor)
Electric heater			W	20 (Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.50m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 × 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item \ Model				FDC125VS
Power source				3 Phase 380-415V 50Hz / 380V 60Hz
Operation data	Nominal cooling capacity (range)		kW	12.5 [5.0(Min.)-14.0(Max.)]
	Nominal heating capacity (range)		kW	14.0 [4.0(Min.)-16.0(Max.)]
	Sound power level	Cooling	dB(A)	72
		Heating		
	Sound pressure level	Cooling		50
		Heating		51
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	845×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	83
Compressor type & Q'ty				RMT5126MDE3×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×1
Fan motor (Starting method)			W	86 < Direct line start >
Air flow		Cooling	m^3/min	75
		Heating		73
Shock & vibration absorber				Rubber sleeve (for compressor)
Electric heater			W	20 (Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.50m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 × 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item \ Model				FDC140VN
Power source				1 Phase 220-240V 50Hz / 220V 60Hz
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-14.5(Max.)]
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-16.5(Max.)]
	Sound power level	Cooling	dB(A)	73
		Heating		
	Sound pressure level	Cooling		51
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	845×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	81
Compressor type & Q'ty				RMT5126MDE2×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×1
Fan motor (Starting method)			W	86 < Direct line start >
Air flow		Cooling	m^3/min	75
		Heating		73
Shock & vibration absorber				Rubber sleeve (for compressor)
Electric heater			W	20 (Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.50m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 × 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

PFA004Z024 A

Item \ Model				FDC140VS
Power source				3 Phase 380-415V 50Hz / 380V 60Hz
Operation data	Nominal cooling capacity (range)		kW	14.0 [5.0(Min.)-14.5(Max.)]
	Nominal heating capacity (range)		kW	16.0 [4.0(Min.)-16.5(Max.)]
	Sound power level	Cooling	dB(A)	73
		Heating		
	Sound pressure level	Cooling		51
		Heating		
	Silent mode sound pressure level			—
Exterior dimensions (Height × Width × Depth)			mm	845×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	83
Compressor type & Q'ty				RMT5126MDE3×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 M-MA68
Refrigerant (Type, amount, pre-charge length)			kg	R410A 3.8kg in outdoor unit (incl. the amount for the piping of : 30m)
Heat exchanger				Straight fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×1
Fan motor (Starting method)			W	86 < Direct line start >
Air flow		Cooling	m^3/min	75
		Heating		73
Shock & vibration absorber				Rubber sleeve (for compressor)
Electric heater			W	20 (Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: ϕ15.88 (5/8")
	Connecting method			Flare piping
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.50m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 × 3pcs
IP number				IP24
Standard accessories				Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item			Model	FDC200VSA
Power source				3 Phase 380-415V 50Hz / 380V 60Hz
Operation data	Nominal cooling capacity (range)		kW	19.0 [5.2(Min.)-22.4(Max.)]
	Nominal heating capacity (range)		kW	22.4 [3.3(Min.)-25.0(Max.)]
	Sound power level	Cooling	dB(A)	72
		Heating		74
	Sound pressure level	Cooling		58
		Heating		59
	Silent mode sound pressure level			52
Exterior dimensions (Height × Width × Depth)			mm	1,300×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	115
Compressor type & Q'ty				RMT5134MDE3×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	0.9 (compressor) + 0.6 (unit) M-MA32R
Refrigerant (Type, amount, pre-charge length)			kg	R410A 5.6kg (Pre-charged up to the piping length of 30m)
Heat exchanger				M shape fin & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×2
Fan motor (Starting method)			W	86x2 < Direct line start >
Air flow		Cooling	m^3/min	135
		Heating		
Shock & vibration absorber				Rubber sleeve (for compressor)
Electric heater			W	20 (Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ9.52 (3/8")
				Gas line: I/U ϕ22.22 (7/8")
	Connecting method			Liquid line : Flare / Gas : Brazing
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.70m (Liquid piping : ϕ12.7, Gas piping ϕ25.4 or ϕ28.58), Max.40m (Liquid piping : ϕ9.52, Max.35m (Gas piping : ϕ22.22),
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 × 3pcs
IP number				IP24
Standard accessories				Connecting pipe, Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

Item \ Model				FDC250VSA
Power source				3 Phase 380-415V 50Hz / 380V 60Hz
Operation data	Nominal cooling capacity (range)		kW	24.0 [6.9(Min.)-28.0(Max.)]
	Nominal heating capacity (range)		kW	27.0 [5.5(Min.)-31.5(Max.)]
	Sound power level	Cooling	dB(A)	73
		Heating		75
	Sound pressure level	Cooling		59
		Heating		62
	Silent mode sound pressure level			54
Exterior dimensions (Height × Width × Depth)			mm	1,505×970×370
Exterior appearance (Munsell color)				Stucco white (4.2Y7.5/1.1) near equivalent
Net weight			kg	143
Compressor type & Q'ty				GTC5150NC40KF×1
Compressor motor (Starting method)			kW	Direct line start
Refrigerant oil (Amount, type)			ℓ	1.45 M-MA32R
Refrigerant (Type, amount, pre-charge length)			kg	R410A 7.2kg (Pre-charged up to the piping length of 30m)
Heat exchanger				M shape & inner grooved tubing
Refrigerant control				Electronic expansion valve
Fan type & Q'ty				Propeller fan ×2
Fan motor (Starting method)			W	86x2 < Direct line start >
Air flow		Cooling	m^3/min	143
		Heating		151
Shock & vibration absorber				Rubber sleeve (for compressor)
Electric heater			W	20 (Crank case heater)
Safety equipments				Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data	Refrigerant piping size (O.D.)		mm	Liquid line: ϕ12.7 (1/2")
				Gas line: ϕ22.22 (7/8")
	Connecting method			Liquid line : Flare / Gas : Brazing
	Attached length of piping		m	—
	Insulation for piping			Necessary (both Liquid & Gas lines)
	Refrigerant line (one way) length		m	Max.70m
	Vertical height diff. between O.U. and I.U.		m	Max.30m (Outdoor unit is higher) Max.15m (Outdoor unit is lower)
	Drain hose			Holes size ϕ20 × 3pcs
IP number				IP24
Standard accessories				Connecting pipe, Edging
Option parts				—

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO5151-T1
Heating	20˚C	—	7˚C	6˚C	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.
(4) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

PFA004Z024 A

(3) Operation chart

The V Multi is a system that allows for different models and capacities of indoor units to be connected so the individual operating characteristics of the indoor and outdoor are provided. Use the procedure shown in Item (c) to calculate the combined operating characteristics.

(a) Operating characteristic of outdoor unit

(220-240V 50Hz/220V 60Hz)

Item \ Model		FDC100VN	FDC125VN	FDC140VN
Cooling power consumption	kW	2.62/2.62	3.91/3.91	4.51/4.51
Heating power consumption		2.60/2.60	3.63/3.63	4.40/4.40
Cooling running current	A	11.7/12.3	17.3/18.2	20.4/21.4
Heating running current		11.6/12.2	16.2/16.9	19.5/20.4
Inrush current (L.R.A) <Max. running current>	A	5 <24>		

(380-415V 50Hz/380V 60Hz)

Item \ Model		FDC100VS	FDC125VS	FDC140VS
Cooling power consumption	kW	2.62/2.62	3.91/3.91	4.51/4.51
Heating power consumption		2.60/2.60	3.63/3.63	4.40/4.40
Cooling running current	A	3.8/4.0	5.5/5.9	6.5/6.9
Heating running current		3.8/4.0	5.1/5.5	6.3/7.0
Inrush current (L.R.A) <Max. running current>	A	5 <15>		

(380-415V 50Hz/380V 60Hz)

Item \ Model		FDC200VSA	FDC250VSA
Cooling power consumption	kW	7.05/7.05	8.22/8.16
Heating power consumption		7.02/7.02	7.42/7.38
Cooling running current	A	10.2/10.5	11.8/12.3
Heating running current		10.0/10.5	10.8/11.2
Inrush current (L.R.A) <Max. running current>	A	5 <20>	5 <21>

Note(1) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(b) Operating characteristic of indoor unit

(220-240V 50Hz/220V 60Hz)

Item \ Model		FDE50VG	FDE60VG	FDE71VG	FDE100VG	FDE125VG
Cooling power consumption	kW	0.05/0.05	0.08/0.08	0.08/0.08	0.13/0.13	0.13/0.13
Heating power consumption		0.05/0.05	0.08/0.08	0.08/0.08	0.13/0.13	0.13/0.13
Cooling running current	A	0.50/0.50	0.75/0.75	0.75/0.75	1.20/1.20	1.20/1.20
Heating running current		0.50/0.50	0.75/0.75	0.75/0.75	1.20/1.20	1.20/1.20

Notes(1) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"
(2) The values shown in the above table are common to both cooling and heating operations.

(c) Calculation of total operation characteristics

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

(i) 1 Phase models

1) Total power consumption

Total power consumption (kW) = Power consumption of outdoor unit + ∑ (Power consumption of indoor unit)

2) Total running current

Total running current (A) = Running current of outdoor unit + ∑ (Running current of indoor unit)

3) Total power factor

Total power factor (%) = [Total power consumption (W) / Total running current (A) × Power source] × 100

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

[Example]

(Conditions) Operation Voltage ····· Indoor unit: 220 V, 50 Hz
Outdoor unit: 220 V, 50 Hz
Operation mode ····· Cooling and Heating
Unit····· Outdoor unit: FDC140VN × 1 unit
Indoor unit: FDE71VG × 2 units

Operation characteristics of each unit (Cooling/Heating)

Item \ Model	FDC140VN	FDE71VG
Power consumption (kW)	4.51/4.40	0.08/0.08
Running current (A)	20.4/19.5	0.75/0.75

① Total power consumption (kW)

(Cooling) 4.51 + (0.08 × 2) = 4.67

(Heating) 4.40 + (0.08 × 2) = 4.56

② Total running current (A)

(Cooling) 20.4 + (0.75 × 2) = 21.9

(Heating) 19.5 + (0.75 × 2) = 21.0

③ Total power factor (%)

(Cooling) $\frac{4.67 \times 1000}{21.9 \times 220} \times 100 \fallingdotseq 97\ \%$

(Heating) $\frac{4.56 \times 1000}{21.0 \times 220} \times 100 \fallingdotseq 99\ \%$

(ii) 3 Phase models

1) Total power consumption

Total power consumption (kW) = Power consumption of outdoor unit + ∑ (Power consumption of indoor unit)

2) Total running current

Total running current (A) = Running current of outdoor unit + [∑ (Running current of indoor unit) × 1/3]

3) Total power factor

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

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

[Example]

(Conditions) Operation Voltage ····· Indoor unit: 220 V, 50 Hz
Outdoor unit: 380 V, 50 Hz
Operation mode ····· Cooling and Heating
Unit····· Outdoor unit: FDC200VSA × 1 unit
Indoor unit: FDE71VG × 1 unit, FDE125VG × 1 unit

Operation characteristics of each unit

(Cooling/Heating)

Item \ Model	FDC200VSA	FDE71VG	FDE125VG
Power consumption (kW)	7.05/7.02	0.08/0.08	0.13/0.13
Running current (A)	10.2/10.0	0.75/0.75	1.20/1.20

① Total power consumption (kW)

(Cooling) 7.05 + 0.08 + 0.13 = 7.26 (kW)

(Heating) 7.02 + 0.08 + 0.13 = 7.23 (kW)

② Total running current (A)

(Cooling) $10.2 + \left[(0.75 + 1.20) \times \frac{1}{3})\right] \fallingdotseq 10.9$ (A)

(Heating) $10.0 + \left[(0.75 + 1.20) \times \frac{1}{3})\right] \fallingdotseq 10.7$ (A)

③ Total power factor (%)

(Cooling) $\frac{7.26 \times 1000}{\sqrt{3} \times 10.9 \times 380} \times 100 \fallingdotseq 99$ %

(Heating) $\frac{7.23 \times 1000}{\sqrt{3} \times 10.7 \times 380} \times 100 \fallingdotseq 99$ %

3.2.3 EXTERIOR DIMENSIONS
(1) Indoor units ..... See page 301
(2) Outdoor units ..... See page 301
(3) Remote control (Option parts) ..... See page 305
3.2.4 ELECTRICAL WIRING
(1) Indoor units ..... See page 306
(2) Outdoor units ..... See page 306
3.2.5 NOISE LEVEL .....
(1) Indoor units ..... See page 312
(2) Outdoor units ..... See page 312
3.2.6 TEMPERATURE AND VELOCITY DISTRIBUTION ..... See page 315
3.2.7 PIPING SYSTEM ..... See page 315
3.2.8 RANGE OF USAGE & LIMITATIONS ..... See page 322
3.2.9 SELECTION CHART ..... See page 326
3.2.10 APPLICATION DATE
(1) Installation of indoor unit ..... See page 344
(2) Electric wiring work installation ..... See page 344
(3) Installation of wired remote control (Option) ..... See page 344
(4) Installation of outdoor unit
(a) Models FDC100-140VN,100-140VS ..... See page 351
(b) Models FDC200,250VSA ..... See page 359
(c) Method for connecting the accessory pipe
(Models FDC200,250VSA) ..... See page 367
(5) Instructions for branching pipe set (DIS-WA1,WB1,TA1,TB1) ..... See page 371
3.2.11 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER ..... See page 374
3.2.12 MAINTENANCE DATA ..... See page 401

4. OPTION PARTS

CONTENTS

4.1 WIRELESS KIT (RCN-E1R) 445
4.2 SIMPLE WIRED REMOTE CONROL (RCH-E3) 449
4.3 BASE HEATER KIT (CW-H-E1) 455

4.1 WIRELESS KIT (RCN-E1R)

PFA012D620 B

Notes :
Following functions of FDE indoor unit series are not able to be set with this wireless remote control (RCN-E1R).
1. Flap control system
2. 4-fan speed setting (P-Hi/Hi/Me/Lo) → 3-fan speed setting (Hi/Me/Lo)

⚠ WARNING

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

⚠ CAUTION

- Install a receiver unit where it is not exposed to direct sunrays or intense light from lighting fixtures.

① Accessories

Please make sure that you have all of the following accessories.

Remoto control holder	AAA dry cell battery (RO3)	Wood screw for holder	Wireless remote control
1	2	2	1

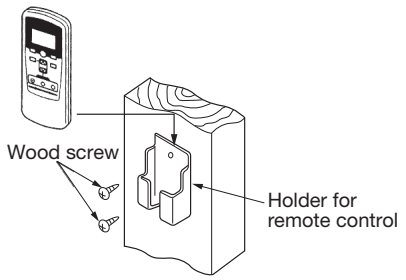
② Installation of the remote control holder

⚠CAUTION DO NOT install it on the following places.

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

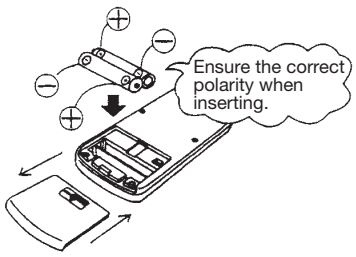
Installation tips for the remote control holder

- Adjust and keep the holder up right.
- Tighten the screw to the end to avoid scratching the remote control.
- DO NOT attach the holder on plaster wall.



How to insert batteries

① Detach the back lid.
① Insert the batteries. (two AAA batteries)
① Reattach the back lid.



③ FDE

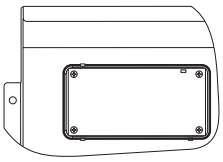
Setting on site

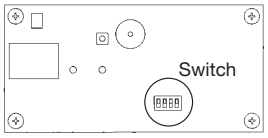
PCB on the receiver has the following switches to set the function.
Default setting is shown with ☐ mark.

SW1	Prevents interference during plural setting	ON : Normal (1ch) OFF : Customized (2ch)
SW2	Receiver master/slave setting	ON : Master OFF : Slave
SW3	Buzzer valid/Invalid	ON : Valid OFF : Invalid
SW4	Auto restart	ON : Valid OFF : Invalid

To change setting

1. Remove the front panel.
2. Remove four screws located on the back of the receiver and detach the board.
3. Change the setting by the switch on PCB.


Receiver Backside



Default settings

4. When switch 1 is turned to off position, change the wireless remote control setting.
(For the method of changing the setting, refer to Setting to avoid mixed communication on page 448)
Refer to Wireless remote control unit operation distance of ③ FDE in case of plural setting.

Master/Slave setting when using plural remote controls

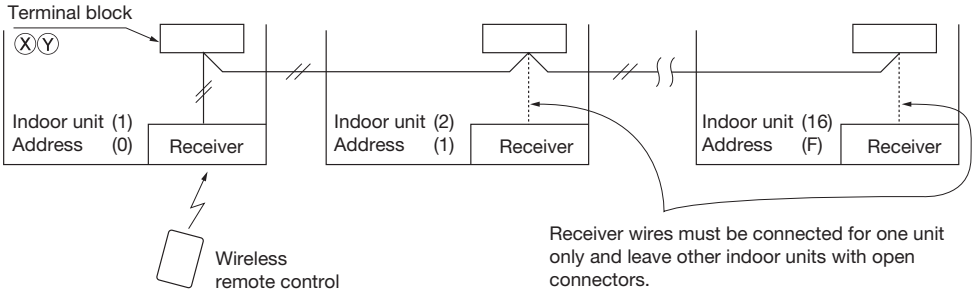
Up to two receiver or wired remote control can be installed in one indoor unit group.
When two receivers or wired remote control are used, it is necessary to change SW on the PCB to set it as slave.

Control plural indoor units with one remote control

Up to 16 indoor units can be connected.
① Connect indoor units with each other with 2-core wires. As for size, refer to the following note.
② The receiver wires must be connected only with the indoor unit that will be operated by the remote control directly.
③ Set the indoor unit address with SW2 on the indoor unit PCB from [0] to [F] so as not to duplicate.

Restrictions on the thickness and length of wire
(Maximun total extension 600m.)

Standard	Within 100m x 0.3 mm^2
	Within 200m x 0.5 mm^2
	Within 300m x 0.75 mm^2
	Within 400m x 1.25 mm^2
	Within 600m x 2.0 mm^2



※ATTENTION

In a system configured as shown above, up to two receivers are usable. If two receivers are used, it is necessary to designate one of them as a slave by setting SW2. (For the method of changing the setting, refer to Setting on site .) Since other receivers are not usable, do not couple the connectors for them. (Unless the connector is coupled for a receiver, the LED will not be able to make any indication)

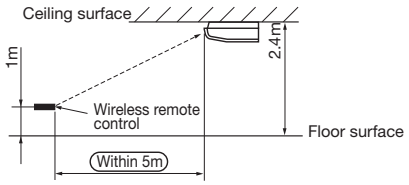
③ FDE (continued)

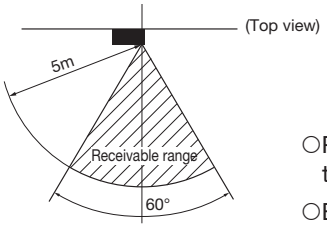
Wireless remote control operation distance

① Standard signal receiving range

[Condition]

Illuminance at the receiver area: 360 lux.
(When no lighting fixture is located within 1m of indoor unit in an ordinary office)

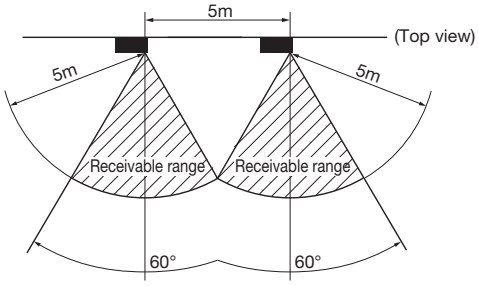




② Points for attention in connecting a plural number of indoor units

[Condition]

Illuminance at the receiver area: 360 lux.
(When no lighting fixture is located within 1m of indoor unit in an ordinary office)
When the remote control is used with the aforementioned interference-prevention setting, a minimum distance guaranteeing the prevention of unintended unit responses is 5m.



○Please operate remote control switches with the unit faced correctly toward the indoor unit's receiver section.

○Effective operation distance can vary with the luminance around the receiver and the reflection from walls of the room.

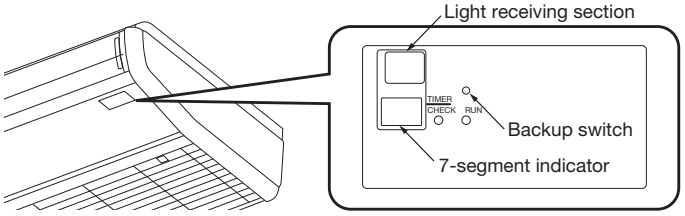
○When the receiver is exposed to intensive light such as from the direct sun or a strong light, it may become operable only from a short distance or unable to receive signals at all.

Backup button

A backup switch is provided on the receiver section of the panel surface.
When operation from the wireless remote control is not possible (due to flat batteries, a mislaid unit, a unit failure), you can use it as an emergency means. You should operate this switch manually.

(1) If pressed while the air-conditioner is in a halt, it will cause the air-conditioner to start operation in the automatic mode.
Wind speed: Hi fan, Temperature setting: 23°C, Louver: horizontal

(2) If pressed while the air-conditioner is in operation, it will stop the air-conditioner.



Cooling test run operation

- After safety confirmation, turn on the power.
- Transmit a cooling operation command with the wireless remote control, while the backup switch on the receiver is depressed.
- If the backup switch on the receiver is pressed during a test run, it will end the test run.

※If you cannot operate the unit properly during a test run, please check wiring by consulting with inspection guides.

③ FDE (continued)

How to read the two-digit display

A two-digit indicator (7-segment indicator) is provided on the receiver section.

(1) An indication will be displayed for one hour after power on.
(2) An indication appears for 3.5 seconds when a “Stop” command is sent from the wireless remote control while the air-conditioner is not running.
(3) An indication appearing in (1) or (2) above will go off as soon as the unit starts operation.
(4) When there are no error records to indicate, addresses are displayed for all of the connected units.
(5) When there are some error records remaining, the error records are displayed.
(6) Error records can be cleared by transmitting a “Stop” command from the wireless remote control, while the backup switch is depressed.

④ Remote control

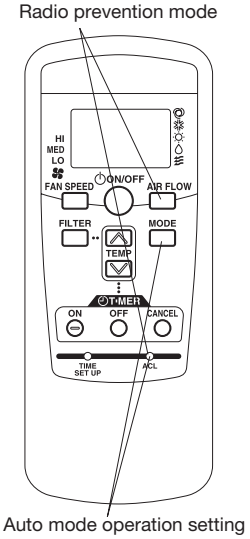
Setting to avoid mixed communication

Pressing ACL and AIR FLOW button at the same time or inserting the batteries with pressing AIR FLOW button will customize the signal.

Setting to disable the Auto mode operation

VRF system (except heat recovery 3-pipe system) cannot be operated in Auto mode.
Make sure to set the remote control for the models so as not to be able to choose Auto mode.

Pushing ACL and MODE button at the same time or inserting the batteries with pressing MODE button will make auto mode operation.



※**ATTENTION**

When the batteries are removed, the setting will return to the default setting.
Please make sure to reset it when the batteries are replaced.

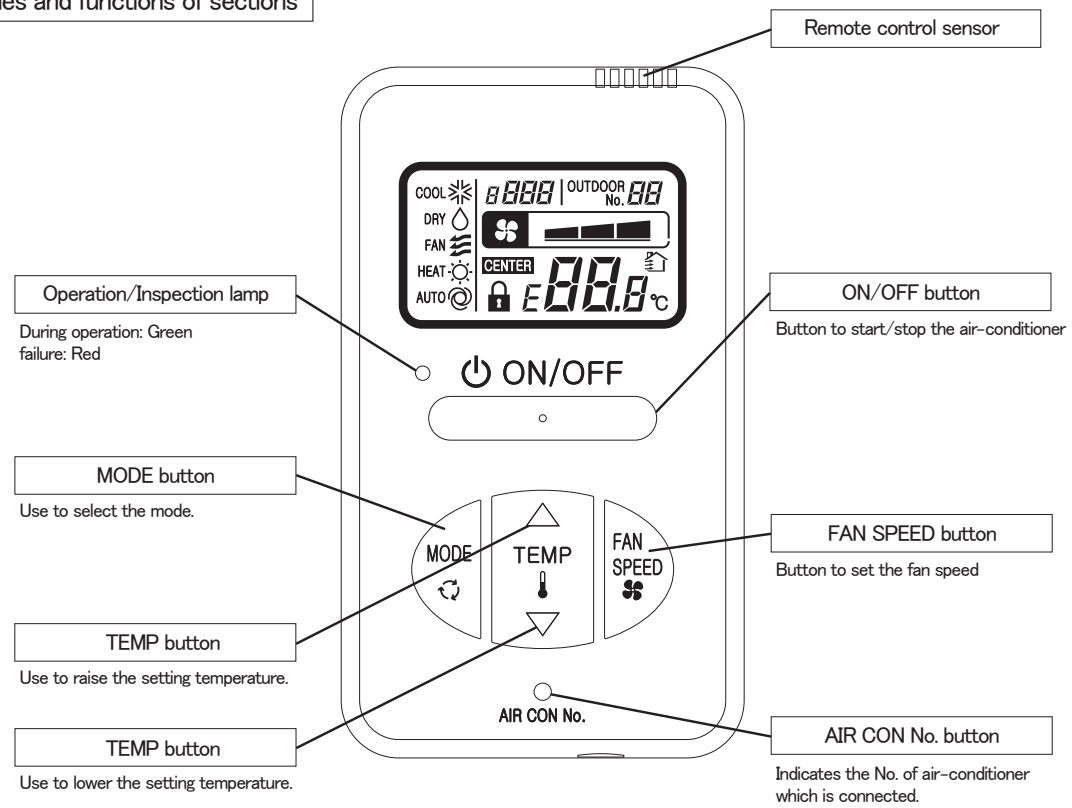
⚠**Caution**

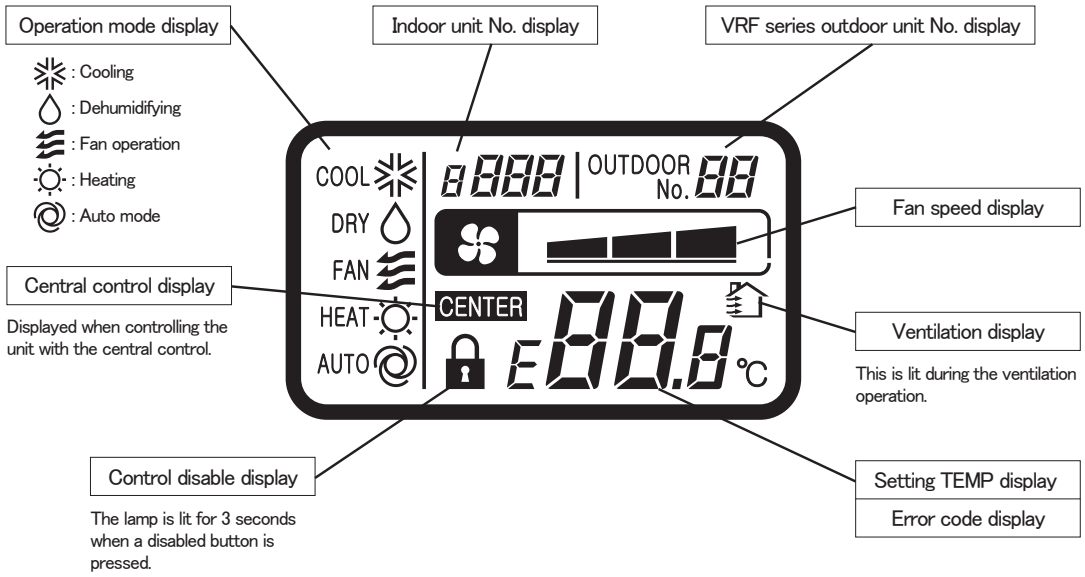
Instruct the customer to set the mentioned above when replacing the batteries.
(How to set is also mentioned in the user’s manual attached on the air-conditioner.)

4.2 SIMPLE WIRED REMOTE CONTROL (RCH-E3)

Notes:
Following functions of FDE indoor unit series are not able to be set with this simple wired remote control (RCH-E3).
1. 4-fan speed setting (PHi/Hi/Me/Lo) →3-fan speed setting (Hi/Me/Lo)

Names and functions of sections





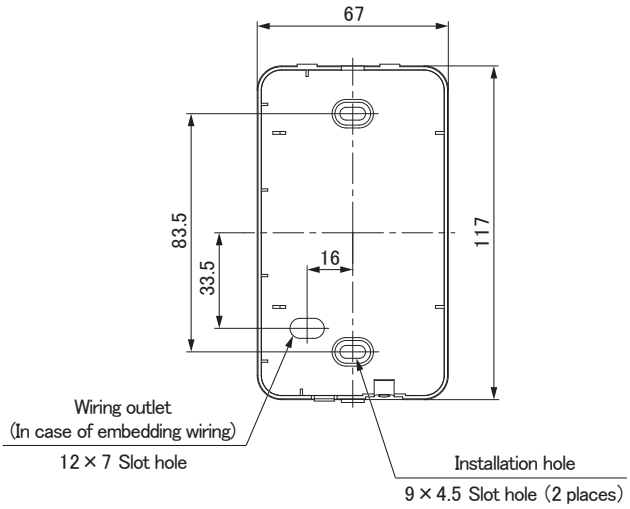
Installation of remote control

DO NOT install the remote control at the following places in order to avoid malfunction.

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

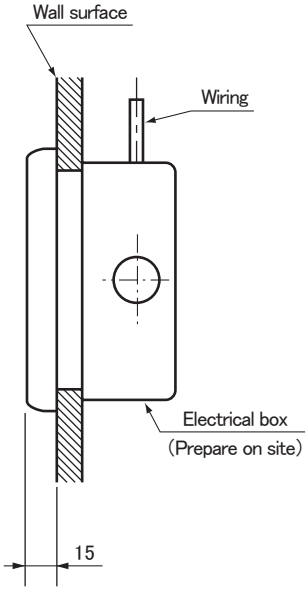
PJZ000Z272 a

Remote control installation dimensions

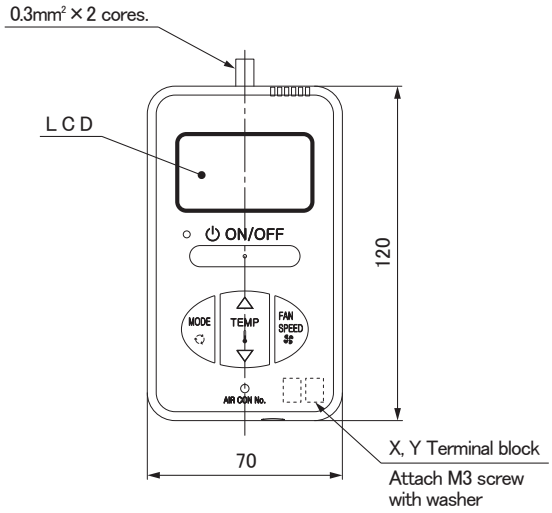


Note: Installation screw for remote control
M4 Screw (2 pieces)

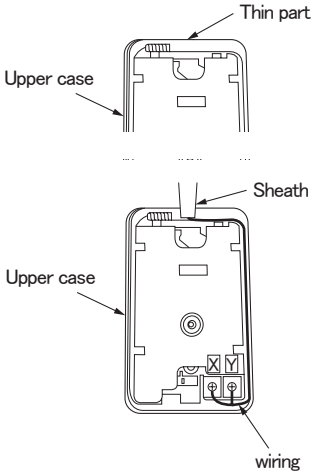
In case of embedding wiring



In case of exposing wiring

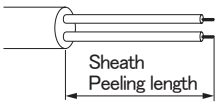


The remote control wiring can be extracted from the upper center.
After the thin part in the upper side of the remote control upper case is scraped with a nipper or knife, remove burr with a file.



The peeling length of each wiring is as follows:

X wiring : 160mm Y wiring : 150mm



Wiring specifications

(1) Wiring of remote control should use 0.3mm² × 2 core wires or cables. (on-site configuration)
(2) Maximum prolongation of remote control wiring is 600m.
If the prolongation is over 100m, change to the size below.
But, the wiring in the remote control case should be 0.3mm² (recommended) to 0.5mm².
Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section.
Be careful about contact failure.

Unit:mm

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

Adapted to **RoHS** directive

Simple Remote Control Installation Manual

PJZ012D069

Read together with indoor unit's installation manual.

⚠WARNING

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

⚠ CAUTION

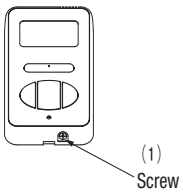
- **DO NOT install the remote control at the following places in order to avoid malfunction.**
  (1) Places exposed to direct sunlight
  (2) Places near heat devices
  (3) High humidity places
  (4) Hot surface or cold surface enough to generate condensation
  (5) Places exposed to oil mist or steam directly
  (6) Uneven surface
- **DO NOT leave the remote control without the upper case.**
  In case the upper cace needs to be detached, protect the remote control with a packaging box or bag in order to keep it away from water and dust.

Accessories	Remote control, wood screw (ϕ3.5× 16) 2 pieces
Prepare on site	Remote control cord (2 cores) (Refer to [2. Installation and wiring of remote control]) [In case of embedding cord] Electrical box, M4 screw (2 pieces) [In case of exposing cord] Cord clamp (if needed)

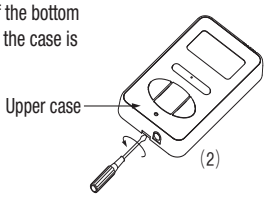
1. Installation procedure

In case of embedding cord

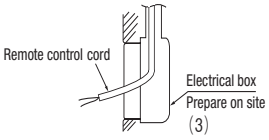
(1) Make certain to remove the screw on the bottom surface of the remote control.



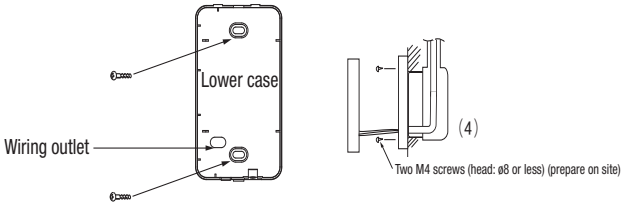
(2) Remove the upper case of the remote control.
Insert a flat-blade screwdriver to a concave portion of the bottom surface of the remote control and slightly twist it, and the case is removed.



(3) Pre-bury the electrical box and remote control cord.



(4) Prepare two M4 screws (recommended length: 12 – 16mm), and install the lower case to the electrical box. Do not use a screw whose screw head is larger than the height of the wall around the screw hole.

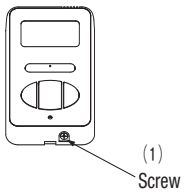


(5) Connect the remote control cord to the terminal block.
Connect the terminals (X and Y) of the remote control and the terminals (X and Y) of the indoor unit. (No polarity of X and Y)

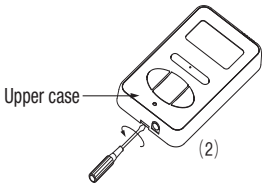
(6) Mount the upper case for restoring to its former state so as not to crimp the remote control cord, and secure with the removed screw.

In case of exposing cord

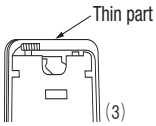
(1) Make certain to remove a screw on the bottom surface of the remote control.



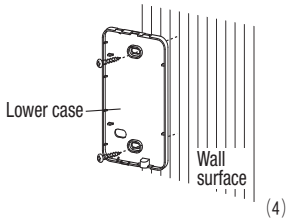
(2) Remove the upper case of the remote control.
Insert a flat-blade screwdriver to a concave portion of the bottom surface of the remote control and slightly twist it, and the case is removed.



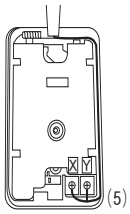
(3) The remote control cord can be extracted from the upper center.
After the thin part in the upper side of the remote control upper case is scraped with a nipper or knife, remove burr with a file.



(4) The lower case of the remote control is mounted to a flat wall with two accessory wood screws.

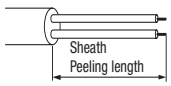


(5) Connect the remote control cord to the terminal block.
Connect the terminals (X and Y) of the remote control and the terminals (X and Y) of the indoor unit. (No polarity of X and Y)
The wiring route is as shown in the right.



The wiring in the remote control case should be 0.3 mm^2 (recommended) to 0.5 mm^2 at maximum.
Further, peel off the sheath.
The peeling length of each wiring is as follows:

X wiring : 160mm Y wiring : 150mm



(6) Mount the upper case for restoring to its former state so as not to crimp the remote control cord, and secure with the removed screw.

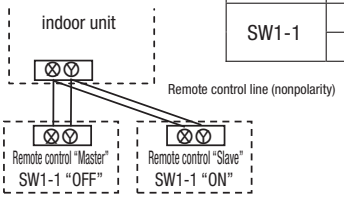
(7) In the case of exposing installation, secure the remote control cord to the wall surface with a cord clamp so as not to loosen the remote control cord.

2. Installation and wiring of remote control

(1) Wiring of remote control should use 0.3mm^2 × 2 core wires or cables. (on-site configuration)
(2) Maximum prolongation of remote control wiring is 600 m.
If the prolongation is over 100m, change to the size below.
But, the wiring in the remote control case should be 0.3mm^2 (recommended) to 0.5mm^2.
Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire
connecting section. Be careful about contact failure.
100 - 200m·····0.5mm^2× 2 cores
Under 300m·····0.75mm^2× 2 cores
Under 400m·····1.25mm^2× 2 cores
Under 600m·····2.0mm^2× 2 cores

3. Master/ slave setting when more than one remote control are used

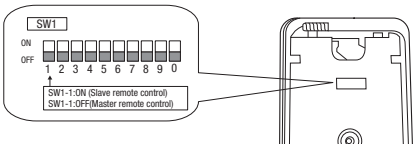
(1) Up to two remote controls can be connected to one unit (or one group) of indoor unit.



Switch	Setting	Function detail
SW1-1	ON	Slave remote control
	OFF	Master remote control

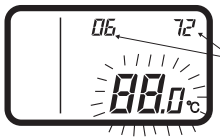
(2) Set the switch SW1-1 of the slave remote control is "Slave" (ON). The factory default is set as "Master" (OFF).

(Note) • The remote control thermistor enabled setting can be set only to the master remote control.
• Install the master remote control at the position to detect room temperature.
• The air-conditioner operation follows the last operation of the remote control in case of the master / slave setting.



4. The indication when power source is supplied

(1) At the time of turning the power source on, after the light is on for the first 2 seconds, the display becomes as shown below.
The number displayed on the upper side of LCD in the remote control is the software number, and this is not an error code.



Software number
(The number in the left is one example. Another number may be shown.)

(2) Then, "88.0 °C" blinks on the remote control until the communication between the remote control and the indoor unit is established.

(3) In the case of connecting one remote control with one unit (or one group) of indoor unit, make certain to set the master remote control (factory default).
If the slave remote control is set, a communication cannot be established.

(4) If a state where the communication between the remote control and the indoor unit cannot be established continues about for 30 minutes, "E" is displayed. Confirm the wiring of the indoor unit and the outdoor unit and master/slave setting of the remote control.

5. Confirmation method for return air temperature

Return air temperature can be confirmed by the remote control operation.

(1) **Press AIR CON NO. button for over 5 seconds.**
"88" blinks on the temperature setting indicator.
("88" blinks for approximately 2 seconds while data are read.)
↓
Then, the return air temperature is displayed.
(Example) return air temperature: "27 °C" (blinking)

(Note) For the return air temperature, in the normal case, the return air temperature of the indoor unit is displayed; however, in the case that the remote control thermistor is effective, detected temperature by the remote control thermistor is displayed.

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

[In the case that the remote thermistor is ineffective and plural indoor units are connected to one remote control]

(1) **Press AIR CON NO. button for over 5 seconds.**
indoor unit No. indicator: "U 000" (blinking)
(Among the connected indoor units, the lowest number is displayed.)

(2) **Press TEMP△ or TEMP▽ button.**
Select the indoor unit No.

(3) **Press MODE button.**
Dectder the indoor unit No.
(Example) indoor unit No. indicator: "U 000"
"88" blinks on the temperature setting indicator. (blinking for approximately 2 to 10 seconds while data are read) Then, the return air temperature is displayed. When AIR CON NO. is pressed, return to the indoor unit selection display (example, "U 000").

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

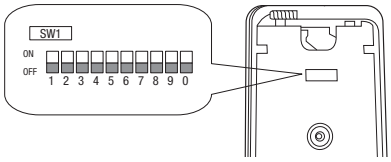
6. Function setting

Each function of the remote control and the indoor unit is automatically set to the initial setting, which is the standard use, on the occasion of connecting the remote control with the indoor unit. In the case of the standard use, the setting change is unnecessary. However, if you whould like to change the initial setting " ○ ", change the setting for only the item of the function number. **Record the setting contents and stored them.**

(1) Function setting item by switch on PCB

Switch No.	Setting	Setting detail	Initial setting
SW1-1	ON	Slave remote control	
	OFF	Master remote control	○
SW1-2	ON	Remote control thermistor enabled	
	OFF	Remote control thermistor disabled	○
SW1-3	ON	"MODE" button prohibited	
	OFF	"MODE" button enabled	○
SW1-4	ON	"ON/OFF" button prohibited	
	OFF	"ON/OFF" button enabled	○

Switch No.	Setting	Setting detail	Initial setting
SW1-5	ON	"TEMP" button prohibited	
	OFF	"TEMP" button enabled	○
SW1-6	ON	"FAN SPEED" button prohibited	※ Note 1
	OFF	"FAN SPEED" button enabled	※ Note 1
SW1-7	ON	Auto restart function enabled	
	OFF	Auto restart function disabled	○
SW1-8, 9, 0	ON	Not used	
	OFF		



- As for the slave remote control, function setting is impossible other than SW1-1.
- In the indoor unit with only one fan speed, "FAN SPEED" button cannot be enabled.

(2) Function setting item by button operation

Classification	Function No.	Function	Setting No.	Setting	Initial setting	Remarks
Remote control function	01	Indoor unit fan speed	01	Fan speed: three steps	※ Note 1	The fan speed is three steps, ❖ ■■■ - ❖ ■■ - ❖ ■ .
			02	Fan speed: two steps (Hi-Lo)	※ Note 1	The fan speed is two steps, ❖ ■■■ - ❖ ■ .
			03	Fan speed: two steps (Hi-Me)		The fan speed is two steps, ❖ ■■■ - ❖ ■■ .
			04	Fan: one step	※ Note 1	The fan speed is fixed to one step.
	03	Remote control thermistor at the time of cooling	01	Remote control thermistor: no offset	○	
			02	Remote control thermistor: +3.0 °C		At the time of cooling, in the case of remote control thermistor enabled, offset temperature at +3.0°C.
			03	Remote control thermistor: +2.0 °C		At the time of cooling, in the case of remote control thermistor enabled, offset temperature at +2.0°C.
			04	Remote control thermistor: +1.0 °C		At the time of cooling, in the case of remote control thermistor enabled, offset temperature at +1.0°C.
			05	Remote control thermistor: -1.0 °C		At the time of cooling, in the case of remote control thermistor enabled, offset temperature at -1.0°C.
			06	Remote control thermistor: -2.0 °C		At the time of cooling, in the case of remote control thermistor enabled, offset temperature at -2.0°C.
			07	Remote control thermistor: -3.0 °C		At the time of cooling, in the case of remote control thermistor enabled, offsett temperature at -3.0°C.
	04	Remote control thermistor at the time of heating	01	Remote control thermistor: no offset	○	
			02	Remote control thermistor: +3.0 °C		At the time of heating, in the case of remote control thermistor enabled, offset temperature at +3.0°C.
			03	Remote control thermistor: +2.0 °C		At the time of heating, in the case of remote control thermistor enabled, offset temperature at +2.0°C.
			04	Remote control thermistor: +1.0 °C		At the time of heating, in the case of remote control thermistor enabled, offset temperature at +1.0°C.
			05	Remote control thermistor: -1.0 °C		At the time of heating, in the case of remote control thermistor enabled, offset temperature at -1.0°C.
			06	Remote control thermistor: -2.0 °C		At the time of heating, in the case of remote control thermistor enabled, offset temperature at -2.0°C.
			07	Remote control thermistor: -3.0 °C		At the time of heating, in the case of remote control thermistor enabled, offset temperature at -3.0°C.
	05	Ventilation setting	01	No ventilator connection	○	
			02	Ventilator links air-conditioner		In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), the operation of ventilation device is linked with the operation of indoor unit.
	06	"Auto" operation setting	01	"Auto" operation enabled	※ Note 1	
			02	"Auto" operation disabled	※ Note 1	"Auto" operation disabled
Indoor unit function	07	Operation permission/ prohibition	01	Disabled	○	
			02	Enabled		Operation permission/prohibition controller is enabled.
	08	External input	01	Level input	○	
			02	Pulse input		
	09	Fan speed setting	01	Standard	Note2	
			02	High speed 1	Note2	
			03	High speed 2	Note2	
	10	Fan remaining operation at the time of cooling	01	No remaining operation	○	After cooling stopped, no fan remaining operation
			02	0.5 hours		After cooling stopped, fan remaining operation for 0.5 hours
			03	1 hour		After cooling stopped, fan remaining operation for 1 hour
			04	6 hours		After cooling stopped, fan remaining operation for 6 hours
	11	Fan remaining operation at the time of heating	01	No remaining operation	○	After heating stopped or after heating thermostat OFF, no fan remaining operation
			02	0.5 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 0.5 hours
			03	2 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 2 hours
			04	6 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 6 hours
	12	Setting temperature offset at the time of heating	01	No offset	○	
			02	Setting temperature offset + 3.0 °C		The setting temperature at the time of heating is offset by +3.0 °C.
			03	Setting temperature offset + 2.0 °C		The setting temperature at the time of heating is offset by +2.0 °C.
			04	Setting temperature offset + 1.0 °C		The setting temperature at the time of heating is offset by +1.0 °C.
	13	Heating fan controller	01	Low fan speed	※ Note 1	At the time of heating thermostat OFF, operate with low fan speed.
			02	Setting fan speed		At the time of heating thermostat OFF, operate with the setting fan speed.
			03	Intermittent operation	※ Note 1	At the time of heatingr thermostat OFF, intermittently operate.
			04	Fan off		At the time of heating thermostat OFF, a fan will be stopped. When the remote control thermistor is enabled, automatically set to "Fan off". Do not set at the time of the indoor unit thermistor.
	14	Return air temperature offset	01	No offset	○	
			02	Return air temperature offset +2.0 °C		Offset the return air temperature of the indoor unit by +2.0 °C.
			03	Return air temperature offset +1.5 °C		Offset the return air temperature of the indoor unit by +1.5 °C.
			04	Return air temperature offset +1.0 °C		Offset the return air temperature of the indoor unit by +1.0 °C.
			05	Return air temperature offset -1.0 °C		Offset the return air temperature of the indoor unit by -1.0 °C.
			06	Return air temperature offset -1.5 °C		Offset the return air temperature of the indoor unit by -1.5 °C.
			07	Return air temperature offset -2.0 °C		Offset the return air temperature of the indoor unit by -2.0 °C.

Note 1: The symbol " ※ " in the initial setting varies depending upon the indoor unit and the outdoor unit to be connected, and this is automatically determined as follows:

Swith No. Function No.	Function	Setting	Product model
SW1-6	"FAN SPEED" button	"FAN SPEED" button prohibited	Product model whose indoor fan speed is only one step
		"FAN SPEED" button enabled	Product model whose indoor fan speed is two steps or three steps
Remote control function 01	Indoor unit fan speed	Fan speed: three steps	Product model whose indoor unit fan speed is three steps
		Fan speed: two steps (Hi-Lo)	Product model whose indoor unit fan speed is two steps
		Fan speed: two steps (Hi-Me)	
		Fan: one step	Product model whose indoor unit fan speed is only one step
Remote control function 06	"Auto" operation setting	"Auto" operation enabled	Product model where "Auto" mode is selectable
		"Auto" operation disabled	Product model without "Auto" mode
Indoor unit function 13	Heating fan control	Low fan speed	Product model except FDUS
		Intermittent operation	FDUS

Note 2: Fan speed of "High speed" setting

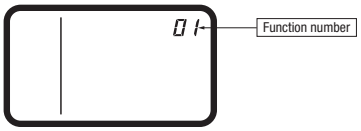
Fan speed setting	Indoor unit fan speed setting		
	❖ ■■■ - ❖ ■■ - ❖ ■	❖ ■■■ - ❖ ■	❖ ■■■ - ❖ ■■
Standard	Hi — Mid — Lo	Hi — Lo	Hi — Mid
High speed 1・2	UHi — Hi — Mid	UHi — Mid	UHi — Hi

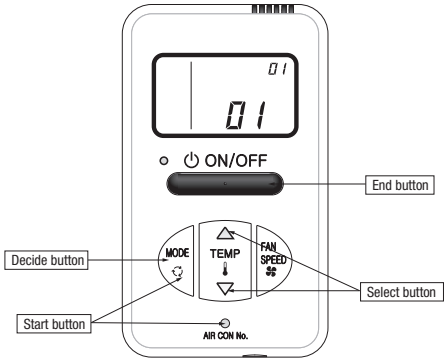
Initial setting of some indoor unit is "High speed".

Note 3: As for plural indoor unit, set indoor functions to each master and slave indoor unit.
But only master indoor unit is received the setting change of indoor unit function "07 Operation permission/ prohibition" and "08 External input".

7. How to set functions by button operation

(1) **Stop air-conditioning, and simultaneously press AIR CON NO. and MODE buttons at the same time for over three seconds.**
The function number "01" blinks in the upper right.

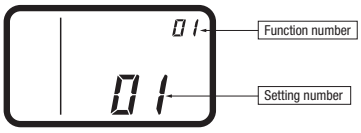




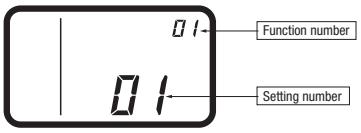
(2) **Press TEMP△ or TEMP▽ button.**
Select the function number.

(3) **Press MODE button.**
Decide the function number.

(4) **[In the case of selecting the remote control function (01-06)]**
① The current setting number of the selected function number blinks
(Example)
Function number: "01" (lighting)
Setting number: "01" (blinking)

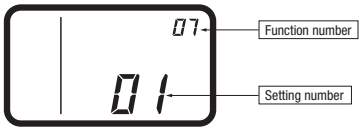


② **Press TEMP△ or TEMP▽ button.**
Select the setting number.
③ **Press MODE button.**
The setting is completed.
Light is on for approximately 3 to 20 seconds while data of the decided function No. and setting No. is transmitted.
(Example)
Function number: "01" (lighting for 3 to 20 seconds)
Setting number: "01" (lighting for 3 to 20 seconds)



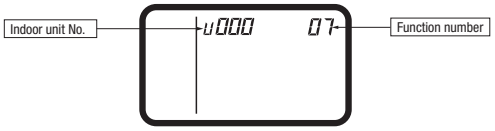
Then, the screen goes back to the function number blinking indication (1), if the setting is sequentially conducted, continue with the same procedures. If the setting is finished, proceed to (5).

[In the case of selecting the indoor unit function (07-14)]
① **"88" blinks on the temperature setting indicators.**
(blinking for approximately 2 to 10 seconds while data is read)
↓
After, that, the current setting number of the selected function number blinks.
(Example)
Function number: "07" (lighting)
Setting number: "01" (blinking)



Proceed to ②.

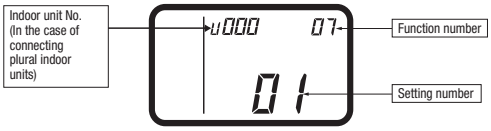
[Note]
a. In the case of connecting one remote control to plural indoor units, the display will be as follows:
Indoor unit No. display: "U 000" (blinking)
(Display the lowest number among the connected indoor units.)



b. Press TEMP△ or TEMP▽ button.
Select the indoor unit No. to be set.
If "U ALL" is selected, the same setting can be set to all units.
c. Press MODE button.
Decide the indoor unit No.
"88" blinks on the temperature setting indicators. (blinking for 2 to 10 seconds while data are read)
When AIR CON NO. button is pressed, go back to the indoor unit selection display (for example, "U 000" blinking).

② **Press TEMP△ or TEMP▽ button.**
Select the setting number

③ **Press MODE button.**
The setting is completed.
Light is on for approximately 3 to 20 seconds while data of the decided function No. and setting No. is transmitted.
(Example)
Indoor unit No.: "U 000" (lighting for 3 to 20 seconds)
Function number: "07" (lighting for 3 to 20 seconds)
Setting number: "01" (lighting for 3 to 20 seconds)



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

(5) **Press ON/OFF button.**
The setting is completed.

- Even if ON/OFF button is pressed during setting, the setting is ended. However, any details where the setting has not been completed will be ineffective.
- The setting contents are stored in the controller, and even if the power failure occur, this will not be lost.

[Confirmation method for current setting]
According to the operation, the "setting number" displayed first after selecting "function number" and pressing MODE button is the currently set content.
(However, in the case of selecting "U ALL" (all units), the setting number of the lowest number among the indoor units is displayed.)

4.3 BASE HEATER KIT (CW-H-E1)

PCZ012D007A

Model Name: CW-H-E1

⚠ WARNING

- Follow the instruction and installation manual for outdoor unit when installing the heater.
- This heater must be installed by authorized personnel.
- Turn off the power source when the kit is installed.
- Failure to follow the above will result in serious accident like electrical shock or fire.

⚠ CAUTION

- Follow the law or regulation of the country where it is installed.
- Do not alter the heater.
- Lay down the heater so that the edge of the sheet metal does not damage the heater.
- Bending radius must be bigger than 25mm.
- Do not use the heater near flammable substances.
- Be sure to check the electrical insulation before use.
- Be sure to check the drain is not trapped by the heater.
- Do not leave refrigerant oil on the base.

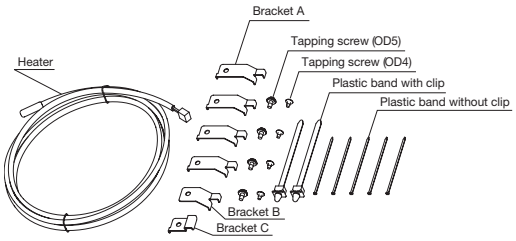
AREAS TO BE APPLIED

This kit is to be used in an area where the lowest temperature drops below zero.

⚠Caution: In case the heater is not applied on the unit which is installed in an area mentioned above, it may be regarded as installation failure and warranty may not be given.

Components

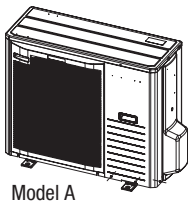
- Heater : 1pc
- Bracket A : 4pcs
- Bracket B : 1pcs
- Bracket C : 1pcs
- Tapping screw (OD5) : 4pcs
- Tapping screw (OD4) : 4pcs
- Plastic band with clip : 2pcs
- Plastic band : 5pcs



Applicable model

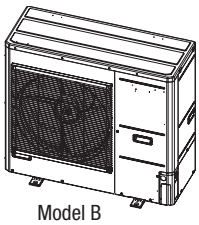
This heater kit is applicable for 3 different models.

<Model A>
Single fan with plastic fan guard model



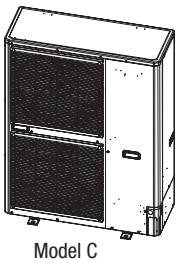
Model A

<Model B>
Single fan model



Model B

<Model C>
Double fan model

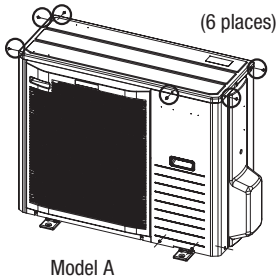


Model C

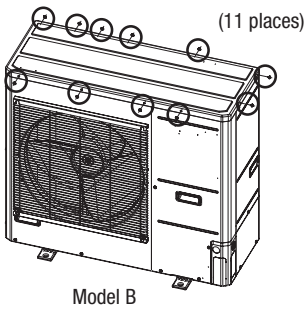
Installation procedure

Step 1

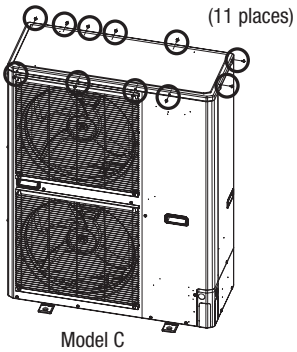
1. Remove the top panel of the outdoor unit



Model A

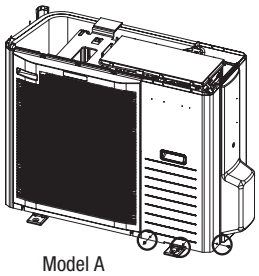


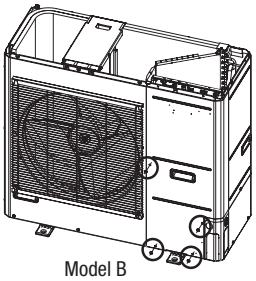
Model B

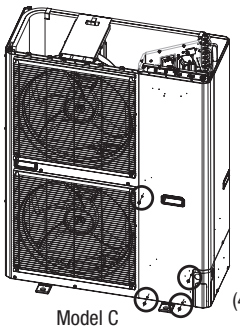


Model C

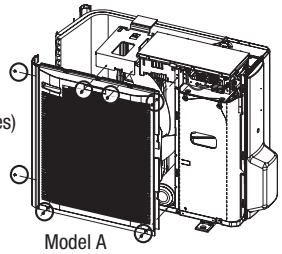
Step 2 2. Remove the service panel

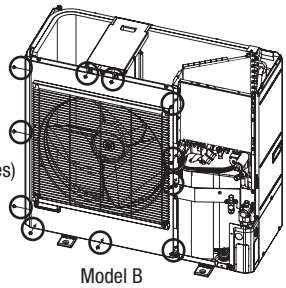

Model A (3 places)

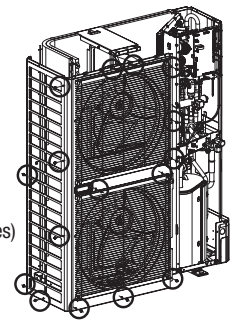

Model B (4 places)


Model C (4 places)

Step 3 3. Remove the front panel
Pull the panel straightforward so that the panel doesn't touch the fan blade.

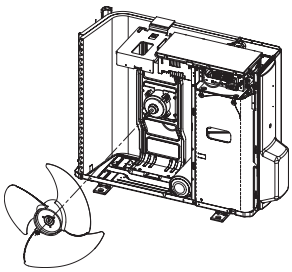

(7 places) Model A

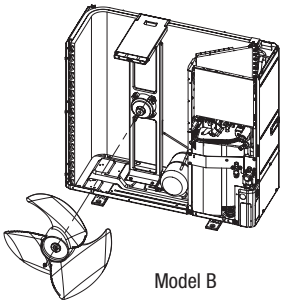

(11 places) Model B

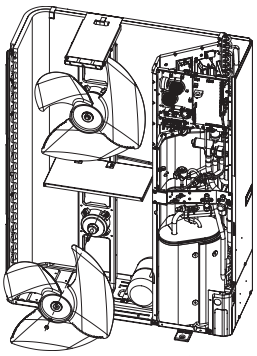

(16 places) Model C

Step 4 4. Remove the fan blade if necessary.

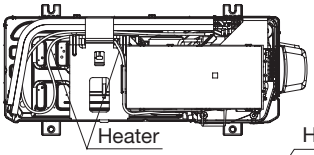
<Note>
Do not rotate the axis of fan motor when removing the fan blade.
It may cause malfunction of the fan motor.

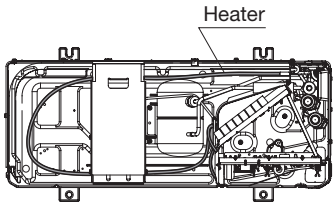

Model A

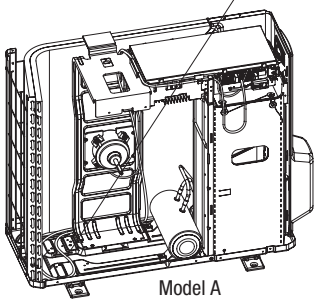

Model B


Model C

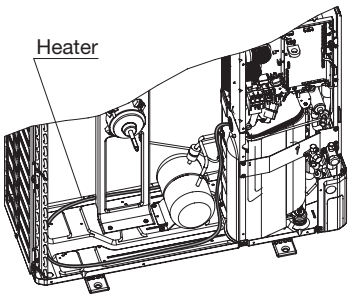
Step 5 5. Lay down the drain pan heater on the base.
For model A, put the cables rear the fan motor bracket.







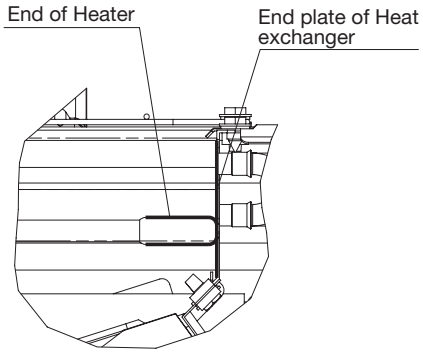
Model A



Model B, C

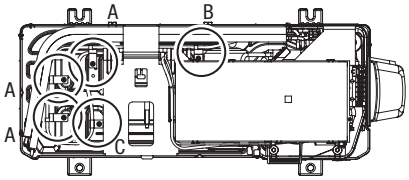
Step 6

6. Put the heater underneath the heat exchanger and align the end of heater with the end plate of heat exchanger.

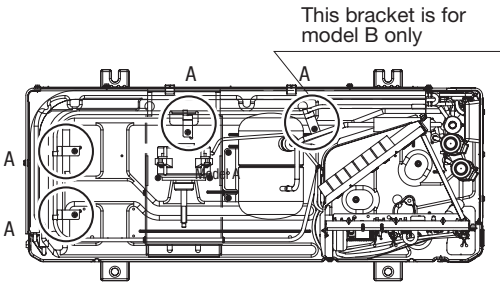


Step 7

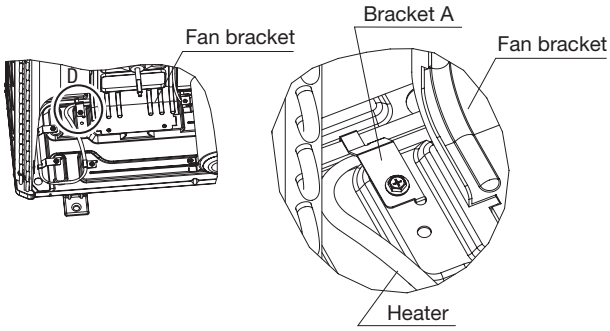
7. Fix the heater with brackets.

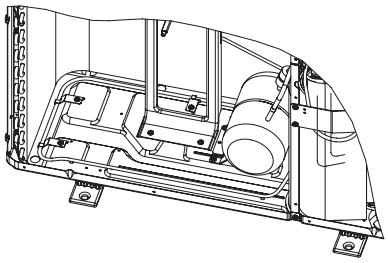


For model A, use 3 pcs of bracket A, 1pc of bracket B and C. Fix bracket A and C with the attached screw (OD4), and fix bracket B with the removed screw which is fastened at the same place.



For model B and C, fix bracket A with the attached screw (OD5).





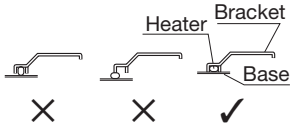
Model A | Detail view D | Model B, C

<Note for model A>

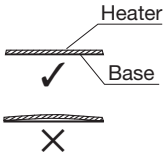
1) Put the end of heating part just after the bracket C
2) Fix the incoming and out going cable with one bracket A on the left of fan bracket as figure shows.

<Note>

1) Fix the heater so that the bracket doesn't pinch the heater as figure shows.



2) Place the heater so as to touch the base completely.

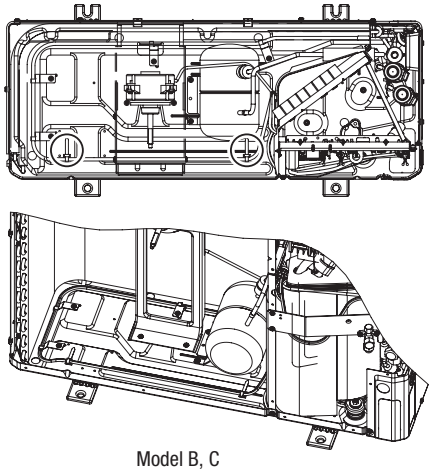


3) In bending position, twist the heater to make it easier to bend, and get back to be able to fix it with bracket.

4) Be careful not to be injured by aluminum fin when fixing the heater with screw.

Step 8

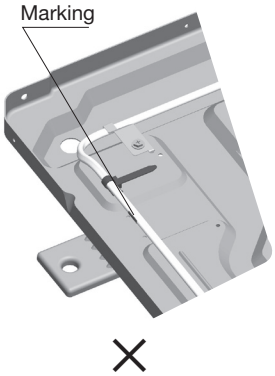
8. Insert the plastic band with clip on the designated place (2 places), and fix the heater.(Model B,C only)



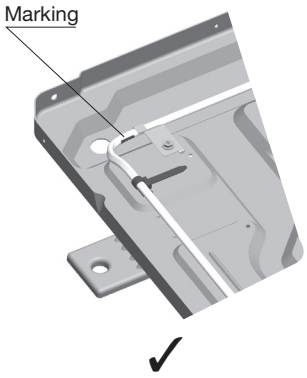
Model B, C

<Note>

1) Do not fasten the heating part with the plastic band.
   There is a marking on the end of heating part.



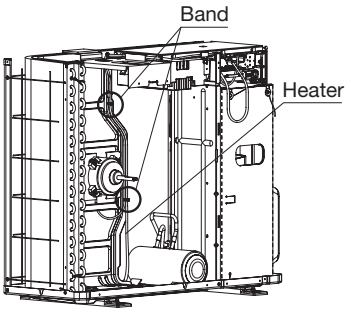
2) When the heater is laid down correctly, the end of heating part comes to the corner of the base.



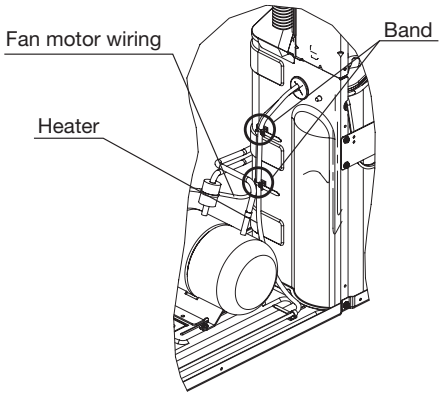
Step 9

9. Lay down the wiring on the same route of fan motor wiring, and fix the wire with attached plastic band at the same place where the fan motor wiring is banded.

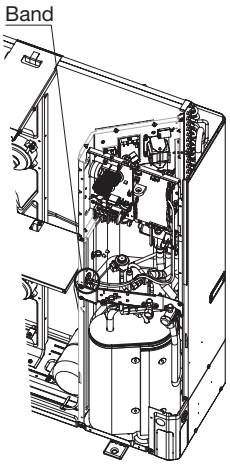
Model A

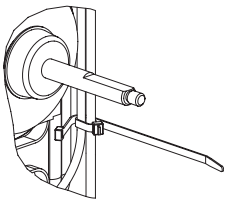


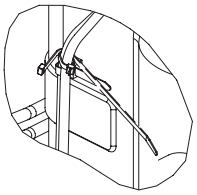
Model B

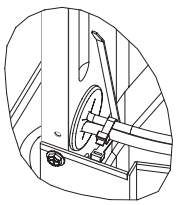


Model C









<Note>

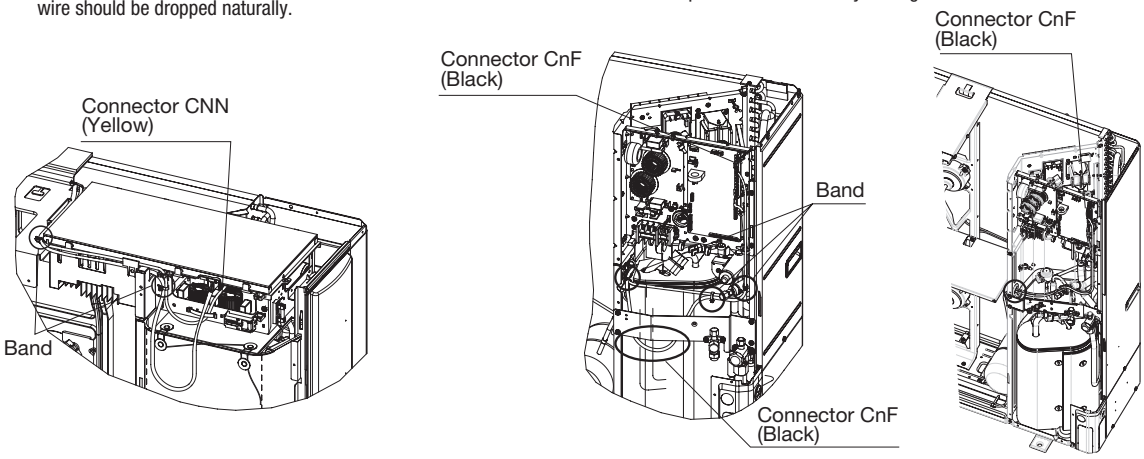
Fan motor wiring is banded on the bracket so that it doesn't loosen.
Do not loose the band for the motor wiring to band the heater wire together but use the attached plastic band.

Step 10

10.Insert the connector to the port (Model A: CNN, Model B,C:CNF) on the PCB, and fix the wire with bands. Excess part of the wire should be dropped naturally.

<Note>

Be sure to cut the excess part of plastic band.
It may cause abnormal noise when hit by fan blade or misassembling of panels.
Do not bundle excess part of the wire. It may damage the heater.



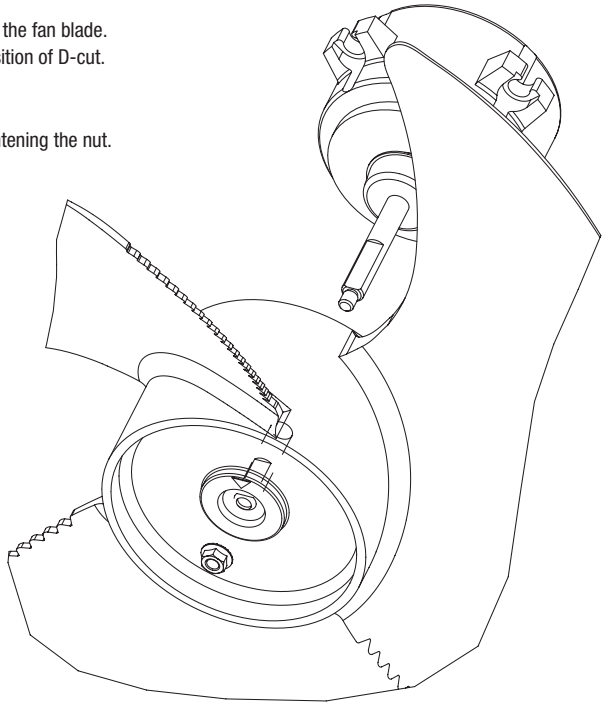
Model A　　Model B　　Model C

Step 11

11. Reassemble the fan blade.
Take care to align the D-cut of motor shaft and the fan blade.
▽ mark on the center of the fan shows the position of D-cut.

<Note>

1. Tightening torque of the nut is 4.0-4.9 N·m.
2. Do not rotate the axis of fan motor when tightening the nut.
It may cause malfunction of the fan motor.



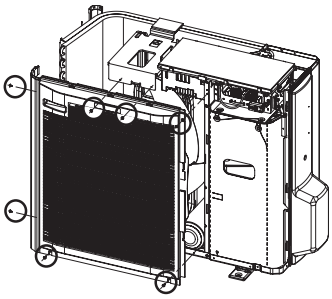
<Note>

- This heater should have bending radius of at least 25mm including non-heating part. Do not bundle the excess part of the wire. It may cause disconnection of the heater or insufficient capacity.
- Be sure to prevent the heater from touching any refrigerant piping.
Especially, pay close attention not to make it touch with pipes which are close to the wiring route such as suction pipe, check valve and check joint.

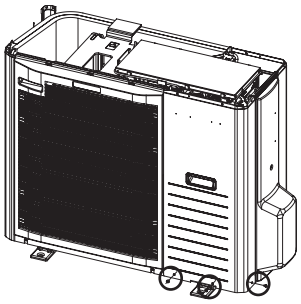
Step 12

12. Reassemble the panels.

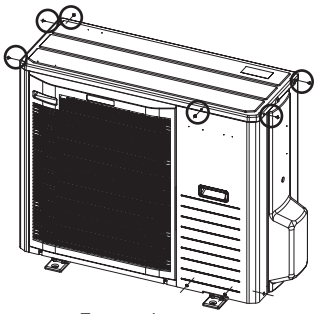
[Model A]



Front panel

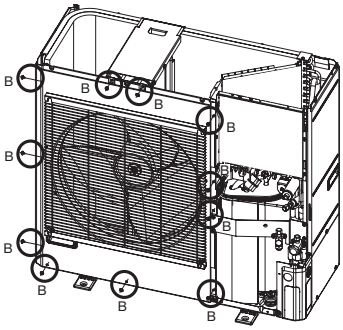


Service panel

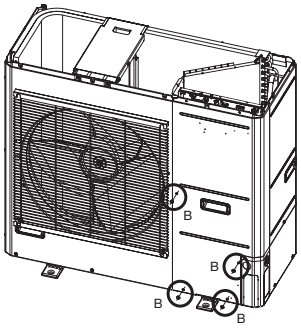


Top panel

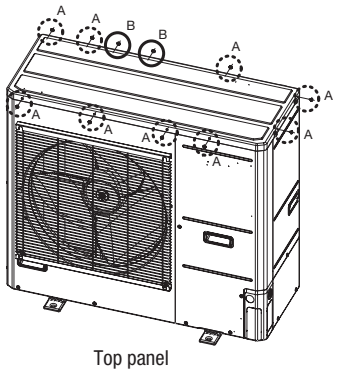
[Model B]



Front panel

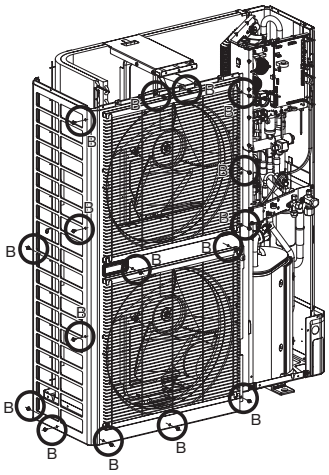


Service panel

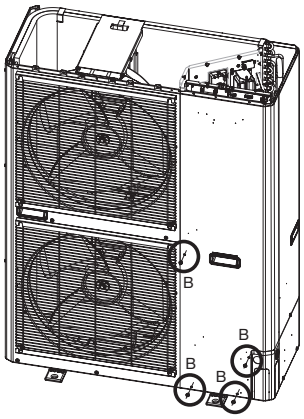


Top panel

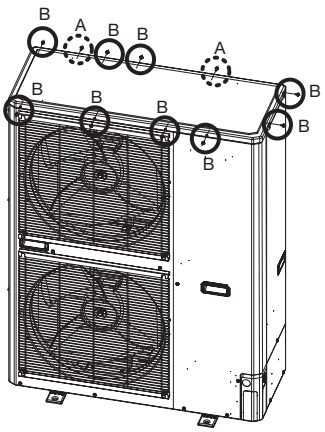
[Model C]



Front panel



Service panel

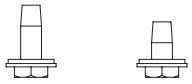


Top panel

<Note>

1) When reassembling the service panel, take care not to damage the front panel with the edge.

2) Top panel of model B and model C is fixed with two different screws.
Be sure to use correct screw as figure shows.



A **B**

INVERTER PACKAGED AIR-CONDITIONERS

MITSUBISHI HEAVY INDUSTRIES, LTD.

Air-Conditioning & Refrigeration Division
16-5, Konan 2-chome, Minato-ku, Tokyo, 108-8215 Japan
http://www.mhi.co.jp

Because of our policy of continuous improvement, we reserve the right to make changes in all specifications without notice.
© Copyright MITSUBISHI HEAVY INDUSTRIES, LTD.