



## DATA BOOK

### INVERTER PACKAGED AIR-CONDITIONERS

Wi-Fi model

(Split system, air to air heat pump type)

#### HYPER INVERTER WALL MOUNTED TYPE

Single type  
SRK100VNXWZRF  
100VSXWZRF

#### MICRO INVERTER WALL MOUNTED TYPE

Single type	Twin type
SRK100VNAWZRF	SRK200VSAWPZRF
100VSAWZRF	

#### STANDARD INVERTER WALL MOUNTED TYPE

Single type  
SRK100VNPWZRF

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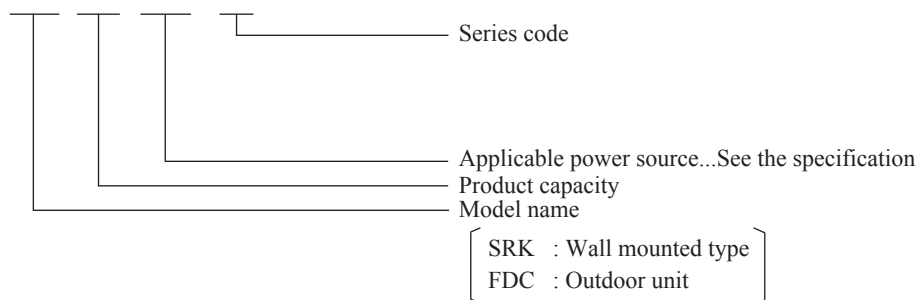
# 1. HYPER INVERTER PACKAGED AIR-CONDITIONERS

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### ■ How to read the model name

Example: SRK 100 VNXW ZRF



# 1.1 SPECIFICATIONS

Item			Model	SRK100VNXWZR	
				Indoor unit <b>SRK100ZR-WF</b>	Outdoor unit <b>FDC100VNX-W</b>
Power source				1 Phase 220-240V 50Hz / 220V 60Hz	
Operation data	Nominal cooling capacity (range)		kW	10.0 [ 3.5(Min.) - 11.2(Max.)]	
	Nominal heating capacity (range)		kW	11.2 [ 2.7(Min.) - 12.5(Max.)]	
	Power consumption	Cooling	kW	2.74	
		Heating		3.04	
	Max power consumption			7.10	
	Running current	Cooling	A	12.1 / 12.7	
		Heating		13.3 / 13.9	
	Inrush current, max current			5 , 25	
	Power factor	Cooling	%	98	
		Heating		99	
	EER	Cooling		3.65	
	COP	Heating		3.69	
	Sound power level	Cooling	dB(A)	63	
		Heating		67	
Sound pressure level	Cooling	dB(A)	Hi : 48 Me : 45 Lo : 40 ULo : 27		
	Heating		Hi : 48 Me : 43 Lo : 38 ULo : 30		
Silent mode sound pressure level	Cooling	dB(A)	-		
	Heating		49 / 48 (Normal / Silent) 48 / 48 (Normal / Silent)		
Exterior dimensions (Height x Width x Depth)			mm	339 x 1197 x 262	
Exterior appearance ( Munsell color ) ( RAL color )				Fine snow ( 8.0Y 9.3/0.1 ) near equivalent (RAL 9003) near equivalent	
Stucco white ( 4.2Y7.5/1.1 ) near equivalent (RAL 7044) near equivalent					
Net weight			kg	16.5	
Compressor type & Q'ty				-	
Compressor motor (Starting method)			kW	-	
Refrigerant oil (Amount, type)			L	-	
Refrigerant (Type, amount, pre-charge length)			kg	R32 4.0 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				Tangential fan x 1	
Propeller fan x2					
Fan motor (Starting method)			W	56 x 1 < Direct line start >	
86x2 < Direct line start >					
Air flow	Cooling	m³/min	Hi : 24.5 Me : 21.3 Lo : 17.6 ULo : 10.4		
	Heating		Hi : 27.5 Me : 23.2 Lo : 19.1 ULo : 13.6		
Available external static pressure			Pa	0	
Outside air intake				Not possible	
Air filter, Quality / Quantity				Polypropylene net (Washable) x 2	
Shock & vibration absorber				Rubber sleeve(for fan motor)	
Rubber sleeve(for fan motor & compressor )					
Electric heater			W	-	
20 (Crank case heater)					
Operation control	Remote control			(Option) Wired : RC-EX3A, RC-E5 , RCH-E3 Interface kit : SC-BIKN2-E	
	Room temperature control			Wireless LAN connecting (Cannot be used at the same time interface kit)	
	Operation display			Thermostat by electronics	
RUN : Green, TIMER : Yellow, HI POWER : Green, 3D AUTO : Green					
Safety equipments				Overload protection for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection	
Installation data	Refrigerant piping size (O.D.)	Liquid line	mm	I/U φ 9.52 (3/8") Pipe φ 9.52(3/8")x0.8 O/U φ 9.52 (3/8")	
		Gas line		φ 15.88 (5/8") Pipe φ 15.88(5/8")x1.0 φ 15.88 (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	Min.3, Max.100	
Vertical height diff. between O/U and I/U		m	Max.50(Outdoor unit is higher)		
Max.15(Outdoor unit is lower)					
Drain hose			Hose connectable with VP16		
Hole size φ 20 x 3 pcs.					
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				φ 1.6mm x 3 cores + earth cable / Terminal block(Screw fixing type)	
IP number				IPX0	
Standard accessories				Mounting kit, Clean filter	
Option parts				-	
Notes (1) The data are measured at the following conditions.				The pipe length is 7.5m.	
Operation	Cooling	Indoor air temperature	Outdoor air temperature	Standards	
		DB		WB	DB
	27°C	19°C	35°C	24°C	ISO5151-T1
Heating	20°C	-	7°C	6°C	ISO5151-H1

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

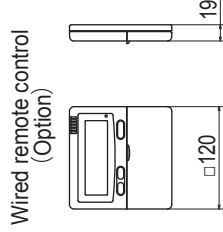
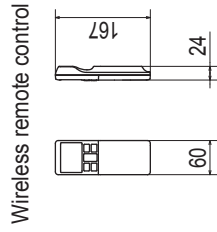
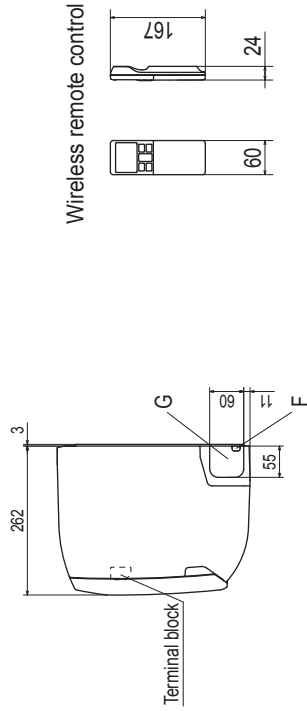
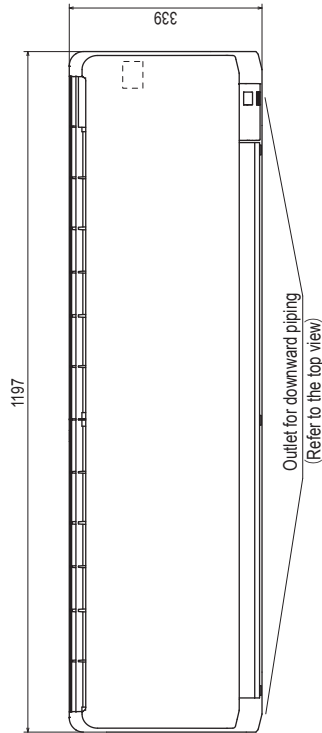
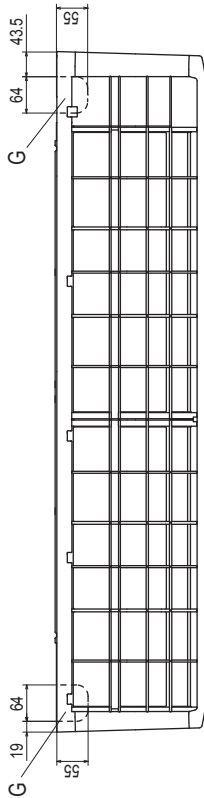
		Model		SRK100VSWZRF			
Item				Indoor unit	Outdoor unit		
				SRK100ZR-WF	FDC100VSX-W		
Power source				3 Phase 380-415V 50Hz / 380V 60Hz			
Operation data	Nominal cooling capacity (range)	kW		10.0 [ 3.5(Min.) - 11.2(Max.)]			
	Nominal heating capacity (range)	kW		11.2 [ 2.7(Min.) - 16.0(Max.)]			
	Power consumption	Cooling	kW		2.74		
		Heating	kW		3.04		
	Max power consumption			8.90			
	Running current	Cooling	A		4.7 / 4.9		
		Heating	A		5.1 / 5.4		
	Inrush current, max current			5 , 14			
	Power factor	Cooling	%		85		
		Heating	%		86		
	EER	Cooling				3.65	
	COP	Heating				3.69	
	Sound power level	Cooling	dB(A)		63		
		Heating	dB(A)		67		
Sound pressure level	Cooling	dB(A)		Hi : 48 Me : 45 Lo : 40 ULo : 27			
	Heating	dB(A)		Hi : 48 Me : 43 Lo : 38 ULo : 30			
Silent mode sound pressure level	Cooling			49 / 48 (Normal / Silent)			
	Heating			48 / 48 (Normal / Silent)			
Exterior dimensions (Height x Width x Depth)	mm		339 x 1197 x 262		1300x970x370		
Exterior appearance (Munsell color) (RAL color)			Fine snow ( 8.0Y 9.3/0.1 ) near equivalent (RAL 9003) near equivalent		Stucco white ( 4.2Y7.5/1.1 ) near equivalent (RAL 7044) near equivalent		
Net weight	kg		16.5		99		
Compressor type & Q'ty			-		RMT5134SWP4x1		
Compressor motor (Starting method)	kW		-		Direct line start		
Refrigerant oil (Amount, type)	L		-		0.9 (M-MB75)		
Refrigerant (Type, amount, pre-charge length)	kg		R32 4.0 in outdoor unit (Incl. the amount for the piping of 30m)				
Heat exchanger			Louver fins & inner grooved tubing		M shape fin & inner grooved tubing		
Refrigerant control			Electronic expansion valve				
Fan type & Q'ty			Tangential fan x 1		Propeller fan x2		
Fan motor (Starting method)	W		56 x 1 < Direct line start >		86x 2 < Direct line start >		
Air flow	Cooling	m³/min		Hi : 24.5 Me : 21.3 Lo : 17.6 ULo : 10.4			
	Heating	m³/min		Hi : 27.5 Me : 23.2 Lo : 19.1 ULo : 13.6			
Available external static pressure	Pa		0		0		
Outside air intake			Not possible				
Air filter, Quality / Quantity			Polypropylene net (Washable) x 2				
Shock & vibration absorber			Rubber sleeve(for fan motor)		Rubber sleeve(for fan motor & compressor )		
Electric heater	W		-		20 (Crank case heater)		
Operation control	Remote control			(Option) Wired : RC-EX3A, RC-E5 , RCH-E3 Interface kit : SC-BIKN2-E			
	Room temperature control			Wireless LAN connecting (Cannot be used at the same time interface kit)			
	Operation display			Thermostat by electronics			
Safety equipments			RUN : Green, TIMER : Yellow, HI POWER : Green, 3D AUTO : Green				
			Overload protection for fan motor				
			Frost protection thermostat				
			Internal thermostat for fan motor				
Installation data	Refrigerant piping size (O.D.)	Liquid line	mm		I/U φ 9.52 (3/8") Pipe φ 9.52(3/8")x0.8 O/U φ 9.52 (3/8")		
		Gas line	mm		φ 15.88 (5/8") Pipe φ 15.88(5/8")x1.0 φ 15.88 (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		Min.3, Max.100			
	Vertical height diff. between O/U and I/U	m		Max.50(Outdoor unit is higher)		Max.15(Outdoor unit is lower)	
Drain hose			Hose connectable with VP16		Hole size φ 20 x 3 pcs.		
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		φ 1.6mm x 3 cores + earth cable / Terminal block(Screw fixing type)				
IP number			IPX0		IP24		
Standard accessories			Mounting kit, Clean filter		-		
Option parts			-				
Notes (1) The data are measured at the following conditions.				The pipe length is 7.5m.			
Operation	Cooling	Indoor air temperature	Outdoor air temperature		Standards		
		DB	WB	DB		WB	
	27°C	19°C	35°C	24°C		ISO5151-T1	
Heating	20°C	-	7°C	6°C	ISO5151-H1		
(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) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.							

# 1.2 EXTERIOR DIMENSIONS

## (1) Indoor unit

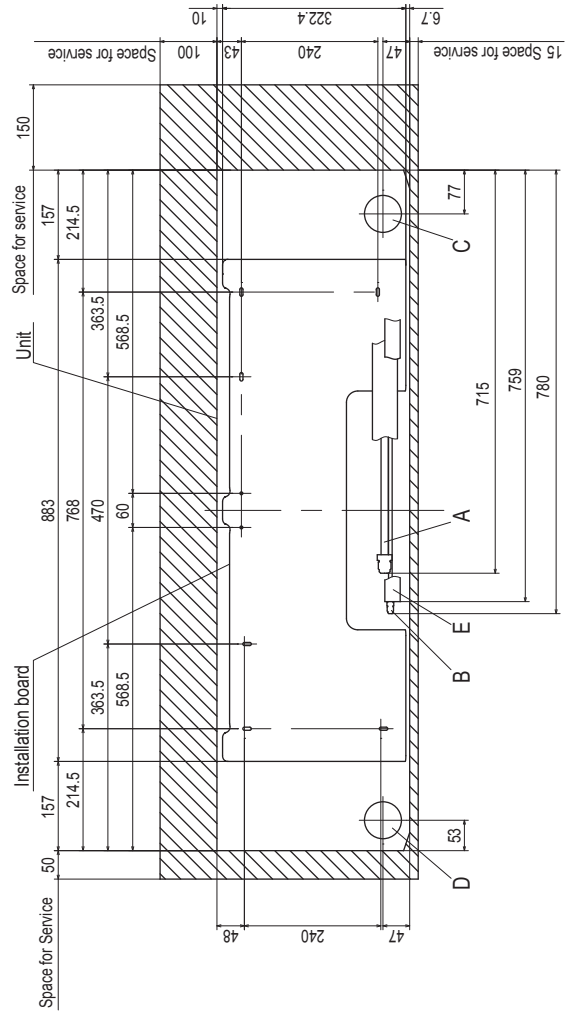
Model SRK100ZR-WF

Symbol	Content
A	Gas piping φ 15.88 (5/8") (Flare)
B	Liquid piping φ 9.52 (3/8") (Flare)
C	Hole on wall for right rear piping (φ 65)
D	Hole on wall for left rear piping (φ 65)
E	Drain hose VP16
F	Outlet for wiring (on both side)
G	Outlet for piping (on both side)



Notes (1) The model name label is attached on the underside of the indoor unit.  
(2) To connect the wired remote control, the interface kit (SC-BIKN2-E) is required.

Unit:mm



Space for installation and service when viewing from the front

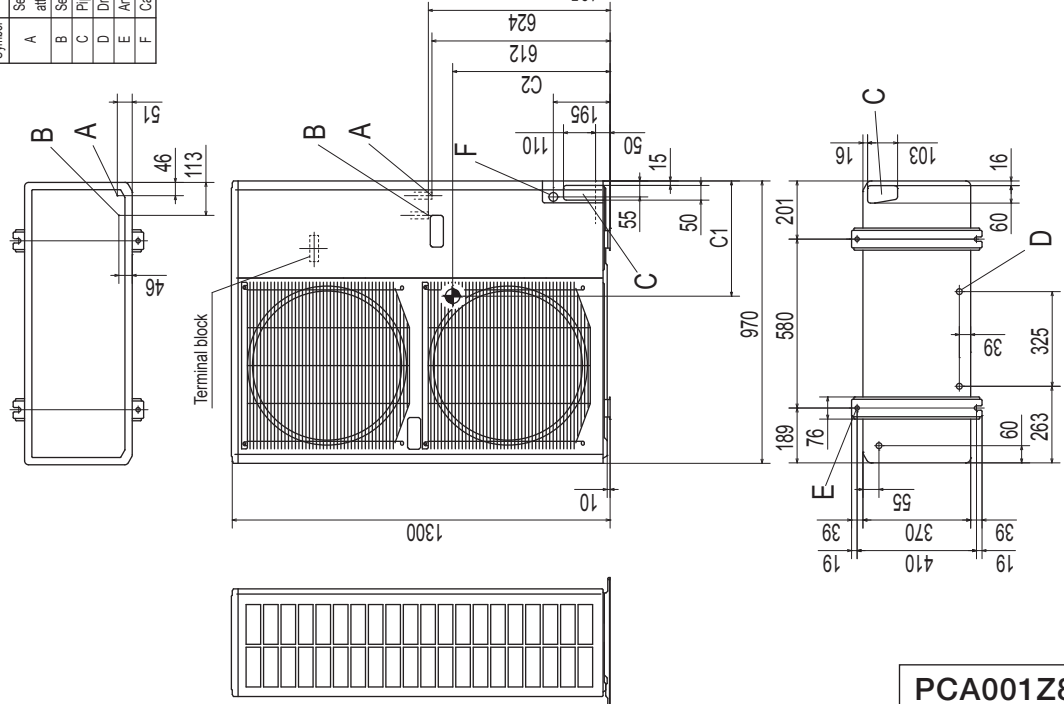
### (2) Outdoor units

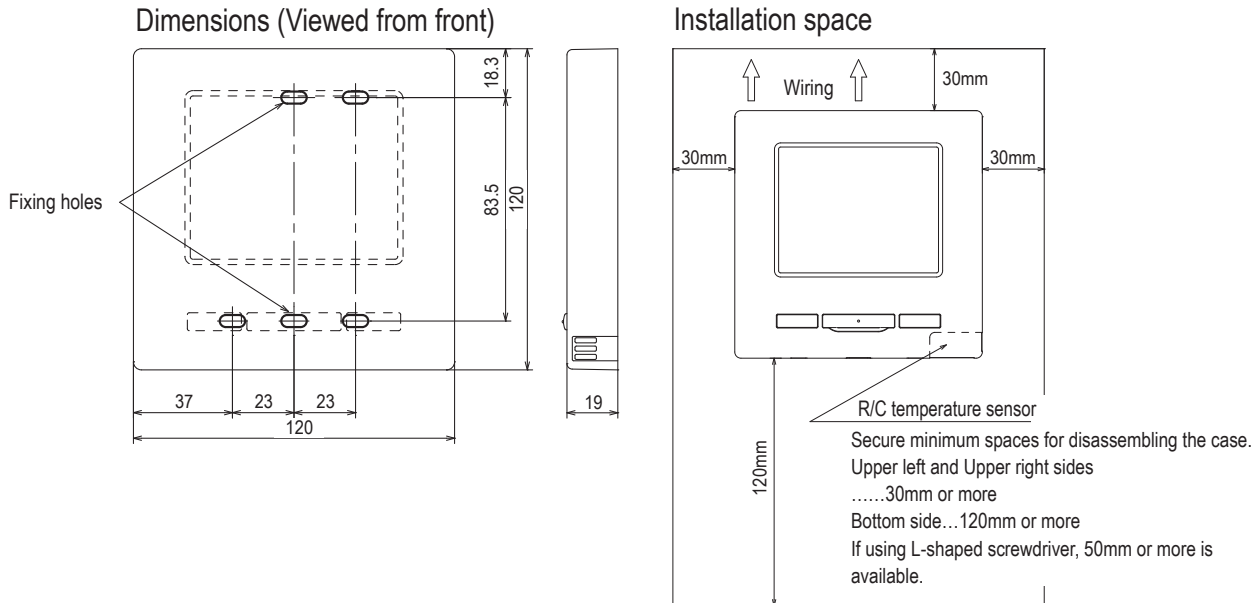
Models FDC100VN-X-W  
100VSX-W

Symbol	Content
A	Service valve connection of the attached connecting pipe (gas side) $\phi$ 15.88(5/8") (Flare)
B	Service valve connection (liquid side) $\phi$ 9.52(3/8") (Flare)
C	Pipe / cable draw-out hole $\phi$ 20 x 3 places
D	Drain discharge hole M10 x 4 places
E	Anchor bolt hole $\phi$ 30 x 3 places
F	Cable draw-out hole

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.



**(3) Remote control****(a) Wired remote control (Option parts)****Model RC-EX3A**

- **Do not install the remote control at following places.**

- 1) It could cause break-down or deformation of remote control.
  - Where it is exposed to direct sunlight
  - Where the ambient temperature becomes 0 °C or below, or 40 °C or above
  - Where the surface is not flat
  - Where the strength of installation area is insufficient
- 2) Moisture may be attached to internal parts of the remote control, resulting in a display failure.
  - Place with high humidity where condensation occurs on the remote control
  - Where the remote control gets wet
- 3) Accurate room temperature may not be detected using the temperature sensor of the remote control.
  - Where the average room temperature cannot be detected
  - Place near the equipment to generate heat
  - Place affected by outside air in opening/closing the door
  - Place exposed to direct sunlight or wind from air-conditioner
  - Where the difference between wall and room temperature is large
- 4) When you are using the automatic grille up and down panel in the IU, you may not be able to confirm the up and down motion.
  - Where the IU cannot be visually confirmed

**R/C cable:0.3mm<sup>2</sup> x 2 cores**

When the cable length is longer than 100 m, the max size for wires used in the R/C case is 0.5 mm<sup>2</sup>. 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 <sup>2</sup> x 2 cores
≦ 300m	0.75 mm <sup>2</sup> x 2 cores
≦ 400m	1.25 mm <sup>2</sup> x 2 cores
≦ 600m	2.0 mm <sup>2</sup> x 2 cores

- **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.

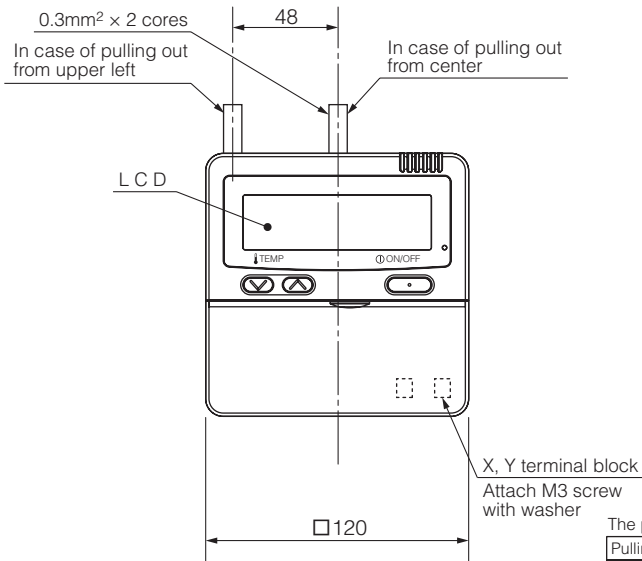
Adapted RoHS directive

PJZ000Z333



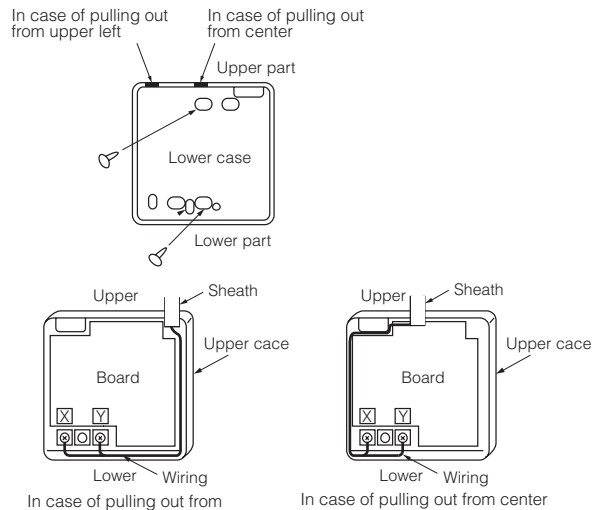
**Model RC-E5**

**Exposed mounting**



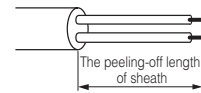
Exterior appearance (Munsell color) Pearl white (N8.5) near equivalent

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.

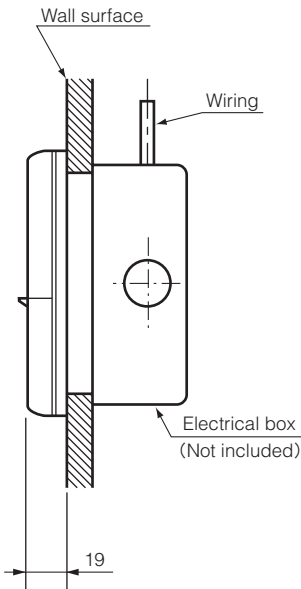


The peeling-off length of sheath

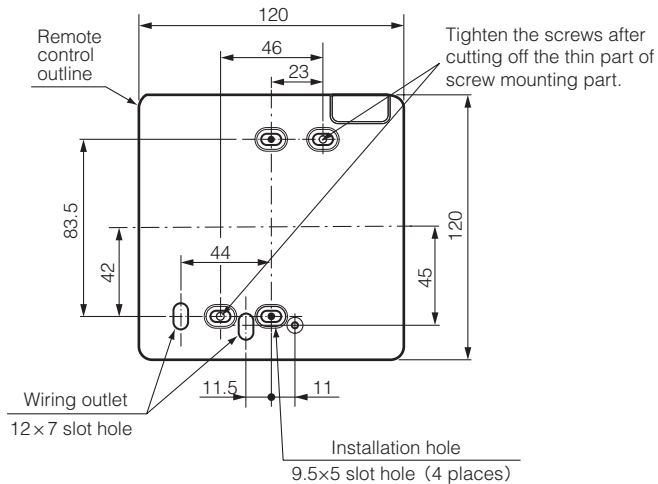
Pulling out from upper left	Pulling out from center
X wiring : 215mm	X wiring : 170mm
Y wiring : 195mm	Y wiring : 190mm



**Embedded mounting**



**Remote control installation dimensions**



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

Unit:mm

**Wiring specifications**

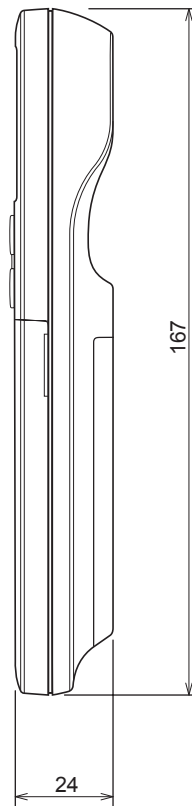
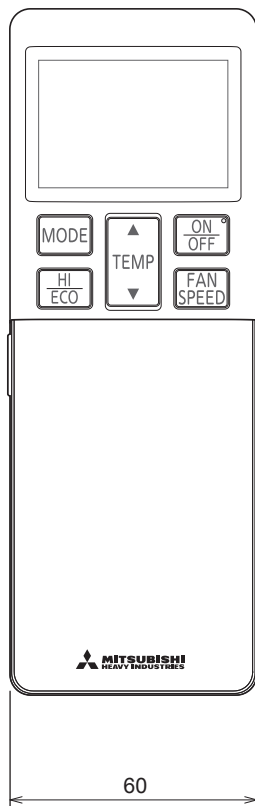
1) If the prolongation is over 100m, change to the size below.  
But, wiring in the remote control case should be under 0.5mm². Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.

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

**PJZ000Z295**

(b) Wireless remote control

Unit: mm

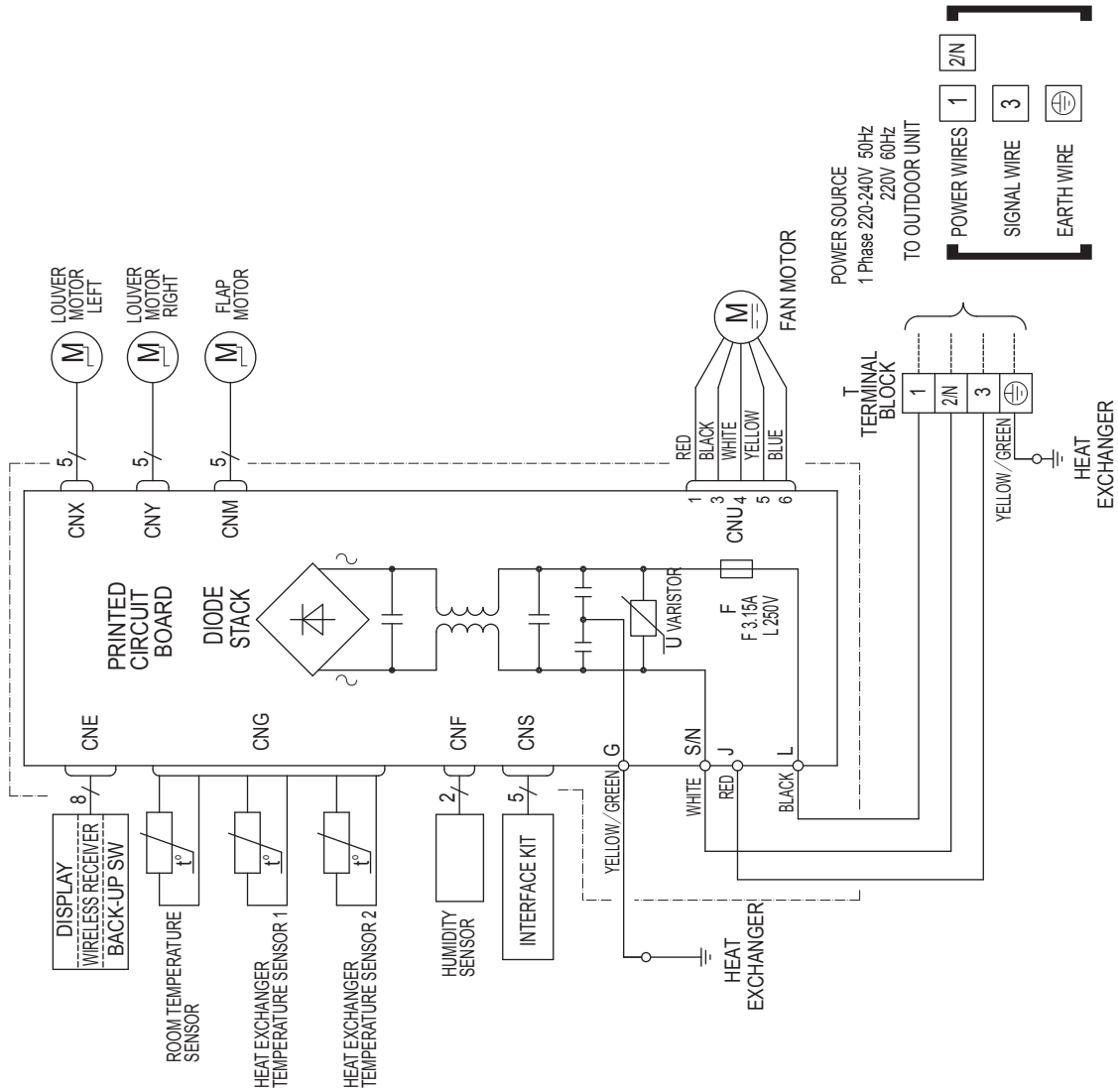


# 1.3 ELECTRICAL WIRING

## (1) Indoor unit

Model SRK100ZR-WF

Item	Description
CNE	Connector
CNF	
CNG	
CNM	
CNS	
CNU	
CNX	
CNY	



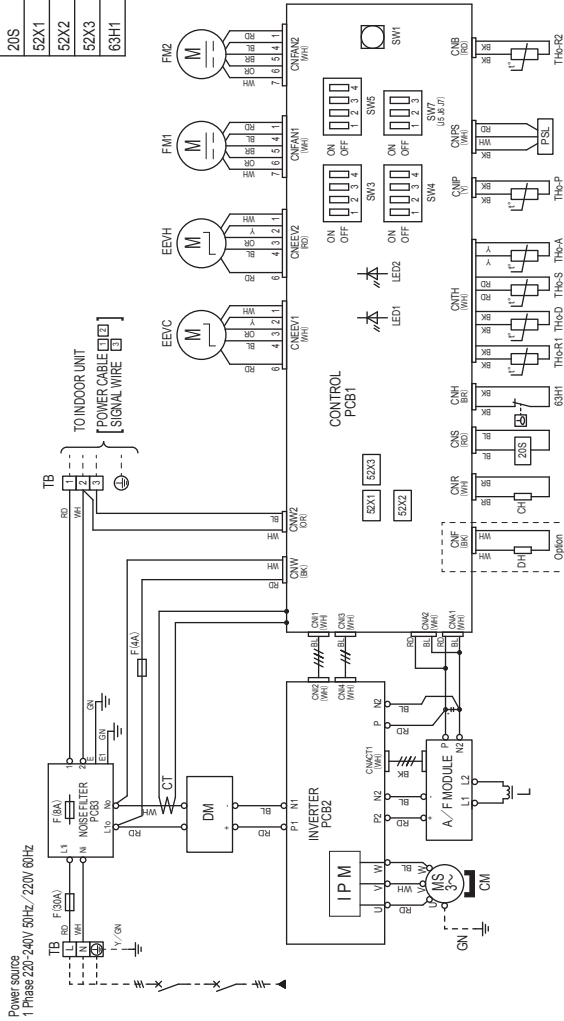
RWA000Z426

(2) Outdoor units  
Model FDC100VNX-W

Item	Description
CH	Crankcase heater
CM	Compressor motor
CN	Connector
CT	Current sensor
DH	Drain pan heater
DM	Diode module
EEVC	Expansion valve for cooling
EEVH	Expansion valve for heating
F	Fuse
FM1,2	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
PSL	Low pressure sensor
SW1	Pump down switch
SW3,4,5,7	Local setting switch
TB	Terminal block
Tho-A	Temperature sensor (Outdoor air)
Tho-D	Temperature sensor (Discharge pipe)
Tho-R1,2	Temperature sensor (Heat exchanger pipe)
Tho-S	Temperature sensor (Suction pipe)
Tho-P	Temperature sensor (IPM)

Item	Description
20S	Solenoid valve for 4-way valve
52X1	Auxiliary relay (for CH)
52X2	Auxiliary relay (for DH)
52X3	Auxiliary relay (for 20S)
63H1	High pressure switch

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



Local setting switch SW3,4,5 (Set up at shipment OFF)

Item	Description
SW3-1	Defrost control change
SW3-2	Snow guard fan control
SW3-3,4	Trial operation
SW4-1	Lower noise silent mode
SW5-2	High height difference operation control

Model	MAX over current (A)	Power cable size (mm <sup>2</sup> )	Power cable length (m)	Indoor-outdoor wire size × number	Earth wire size (mm)
100	25	5.5	21	φ1.6mm × 3	φ1.6

- 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.
- Power source cable: Use the cable which is conformed with 60245 IEC57.
- When selecting the power source cable length, make sure that voltage drop is less than 2%. If the wire length gets longer, increase the wire diameter.
- Indoor-outdoor connecting wires: Use the wires which is conformed with 60245 IEC57.

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.

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°C or lower and the compressor is not running when the unit is used in a very snowy country, set this switch to ON.

Method of trial operation

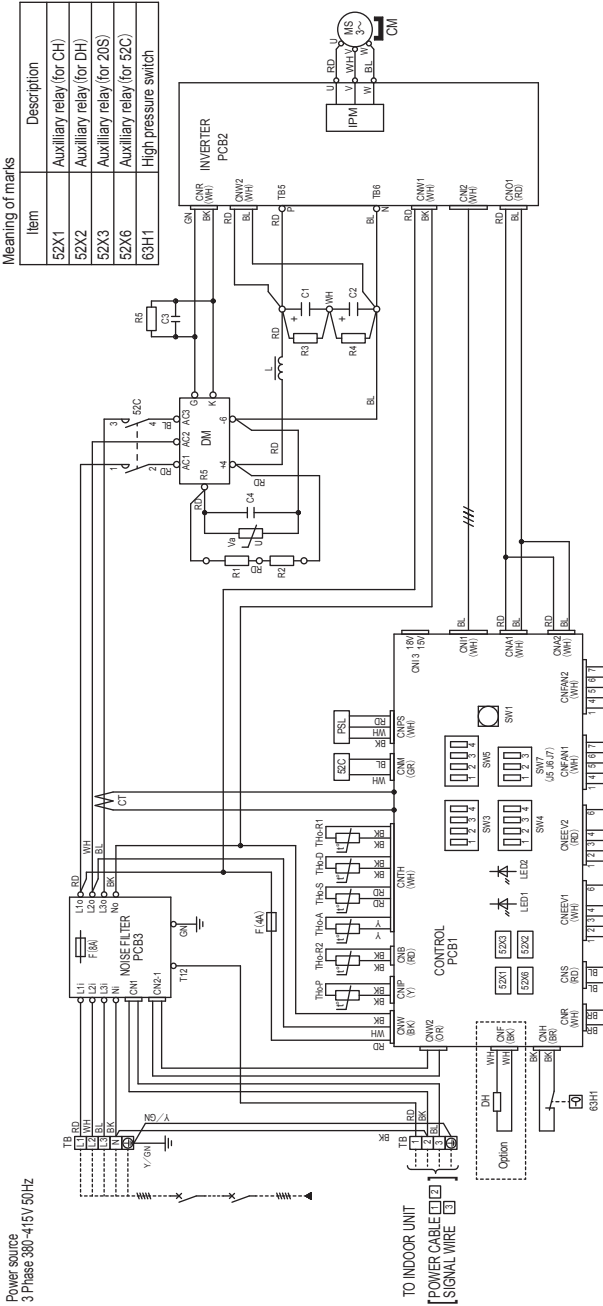
- ① Trial operation can be performed by using SW3-3,4.
- ② Compressor will be in the operation when SW3-3 is ON.
- ③ Cooling trial operation will be performed when SW3-4 is OFF, and heating trial operation when SW3-4 is ON.
- ④ Be sure to turn OFF SW3-3 after the trial operation is finished.

Upper limit of compressor speed and fan speed becomes lower in silent mode. Set this switch to ON when outdoor unit is installed at a position higher than indoor unit by 30m or more.

Model FDC100VSX-W

Item	Description
CH	Crankcase heater
CM	Compressor motor
CN	Connector
CT	Current sensor
DH	Drain pan heater
DM	Diode module
EEVC	Expansion valve for cooling
EEVH	Expansion valve for heating
F	Fuse
FM1.2	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
PSL	Low pressure sensor
SW1	Pump down switch
SW3.4.5.7	Local setting switch
TB	Terminal block
Tho-A	Temperature sensor (Outdoor air)
Tho-D	Temperature sensor (Discharger pipe)
Tho-R1.2	Temperature sensor (Heat exchanger pipe)
Tho-S	Temperature sensor (Suction pipe)
Tho-P	Temperature sensor (IPM)
ZOS	Solenoid valve for 4-way valve
52C	Relay

Item	Description
52X1	Auxiliary relay (for CH)
52X2	Auxiliary relay (for DH)
52X3	Auxiliary relay (for ZOS)
52X6	Auxiliary relay (for 52C)
63H1	High pressure switch



Power source  
3 Phase 380~415V 50/60Hz

Local setting switch SW3,4,5 (Set up at shipment OFF)

Item	Description
SW3-1	Defrost control change
SW3-2	Snow guard fan control
SW3-3,4	Trial operation
SW4-1	Lower noise silent mode
SW5-2	High height difference operation control

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

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm <sup>2</sup> )	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm)
100	14	3.5	49	φ1.6mm x 3	φ1.6

- 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.
- Switch/gear of circuit breaker capacity which is calculated from MAX. over current should be chosen along the regulations in each country.
- Power source cable: Use the cable which is conformed with 60245 IEC57. When selecting the power source cable length, make sure that voltage drop is less than 2%. If the wire length gets longer, increase the wire diameter.
- Indoor-outdoor connecting wires: Use the wires which is conformed with 60245 IEC57.



# 1.4 NOISE LEVEL

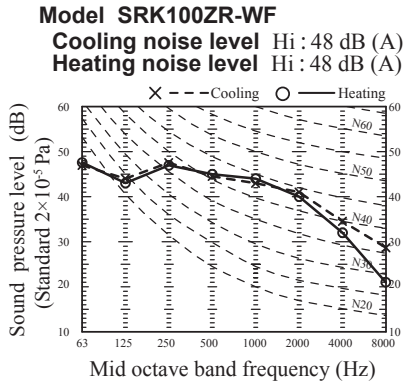
Notes (1) The data are based on the following conditions.

Ambient air temperature: Indoor unit 27°CWB. Outdoor unit 35°CDB.

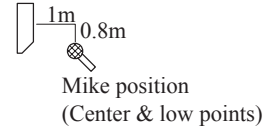
(2) The data in the chart are measured in an anechoic room.

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

## (1) Indoor unit



Measured based on JIS C 9612  
 Mike position as right

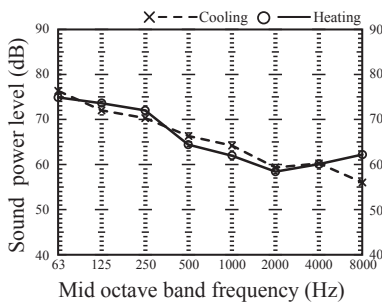


## (2) Outdoor units

### (a) Sound power level

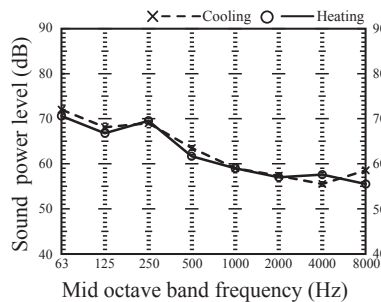
#### (i) Rated capacity value

**Models FDC100VNX-W,100VSX-W**  
**Cooling noise level** 67 dB (A)  
**Heating noise level** 67 dB (A)



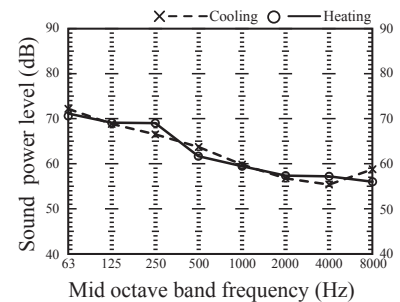
#### (ii) Silent mode (Normal)

**Models FDC100VNX-W,100VSX-W**  
**Cooling noise level** 65 dB (A)  
**Heating noise level** 64 dB (A)



#### (iii) Silent mode (Silent)

**Models FDC100VNX-W,100VSX-W**  
**Cooling noise level** 64 dB (A)  
**Heating noise level** 64 dB (A)



### (b) Sound pressure level

Measured based on JIS B 8616

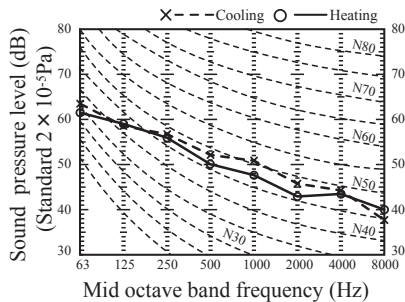
Mike position: at highest noise level in position as mentioned below

Distance from front side 1m

Height 1m

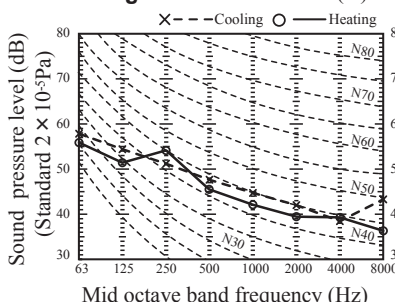
#### (i) Rated capacity value

**Models FDC100VNX-W,100VSX-W**  
**Cooling noise level** 53 dB (A)  
**Heating noise level** 51 dB (A)



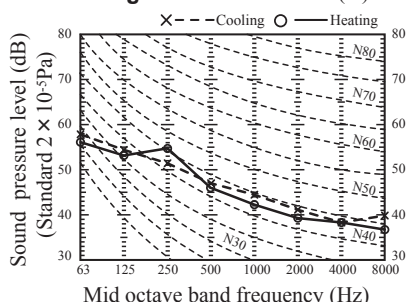
#### (ii) Silent mode (Normal)

**Models FDC100VNX-W,100VSX-W**  
**Cooling noise level** 49 dB (A)  
**Heating noise level** 48 dB (A)



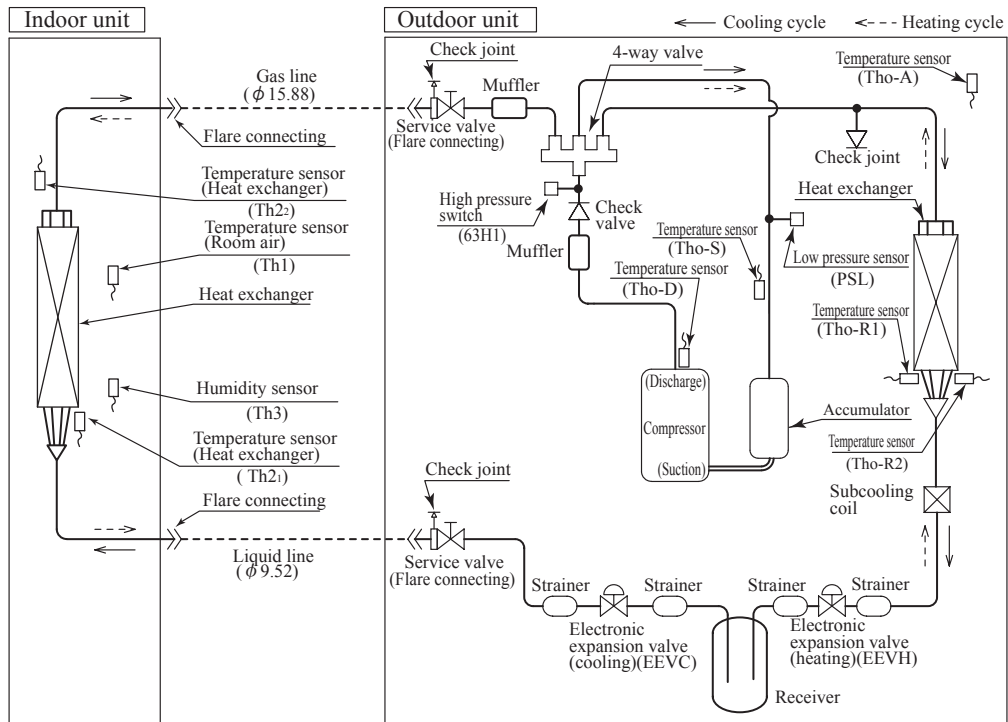
#### (iii) Silent mode (Silent)

**Models FDC100VNX-W,100VSX-W**  
**Cooling noise level** 48 dB (A)  
**Heating noise level** 48 dB (A)



# 1.5 PIPING SYSTEM

Model 100



## Preset point of the protective devices

Parts name	Mark	Equipped unit	100 model
Temperature sensor (for protection over-loading in heating)	Tho-A	Outdoor unit	Active 17°C Inactive 16°C
Temperature sensor (for frost prevention)	Th2	Indoor unit	Active 2.5°C Inactive 8°C
Temperature sensor (for protection high pressure in cooling)	Tho-R	Outdoor unit	Active 63°C Inactive 51°C
Temperature sensor (for detecting discharge pipe temperature)	Tho-D	Outdoor unit	Active 115°C Inactive 85°C
High pressure switch (for protection)	63H1	Outdoor unit	Active 4.15MPa Inactive 3.15MPa
Low pressure sensor (for protection)	PSL	Outdoor unit	Active 0.079MPa Inactive 0.227MPa

## 1.6 RANGE OF USAGE & LIMITATIONS

Operating temperature range		See next page.
		When used below -5°C, install a snow hood (locally procured).
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 : 28°C or less, relative humidity : 80% or less
Limitations on unit and piping installation		See page 17.
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 unbalance	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 (10mm or thicker) on the outer plate of indoor unit.

Note (3) Both gas and liquid pipes need to be covered with 20mm or thicker heat insulation materials at the place where humidity exceeds 70%.

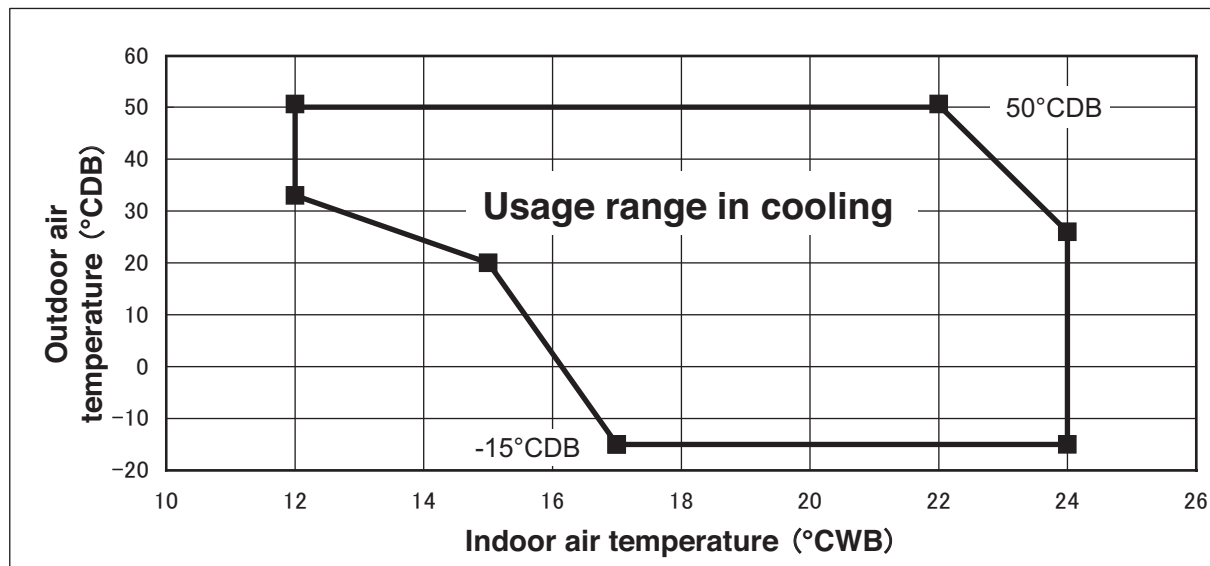
Note (4) When snow accumulate, install a snow hood on site.

Note (5) The indoor unit shall be installed in a room with minimum installation area or more according to the refrigerant charge amount. (for details, refer to installation sheet)

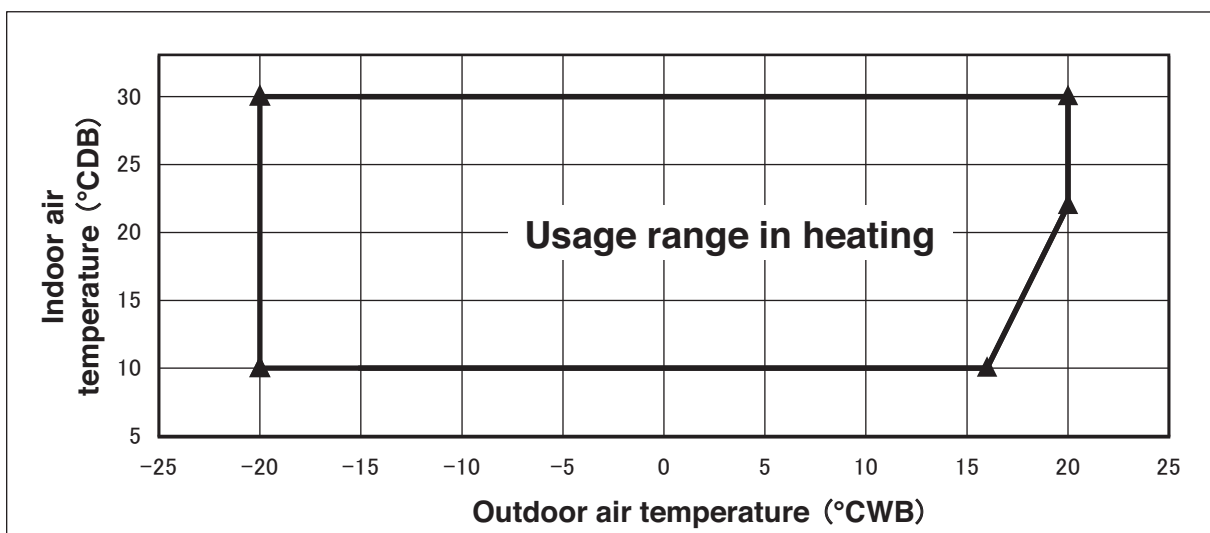


## Operating temperature range


### ■ 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 air flow rate.

PCA001Z888 

#### “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.

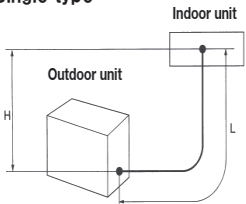
#### [Reason]

Under the low outdoor air temperature conditions of  $-5^{\circ}\text{C}$  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.			
Resitrictions	Model for outdoor units	Dimensional restroctopns	Installation type
			Single type
One-way pipe length	100V	3m ≦ ≦ 100m	L
Elevation difference between indoor and outdoor units	Outdoor unit is positioned higher	≦ 50m (1)	H
	Outdoor unit is positioned lower	≦ 15m	

**Single type**



(1) In case of the outdoor unit is positioned higher, dimensional limitation change from 30m to 50m by changing SW5-2 of outdoor unit control PCB to ON.

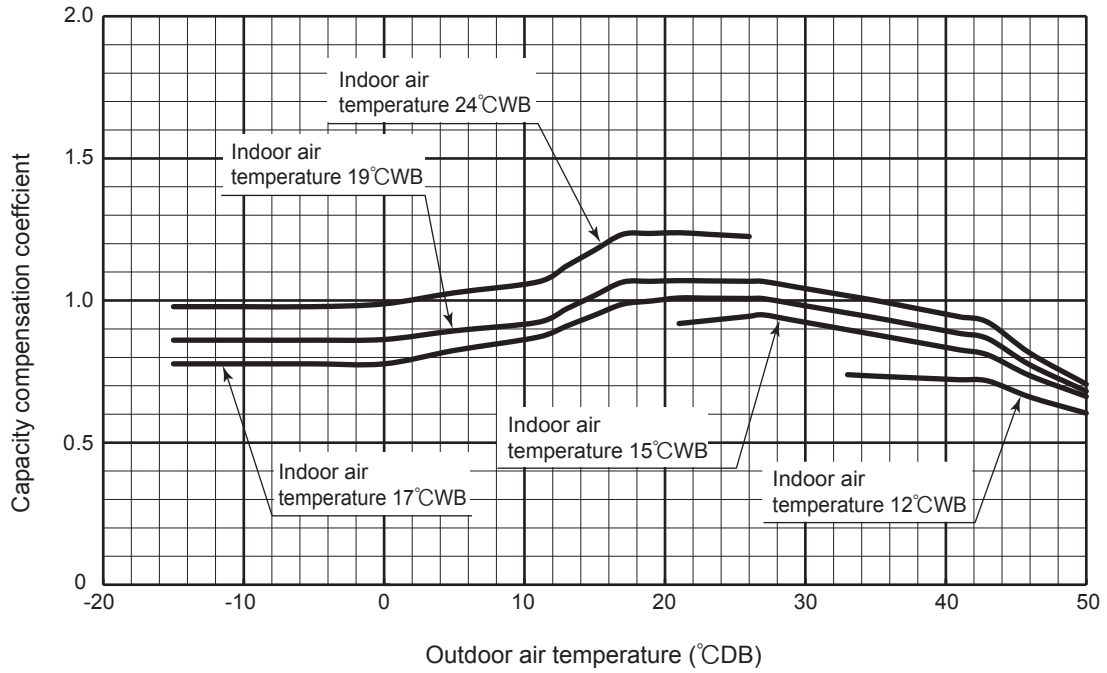


**[References data]**

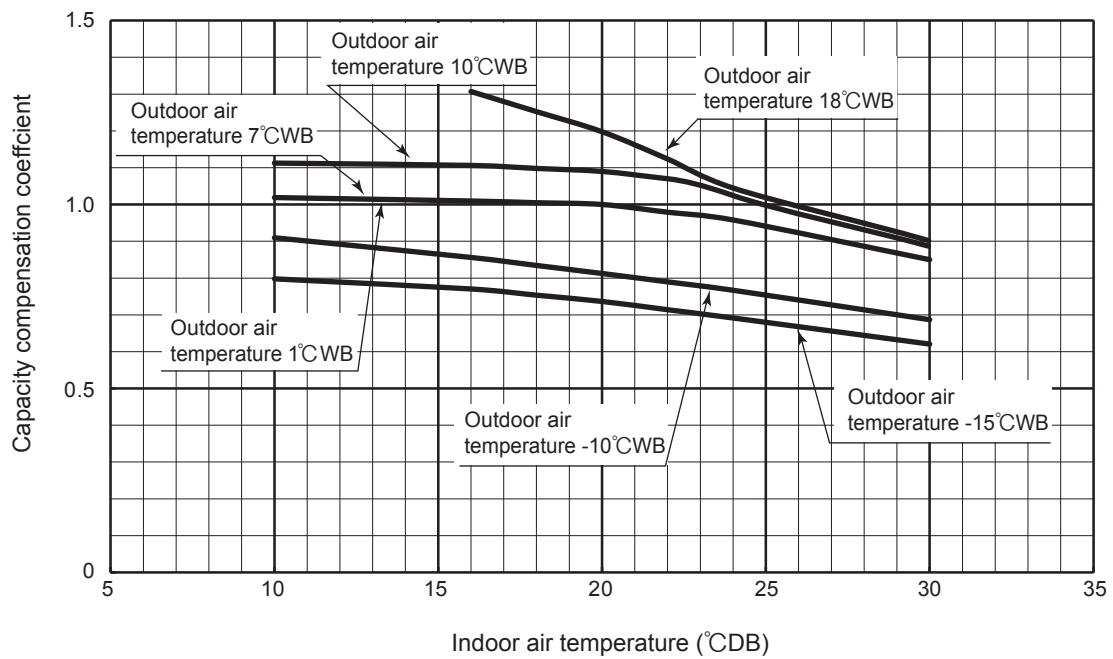
The following figures show capacity variation against outdoor and indoor temperature. Capacity compensation coefficient shows the ratio of maximum capacity at any temperature to nominal capacity.

**(I) Models FDC100VNX-W, 100VSX-W**

**① Cooling**



**② Heating**



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

Fan speed	Hi	Me	Lo
Coefficient	1.00	0.97	0.95

### 1.7.3 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.

Model 100

Equivalent piping length <sup>(1)</sup> (m)		7.5	10	15	20	25	30	35	40	45	50	55	
<b>Heating</b>		1	1	1	1	1	0.998	0.998	0.993	0.993	0.988	0.988	
<b>Cooling</b>	100 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
	100 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

Equivalent piping length <sup>(1)</sup> (m)		60	65	70	75	80	85	90	95	100	105	
<b>Heating</b>		0.983	0.983	0.978	0.978	0.973	0.973	0.968	0.968	0.963	0.963	
<b>Cooling</b>	100 model	φ 15.88	0.856	0.843	0.829	0.816	0.803	0.789	0.776	0.762	0.749	0.736
	100 model	φ 19.05	0.959	0.955	0.951	0.948	0.944	0.940	0.936	0.932	0.929	0.926

Note 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
Equivalent bend length	0.20	0.25	0.30

### 1.7.4 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

Height difference between the indoor unit and outdoor unit in the vertical height difference	35m	40m	45m	50m
Adjustment coefficient	0.93	0.92	0.91	0.90

#### Piping length limitations

Item	Model	100
Max. one way piping length		100m
Max. vertical height difference		Outdoor unit is higher 50m Outdoor unit is lower 15m

Note 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 SRK100VNXWZRF with the air flow “Hi”, the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0°C and outdoor dry-bulb temperature 35°C is

$$\text{Net cooling capacity} = \frac{10.0}{\text{Net cooling total capacity of SRK100VNXWZRF (Outdoor temp. : 35°CDB Indoor temp. : 19°CWB) shown in table 1.7.1}} \times \frac{1.00}{\text{Air flow : Hi shown in table 1.7.2}} \times \frac{0.978}{\text{Piping length : 15m (Gas pipe size is } \phi 15.88 \text{) shown in table 1.7.3}} \times \frac{0.99}{\text{Height diff. : 5m (Outdoor unit : below) shown in table 1.7.4}} \approx 9.7\text{kW}$$



## 2. SELECTING INSTALLATION LOCATION

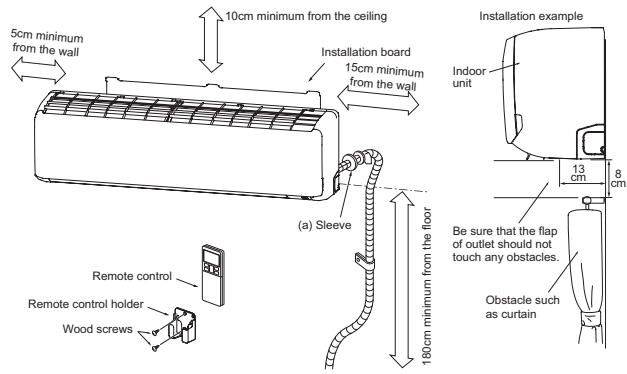
After getting customer's approval, select installation location according to following guidelines.

### 1. Indoor unit

- Where there is no obstruction to the air flow and where the cooled and heated air can be evenly distributed.
- A solid place where the unit or the wall will not vibrate.
- A place where there will be enough space for servicing. (Where space mentioned on the right side can be secured.)
- Where it is easy to conduct wiring and piping work.
- A place where unit is not directly exposed to sunlight or street light.
- A place where it can be easily drained.
- A place separated at least 1 m away from the television or the radio. (To prevent interference to images and sounds.)
- A place where this unit is not affected by the high frequency equipment or electric equipment.
- Avoid installing this unit in place where there is much oil mist.
- A place where there is no electric equipment or household.
- Install the indoor unit on the wall where the height from the floor to the bottom of the unit is more than 180 cm.
- A place where the radio waves can reach when using the wireless LAN communication.

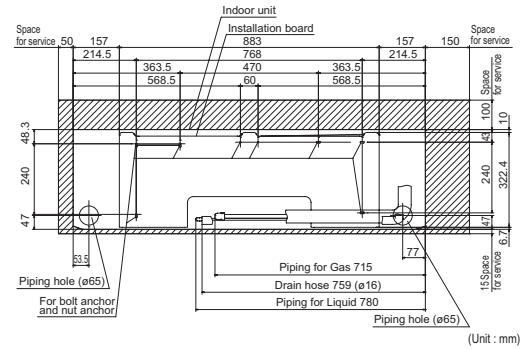
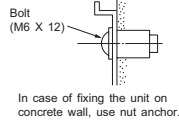
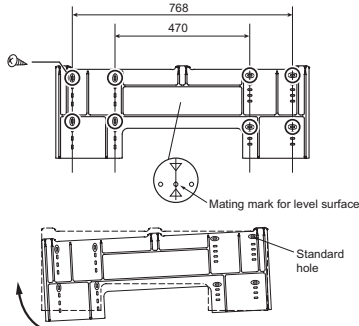
### 2. Remote control

- A place where the air-conditioner can receive the signal surely during operating the remote control.
- A place where it is not affected by the TV, radio etc.
- Do not place where it is exposed to direct sunlight or near heat devices such as a stove.



## 3. INSTALLING INSTALLATION BOARD

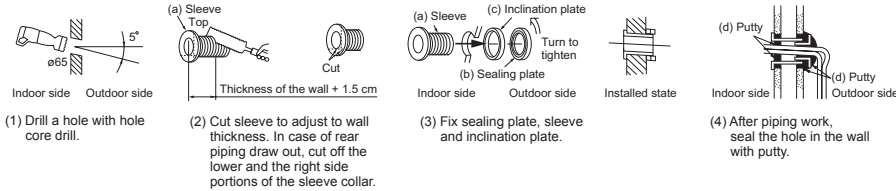
- Installation board should be installed on the wall which can support the weight of the indoor unit.
- Adjustment of the installation board in the horizontal direction is to be conducted with 8 screws in a temporary tightened state.
- With the standard hole as a center, adjust the board and level it.



**CAUTION**  
Improper adjustment of the installation board can cause water leakage.

## 4. DRILLING HOLE AND FIXTURE OF SLEEVE

When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use sealing plate, sleeve and inclination plate (Locally procured parts).



**WARNING**  
Completely seal the hole in the wall with putty. If not sealed properly, dust, insects, small animals, and highly humid air may enter the room from outside, which could result in fire or other hazards.

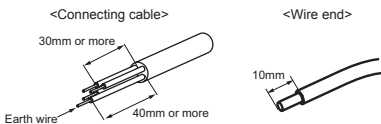
**CAUTION**  
Completely seal the hole in the wall with putty. If not sealed properly, furniture and other fixtures may be damaged by water leakage or condensation.

## 5. ELECTRICAL WIRING WORK

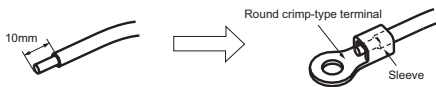
- Before installation, make sure that the power source complies with the air-conditioner's power specification.
- Carry out electrical wiring work according to following guidelines.

### 1. Preparing cable

- (1) Selecting cable  
Select the connecting cable in accordance with the specifications mentioned below.  
4 cores \* 1.5mm<sup>2</sup> conformed with 60245 IEC57  
\* 1 Earth wire is included (Yellow/Green).
- (2) Arrange each wire length as shown below.  
Make sure that each wire is stripped 10mm from the end.



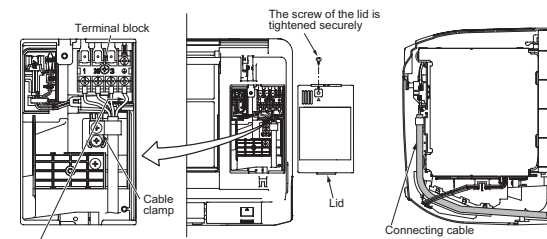
- (3) Attach round crimp-type terminal to each wire as shown in the below.  
Select the size of round crimp-type terminal after considering the specifications of terminal block and wire diameter.



### 2. Connecting cable

- (1) Open the air inlet panel.
- (2) Remove the lid.
- (3) Remove the cable clamp.
- (4) Connect the connecting wires to the terminal block.
- (5) Fix the connecting cable by cable clamp.
- (6) Fix the lid.
- (7) Close the air inlet panel.

**NOTE**  
Take care not to confuse the terminal numbers for indoor and outdoor connections.



**WARNING**  
Incorrect wiring connection can cause malfunction or fire.





### 10. HOW TO OPEN, CLOSE, REMOVE AND INSTALL THE AIR INLET PANEL

#### 1. Open

Pull the air inlet panel at both ends of lower part and release latches, then pull up the panel until you feel resistance.  
(The panel stops at approx. 60° open position)

#### 2. Close

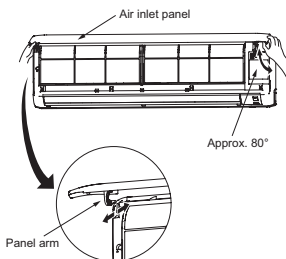
Hold the panel at both ends of lower part, lower it downward slowly, then push it slightly until the latch works.

#### 3. Removing

Open the panel by 80° (as shown in the right illustration) and then pull it forward.

#### 4. Installing

Insert the panel arm into the slot on the front panel from the position shown in right illustration, hold the panel at both ends of lower part, lower it downward slowly, then push it slightly until the latch works.



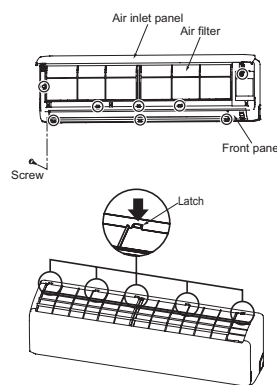
### 11. HOW TO REMOVE AND INSTALL FRONT PANEL

#### 1. Removing

- (1) Remove the air inlet panel and the air filters.
- (2) Remove the 8 screws.
- (3) Remove the 5 upper latches and then front panel can be removed.

#### 2. Installing

- (1) Cover the unit with the front panel and fix 5 upper latches.
- (2) Secure the front panel with the 8 screws.
- (3) Install the air inlet panel and the air filters.



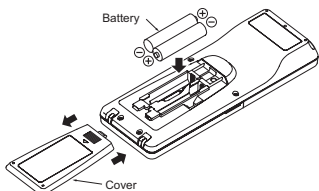
### 12. INSTALLING REMOTE CONTROL

#### Mount the batteries

- (1) Slide and take out the cover of backside.
- (2) Mount the batteries [R03 (AAA, Micro), x 2 pieces] in the body properly.  
(Fit the poles with the indication marks + & -)
- (3) Set the cover again.

#### NOTE

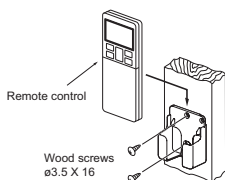
- Do not use new and old batteries together.
- In case the unit is not operated for a long time, take out the batteries



#### Installing remote control holder

- (1) Select the place where the unit can receive signals.
- (2) Fix the holder to pillar or wall with wood screws.

- Do not mix old and new batteries, or batteries of different types (manganese/alkaline).

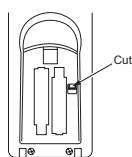


### 14. INSTALLING TWO AIR-CONDITIONERS IN THE SAME ROOM

In case two air-conditioners are installed in the same room, apply this setting so that one unit can be operated with only one remote control.

#### Setting one remote control

- (1) Slide and take out the cover and batteries.
- (2) Cut the switching line next to the battery with wire cutters.
- (3) Set the batteries and cover again.

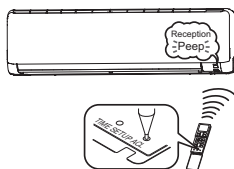


#### Setting one indoor unit

- (1) Turn off the power source and turn it on after 1 minute.
- (2) Send the signal by pressing the ACL switch on the remote control that was set according to the procedure described on the left side.
- (3) Check that the reception buzzer sound "Peep" is emitted from the indoor unit. Since the signal is sent about 6 seconds after the ACL switch is pressed, point the remote control to the indoor unit for a while.

#### NOTE

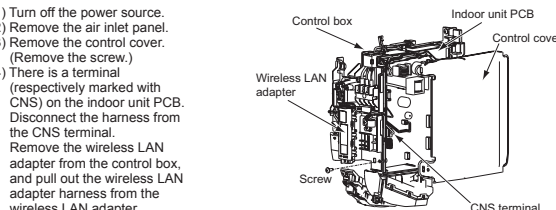
If no reception buzzer is emitted, restart the setting from the beginning.



### 13. TERMINAL CONNECTION FOR AN INTERFACE

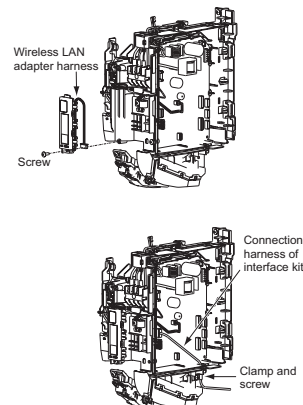
This unit is standardly equipped with a wireless LAN adapter.  
To install wired remote control, Superlink etc., interface kit is needed.  
When using the interface kit, the wireless LAN function cannot be used.

- (1) Turn off the power source.
- (2) Remove the air inlet panel.
- (3) Remove the control cover.  
(Remove the screw.)
- (4) There is a terminal (respectively marked with CNS) on the indoor unit PCB. Disconnect the harness from the CNS terminal.



Remove the wireless LAN adapter harness from the wireless LAN adapter.  
After that, install the wireless LAN adapter in the control box.  
While connecting an interface, connect to the CNS terminal securely with the connection harness supplied with an option "Interface connection kit SC-BIKN2-E" and fasten the connection harness onto the indoor control box with the clamp and screw supplied with the kit.

For more details, refer to the user's manual of "Interface connection kit SC-BIKN2-E".



#### NOTE

Make sure that the disconnected connector does not touch the internal parts of the unit.

### 16. INSTALLATION CHECK AND TEST RUN

After finishing the installation work, check the following points again before turning on the power. Conduct a test run and ensure that the unit operates properly.  
At the same time, explain to the customer how to use the unit and how to take care of the unit following the user's manual.

#### Before test run

Before test run, check following points.

Power source voltage complies with the rated voltage of air-conditioner.	
Earth leakage breaker and circuit breaker are installed.	
Power cable and connecting cable are securely fixed to the terminal block.	
Both liquid and gas service valves are fully open.	
No gas leaks from the joints of the service valves.	
Indoor and outdoor side pipe joints have been insulated.	
Hole on the wall is completely sealed with putty.	
Drain hose and cap are installed properly.	
Screw of the lid is tightened securely.	

#### Test run

Check following points during test run.

Indoor unit receives signal of remote control.	
Air-conditioning operation is normal.	
There is no abnormal noise.	
Water drains out smoothly.	
Display of remote control is normal.	

#### NOTE

During restart or change in operation mode, the unit will not start operating for approximately 3 minutes. This is to protect the unit and it is not malfunction.

#### After test run

Explain the operating and maintenance methods to the user according to the user's manual.	
Keep this installation manual together with user's manual.	

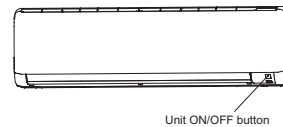
### 15. PUMP DOWN WORK

For the environmental protection, be sure to pump down when relocating or disposing of the unit. Pump down is the method of recovering refrigerant from the indoor unit to the outdoor unit before the connecting pipes are removed from the unit. When pump down is carried out, forced cooling operation is needed.

#### Forced cooling operation

- (1) Turn off the power source and turn it on again after 1 minute.
- (2) Press the ON/OFF button continuously for at least 5 seconds. Then operation will start.

For the detail of pump down, refer to the installation manual of outdoor unit.





**1.8.2 Installation of wired remote control (Option parts)**

(1) Model RC-EX3A

PJZ012A171 **1) 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.

 <b>WARNING</b>	Failure to follow these instructions properly may result in serious consequences such as death, severe injury, etc.
 <b>CAUTION</b>	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, this manual should be given to a new owner.

** WARNING****Consult your dealer or a professional contractor to install the unit.**

Improper installation made on your own may cause electric shocks, fire or dropping of the unit.

**Installation work should be performed properly according to this installation manual.**

Improper installation work may result in electric shocks, fire or break-down.

**Be sure to use accessories and specified parts for installation work.**

Use of unspecified parts may result in drop, fire or electric shocks.

**Install the unit properly to a place with sufficient strength to hold the weight.**

If the place is not strong enough, the unit may drop and cause injury.

**Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**

Power source with insufficient and improper work can cause electric shock and fire.

**Shut OFF the main power source before starting electrical work.**

Otherwise, it could result in electric shocks, break-down or malfunction.

**Do not modify the unit.**

It could cause electric shocks, fire, or break-down.

**Be sure to turn OFF the power circuit breaker before repairing/ inspecting the unit.**

Repairing/inspecting the unit with the power circuit breaker turned ON could cause electric shocks or injury.

 **WARNING****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.

**Do not use the unit in a place where it gets wet, such as laundry room.**

It could cause electric shocks, fire, or break-down.

**Do not operate the unit with wet hands.**

It could cause electric shocks.

**Do not wash the unit with water.**

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.

If dew or water enters the unit, it may cause screen display anomalies.

**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.

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

If dew, water, insect, etc. enters through the hole, it could cause electric shocks, fire or break-down.

---

 CAUTION

**Do not install the remote control at following places.**

- (1) It could cause break-down or deformation of remote control.
- Where it is exposed to direct sunlight
  - Where the ambient temperature becomes 0 °C or below, or 40 °C or above
  - Where the surface is not flat
  - Where the strength of installation area is insufficient
- (2) Moisture may be attached to internal parts of the remote control, resulting in a display failure.
- Place with high humidity where condensation occurs on the remote control
  - Where the remote control gets wet
- (3) Accurate room temperature may not be detected using the temperature sensor of the remote control.
- Where the average room temperature cannot be detected
  - Place near the equipment to generate heat
  - Place affected by outside air in opening/closing the door
  - Place exposed to direct sunlight or wind from air-conditioner
  - Where the difference between wall and room temperature is large



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**To connect to a personal computer via USB, use the dedicated software.**



**Do not connect other USB devices and the remote control at the same time.**

It could cause malfunction or break-down of the remote control/personal computer.

---

## 2) Accessories & prepare on site

Following parts are provided.

Accessories	R/C main unit, wood screw ( $\phi$ 3.5 x 16) 2 pcs., Quick reference
-------------	--

Following parts are arranged at site. Prepare them according to the respective installation procedures.

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 directly on a wall. (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 <sup>2</sup> 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<sup>2</sup>. 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 <sup>2</sup> x 2 cores
≤ 300m	0.75 mm <sup>2</sup> x 2 cores
≤ 400m	1.25 mm <sup>2</sup> x 2 cores
≤ 600m	2.0 mm <sup>2</sup> x 2 cores

## 3) Installation place

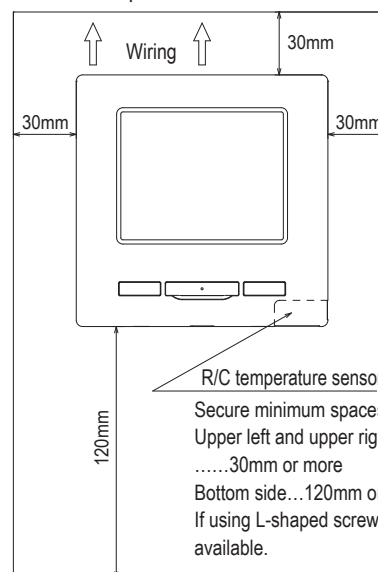
Secure the installation space shown in the figure.

For the installation method, "embedding wiring" or "exposing wiring" can be selected.

For the wiring direction, "Backward", "Upper center" or "Upper left" can be selected.

Determine the installation place in consideration of the installation method and wiring direction.

Installation space

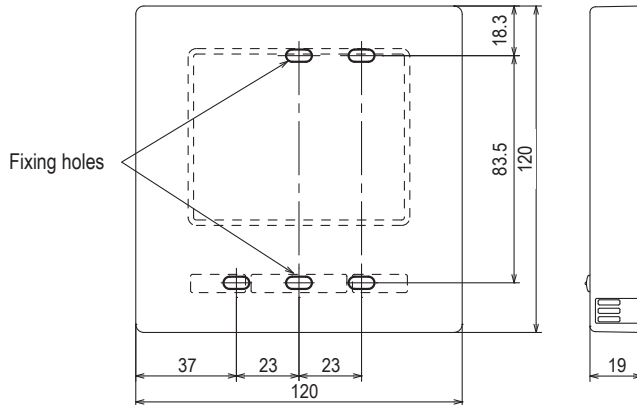


Secure minimum spaces for disassembling the case.  
Upper left and upper right sides  
.....30mm or more  
Bottom side...120mm or more  
If using L-shaped screwdriver, 50mm or more is available.

## 4) Installation procedure

Perform installation and wiring work for the remote control according to the following procedure.

Dimensions (Viewed from front)



To disassemble the R/C case into the upper and lower pieces after assembling them once

- 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. It is recommended that the tip of the screwdriver be wrapped with tape to avoid damaging the case.

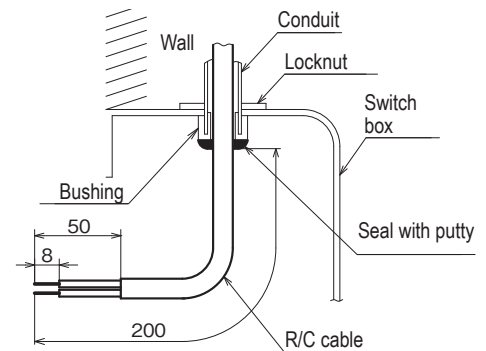
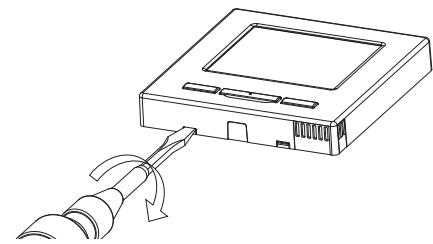
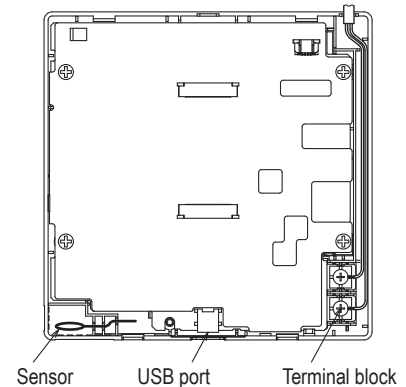
Take care to protect the removed upper case from moisture or dust.

### In case of embedding wiring

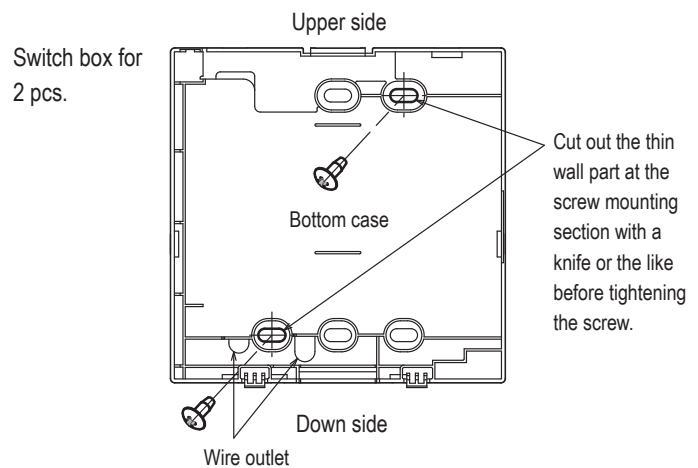
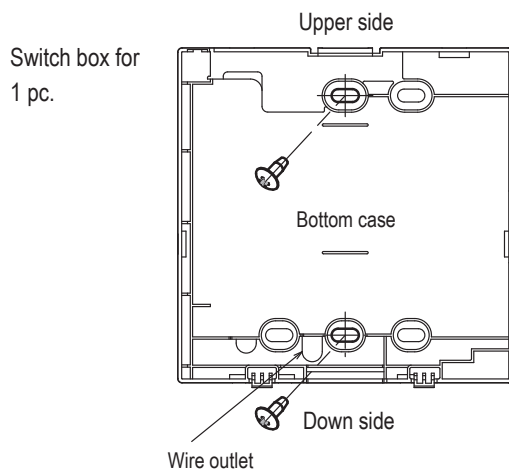
(When the wiring is retrieved "Backward")

- ① Embed the switch box and the R/C wires beforehand.  
Seal the inlet hole for the R/C wiring with putty.

PCB side (Viewed from rear)



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



- ③ 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. Fix wires such that the wires will run around the terminal screws on the top case of R/C.
- ④ Install the upper case with care not to pinch wires of R/C.

**Cautions for wire connection**

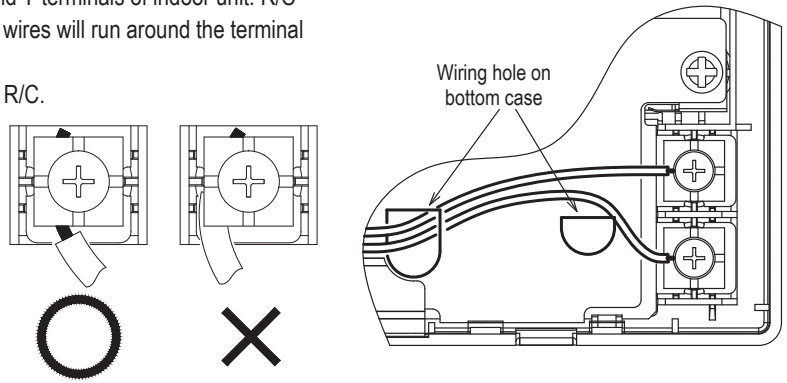
Use wires of no larger than 0.5 mm<sup>2</sup> for wiring running through the remote control case. Take care not to pinch the sheath.

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.

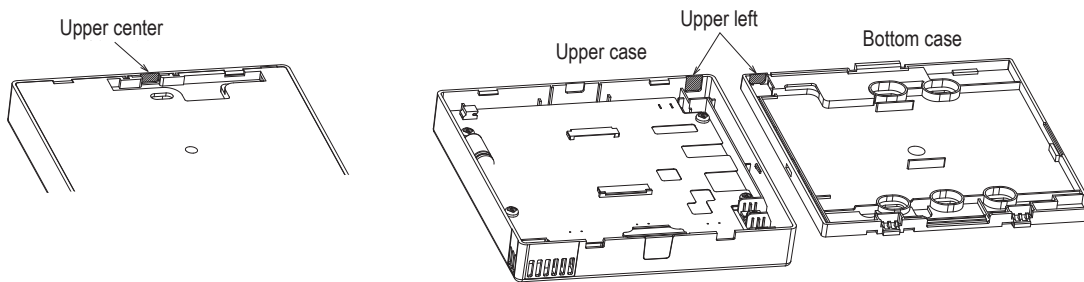
**In case of exposing wiring**

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

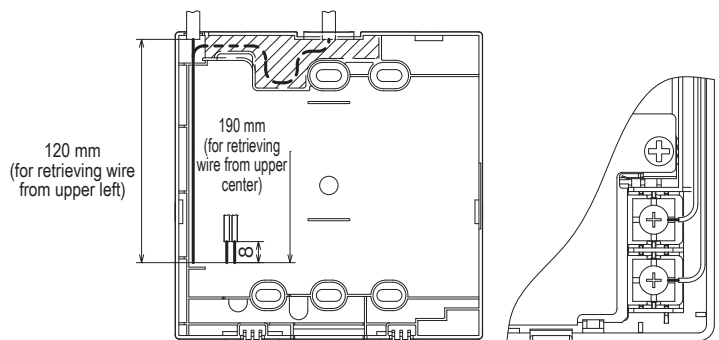
- ① Cut out the thin wall sections on the cases for the size of wire.



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.



- ② Fix the bottom R/C case on a flat surface with two wood screws.
- ③ In case of the upper center, pass the wiring behind the bottom case. (Hatched section)
- ④ 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. Fix wires such that the wires will run around the terminal screws on the top case of R/C.
- ⑤ Install the top case with care not to pinch wires of R/C.
- ⑥ Seal the area cut in ① with putty.



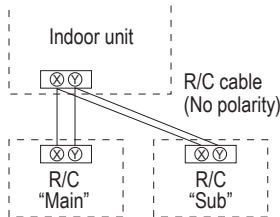


## 5) Main/Sub setting when more than one remote control are used

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.



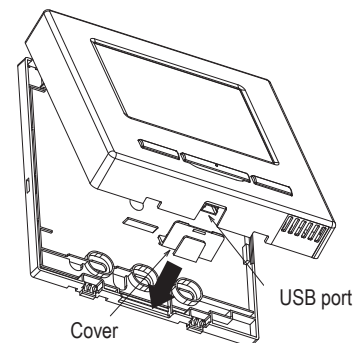
R/C operations		Main	Sub	
Run/Stop, Change set temp., Change flap direction, Auto swing, Change fan speed operations		○	○	
High power operation, Energy-saving operation		○	○	
Silent mode control		○	×	
Useful functions	Individual flap control	○	×	
	Anti draft setting	○	×	
	Timer	○	○	
	Favorite setting	○	○	
	Weekly timer	○	×	
	Home leave mode	○	×	
	External ventilation	○	○	
	Select the language	○	○	
	Silent mode control	○	×	
	Energy-saving setting		○	×
Filter	Filter sign reset	○	○	
User setting	Initial settings		○	○
	Administrator settings	Permission/Prohibition setting	○	×
		Outdoor unit silent mode timer	○	×
		Setting temp. range	○	×
	Temp increment setting	○	×	
	Set temp. display	○	○	
	R/C display setting	○	○	
	Change administrator password	○	○	
F1/F2 function setting	○	○		

○ : operable × : not operable

R/C operations		Main	Sub			
Service setting	Installation settings	Installation date	○	×		
		Company information	○	○		
		Test run	○	×		
		Static pressure adjustment	○	×		
		Change auto-address	○	×		
		Address setting of main IU	○	×		
		IU back-up function	○	×		
		Motion sensor setting	○	×		
		R/C function settings	Main/Sub of R/C	○	○	
			Return air temp.	○	×	
	R/C sensor		○	×		
	R/C sensor adjustment		○	×		
	Operation mode		○	×		
	°C / °F		○	×		
	Fan speed		○	×		
	External input		○	×		
	Upper/lower flap control		○	×		
	Left/right flap control		○	×		
	IU settings	Ventilation setting	○	×		
		Auto-restart	○	×		
		Auto temp. setting	○	×		
		Auto fan speed	○	×		
		Service & Maintenance	IU address	○	○	
			Next service date	○	×	
			Operation data	○	×	
			Error display	Error history	○	○
				Display/erase anomaly data	○	×
				Reset periodical check	○	○
	Saving IU settings		○	×		
	Special settings		Erase IU address	○	×	
			CPU reset	○	○	
			Restore of default setting	○	×	
		Touch panel calibration	○	○		
	Indoor unit capacity display	○	×			

### Advice: Connection to personal computer

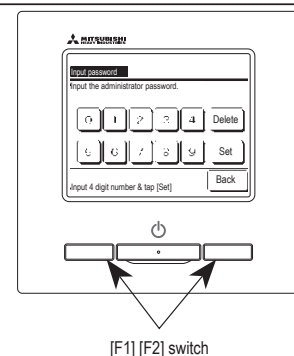
It can be set from a personal computer via the USB port (mini-B). Connect after removing the cover for USB port of upper case. Replace the cover after use. Special software is necessary for the connection. For details, view the web site.



### Advice: 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).  
If the administrator password is forgotten, it can be initialized by holding down the [F1] and [F2] switches together for five 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



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.
 

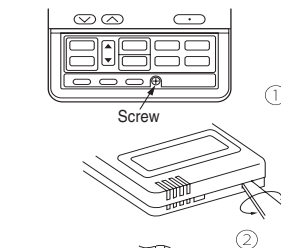
(1) Places exposed to direct sunlight	(4) Hot surface or cold surface enough to generate condensation
(2) Places near heat devices	(5) Places exposed to oil mist or steam directly
(3) High humidity places	(6) Uneven surface

⊘
- Do not leave the remote control without the upper case.  
In case the upper case 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 (φ 3.5×16) 2 pieces
Prepare on site	Remote control cord (2 cores) the insulated thickness in 1mm or more. [In case of embedding cord] Electrical box, M4 screw (2 pieces) [In case of exposing cord] Cord clamp (if needed)

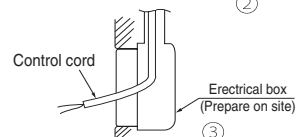
**Installation procedure**

- ① Open the cover of remote 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.

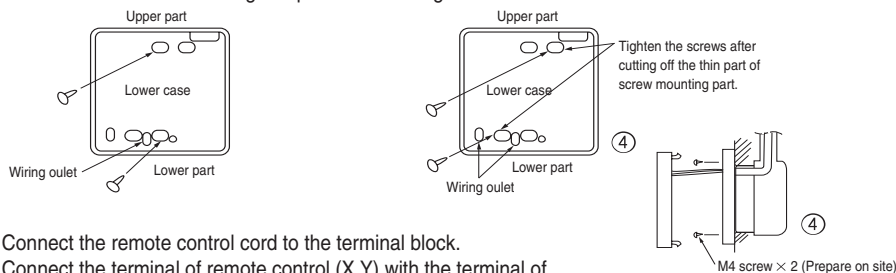


**[In case of embedding cord]**

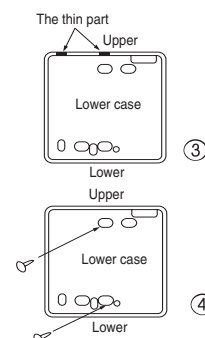
- ③ Embed the electrical box and remote control cord beforehand.



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



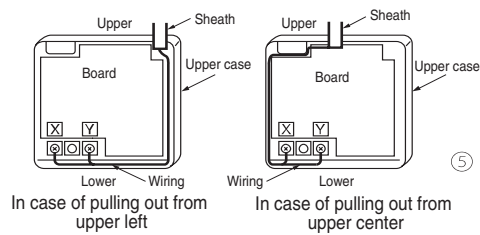
- ⑤ Connect the remote control cord to the terminal block.  
Connect the terminal of remote control (X,Y) with the terminal of indoor unit (X,Y). (X and Y are no polarity)
- ⑥ Install the upper case as before so as not to catch up the remote control cord, and tighten with the screws.



**[In case of exposing cord]**

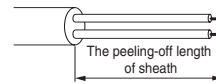
- ③ You can pull out the remote control cord from left upper part or center upper part.  
Cut off the upper thin part of remote control lower case with a nipper or knife, and grind burrs with a file etc.
- ④ Install the lower case to the flat wall with attached two wooden screws.

- 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.



The wiring inside the remote control case should be within 0.3mm<sup>2</sup> (recommended) to 0.5mm<sup>2</sup>.  
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	X wiring : 170mm
Y wiring : 195mm	Y wiring : 190mm



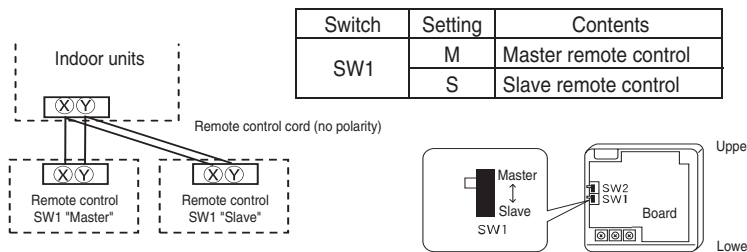
- ⑥ Install the upper case as before so as not to catch up the remote control cord, and tighten with the screws.
- ⑦ In case of exposing cord, fix the cord on the wall with cord clamp so as not to slack.

### Installation and wiring of remote control

- ① Wiring of remote control should use 0.3mm<sup>2</sup> × 2 cores 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<sup>2</sup>. 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<sup>2</sup> × 2 cores  
Under 300m.....0.75mm<sup>2</sup> × 2 cores  
Under 400m.....1.25mm<sup>2</sup> × 2 cores  
Under 500m.....2.0mm<sup>2</sup> × 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.)



Set SW1 to "Slave" for the slave remote control. It was factory set to "Master" for shipment.  
Note: The setting "Remote control sensor 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).

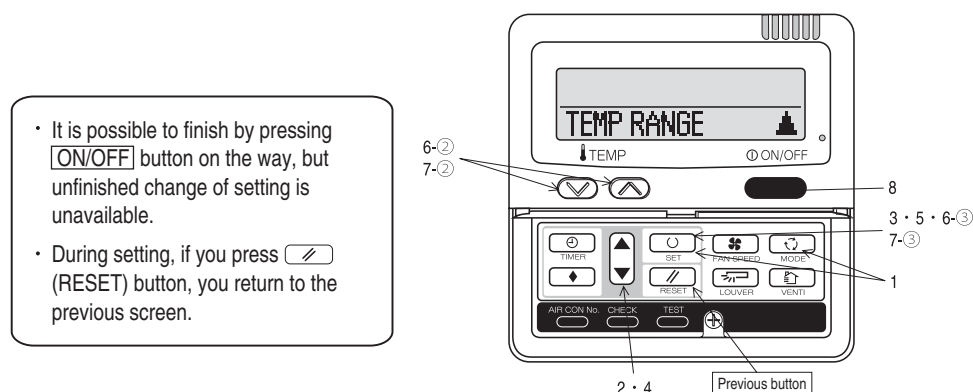
Lower limit setting: valid except heating (automatic, cooling, fan, dry) Possible to set in the range of 18 to 26°C (62 to 79°F).

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

- When ⑫ TEMP 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.
- When ⑫ TEMP 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

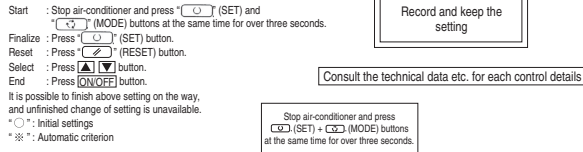
- Stop the air-conditioner, and press (SET) and (MODE) button at the same time for over three seconds.  
 The indication changes to "FUNCTION SET ▼".
- Press button once, and change to the "TEMP RANGE ▲" indication.
- Press (SET) button, and enter the temperature range setting mode.
- Select "UPPER LIMIT ▼" or "LOWER LIMIT ▲" by using button.
- Press (SET) button to fix.
- 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 ▼".
- 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 ▼".
- Press button to finish.



**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 will be no need to change the initial settings.  
 If you would like to change the initial setting marked "○", set your desired setting as for the selected item.  
 The procedure of functional setting is shown as the following diagram.

**[Flow of function setting]**



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	INVALID	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	INVALID	Indoor unit with automatically swing louver
		INVALID	Indoor unit without automatically swing louver
Remote control function13	1/1 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	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 / PROHIBITION".

Function	setting	Function	setting
01 ESP SET	VALID ○ INVALID ※	02 FAN SPEED SET	STANDARD ※ HIGH SPEED 1 ※ HIGH SPEED 2 ※
02 AUTO RUN SET	AUTO RUN ON ※ AUTO RUN OFF ※	03 FILLER SIGN SET	INDICATION OFF ○ TYPE 1 ○ TYPE 2 ○ TYPE 3 ○ TYPE 4 ○
03 TEMP SW	VALID ○ INVALID ※	04 POSITION	POSITION STOP ○ FREE STOP ○
04 MODE SW	VALID ○ INVALID ※	05 EXTERNAL INPUT	LEVEL INPUT ○ PULSE INPUT ○
05 ON/OFF SW	VALID ○ INVALID ※	06 PERMISSION/PROHIBITION	INVALID ○ VALID ○
06 FAN SPEED SW	VALID ※ INVALID ※	07 EMERGENCY STOP	INVALID ○ VALID ○
07 LOUVER SW	VALID ○ INVALID ※	08 SP OFFSET	OFFSET +3.0℃ ○ OFFSET +2.0℃ ○ OFFSET +1.0℃ ○ NO OFFSET ○
08 TIMER SW	VALID ○ INVALID ※	09 RETURN AIR TEMP	OFFSET +2.0℃ ○ OFFSET +1.5℃ ○ OFFSET +1.0℃ ○ NO OFFSET ○
09 SENSOR SET	SENSOR OFF ○ SENSOR ON ○ SENSOR +3.0℃ ○ SENSOR +2.0℃ ○ SENSOR +1.0℃ ○ SENSOR -1.0℃ ○ SENSOR -2.0℃ ○ SENSOR -3.0℃ ○	10 FAN CONTROL	LEM FAN SPEED ○ SET FAN SPEED ○ INTERMITTENCE ○ FAN OFF ○
10 AUTO RESTART	INVALID ○ VALID ○	11 FROST PREVENTION TEMP	TEMP HIGH ○ TEMP LOW ○
11 VENT LINK SET	NO VENT ○ VENT LINK ○ NO VENT LINK ○	12 FROST PREVENTION CONTROL	FAN CONTROL ON ○ FAN CONTROL OFF ○
12 TEMP RANGE SET	INDEN CHANGE ○ NO INDEN CHANGE ○	13 DRAIN PUMP LINK	○ ○ ○ AND ○ ○ AND ○ AND ○
13 1/1 FAN	HI-MID-LO ※ HI-LO ※ HI-MID ※ 1 FAN SPEED ※	14 SP FAN REMAINING	NO REMAINING ○ 0.5 HOUR ○ 1 HOUR ○ 2 HOUR ○ 6 HOUR ○
14 POSITION	POSITION STOP ○ FREE STOP ○	15 SP FAN REMAINING	NO REMAINING ○ 0.5 HOUR ○ 1 HOUR ○ 2 HOUR ○ 6 HOUR ○
15 MODEL TYPE	HEAT PUMP ※ COOLING ONLY ※	16 SP FAN INTERMITTENCE	NO REMAINING ○ 5min/5 OFF 5min/ON ○ 5min/5 OFF 5min/ON ○
16 EXTERNAL CONTROL SET	INDIVIDUAL ○ FOR ALL UNITS ○	17 PRESSURE CONTROL	STANDARD ※ INVERT ※
17 ROOM TEMP INDICATION SET	INDICATION OFF ○ INDICATION ON ○		
18 SHOWN INDICATION	INDICATION ON ○ INDICATION OFF ○		
19 °C/°F SET	℃ ○ °F ○		

Note2: Fan setting of "HIGH SPEED"

Fan tap	Indoor unit air flow setting					
	Std1	Std2	Std3	Std4	Std5	Std6
FAN SPEED SET	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".]

Note \* The mark cannot use SRK series.

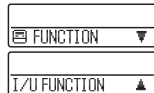
ON/OFF button (finished)

### 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.



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.  
Select "FUNCTION ▼" (remote control function) or "I/U FUNCTION ▲" (indoor unit function).



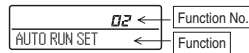
5. Press (SET) button.

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

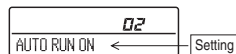
- ① "DATA LOADING" (Indication with blinking)

↓  
Display is changed to "01 ESP SET".

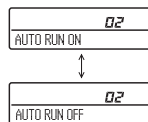
- ② Press or button.  
"No. and function" are indicated by turns on the remote control function table, then you can select from them.  
(For example)



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



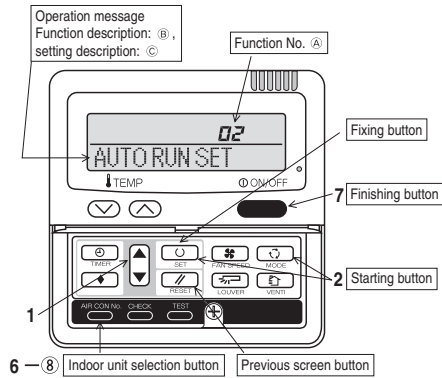
- ④ Press or button.  
Select the setting.



- 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.



7. Press (ON/OFF) button.  
Setting is finished.



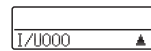
#### 【On the occasion of indoor unit function selection】

- ① "DATA LOADING" (Blinking for 2 to 23 seconds to read the data)

↓  
Indication is changed to "02 FAN SPEED SET".  
Go to ②.

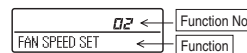
#### 【Note】

- (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.

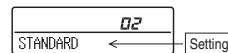


- (2) Press or button.  
Select the number of the indoor unit you are to set  
If you select "ALL UNIT ▼", you can set the same setting with all unites.
- (3) Press (SET) button.

- 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)



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



- 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.



※ When plural indoor units are connected to a remote control, press the 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 function" and press set button by the previous operation, the "Setting" displayed first is the current setting.  
(But, if you select "ALL UNIT ▼", the setting of the lowest number indoor unit is displayed.)

### 1.8.3 Installation of outdoor unit Models FDC100VNX-W,100VSX-W

PSC012D143C

- This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 22.
- 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

Inverter driven split PAC	
100, 125, 140 VNX-W	
100, 125, 140 VSX-W	
Designed for R32 refrigerant	

#### 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 notification 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.
- In case of 125VNX and 140VNX, 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

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

#### WARNING

- |   |   |
|---|---|
| <p>● <b>Installation must be carried out by the qualified installer.</b><br/>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.</p> <p>● <b>Install the system in full accordance with the instruction manual.</b><br/>Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.</p> <p>● <b>Use the original accessories and the specified components for installation.</b><br/>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.</p> <p>● <b>When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with ISO1540.</b><br/>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.</p> <p>● <b>Ventilate the working area well in the event of refrigerant leakage during installation.</b><br/>If the refrigerant comes into contact with naked flames, poisonous gas is produced.</p> <p>● <b>After completed installation, check that no refrigerant leaks from the system.</b><br/>If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.</p> <p>● <b>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.</b><br/>An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit.</p> <p>● <b>Install the unit in a location with good support.</b><br/>Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.</p> <p>● <b>Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.</b><br/>Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.</p> <p>● <b>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.</b><br/>Power source with insufficient capacity and incorrect function due to improper work can cause electric shocks and fire.</p> <p>● <b>Be sure to shut off the power before starting electrical work.</b><br/>Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.</p> <p>● <b>Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.</b><br/>Unconformable cables can cause electric leak, anomalous heat production or fire.</p> <p>● <b>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.</b><br/>Loose connections or cable mountings can cause anomalous heat production or fire.</p> <p>● <b>Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.</b><br/>Incorrect installation may result in overheating and fire.</p> <p>● <b>Do not perform brazing work in the airtight room.</b><br/>It can cause lack of oxygen.</p> <p>● <b>Use the prescribed pipes, flare nuts and tools for R32 and R410A.</b><br/>Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.</p> | <p>● <b>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.</b><br/>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.</p> <p>● <b>Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.</b><br/>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.</p> <p>● <b>Only use prescribed option parts. The installation must be carried out by the qualified installer.</b><br/>If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.</p> <p>● <b>Do not perform any change of protective device itself or its set-up condition.</b><br/>The forced operation by short-circuiting protective device of pressure switch and temperature control or the use of non specified component can cause fire or burst.</p> <p>● <b>Be sure to switch off the power source in the event of installation, inspection or servicing.</b><br/>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.</p> <p>● <b>Consult the dealer or an expert regarding removal of the unit.</b><br/>Incorrect installation can cause water leaks, electric shocks or fire.</p> <p>● <b>Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.</b><br/>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.</p> <p>● <b>Be sure to wear protective goggles and gloves while at work.</b></p> <p>● <b>This unit is designed specifically for R32.</b><br/>Using any other refrigerant can cause unit failure and personal injury.</p> <p>● <b>Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.</b><br/>If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.</p> <p>● <b>Do not run the unit with removed panels or protections.</b><br/>Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.</p> <p>● <b>Be sure to fix up the service panels.</b><br/>Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.</p> <p>● <b>Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair.</b><br/>If you repair or modify the unit, it can cause water leaks, electric shocks or fire.</p> <p>● <b>Do not process or splice the power cord, or share the socket with other power plugs.</b><br/>This may cause fire or electric shock due to deflecting contact, deflecting insulation and over-current etc.</p> <p>● <b>Do not bundle or wind or process the power cord. Do not deform the power cord by treading it.</b><br/>This may cause fire or heating.</p> |
|---|---|

#### CAUTION

- |  |   |
|--|---|
| <p>● <b>Carry out the electrical work for ground lead with care.</b><br/>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.</p> <p>● <b>Use the circuit breaker for all pole with correct capacity.</b><br/>Using the incorrect circuit breaker, it can cause the unit malfunction and fire.</p> <p>● <b>Install isolator or disconnect switch on the power source wiring in accordance with the local codes and regulations.</b><br/>The isolator should be locked in accordance with EN60204-1.</p> <p>● <b>Take care when carrying the unit by hand.</b><br/>If the unit weighs 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 aluminium fins.</p> <p>● <b>Dispose of any packing materials correctly.</b><br/>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.</p> <p>● <b>Pay attention not to damage the drain pan by weld spatter when welding work is done near the indoor unit.</b><br/>If weld spatter enters 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.</p> <p>● <b>Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.</b><br/>Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.</p> <p>● <b>Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.</b><br/>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.</p> <p>● <b>Perform installation work properly according to this installation manual.</b><br/>Improper installation can cause abnormal vibrations or increased noise generation.</p> <p>● <b>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.</b></p> <p>● <b>Earth leakage breaker must be installed.</b><br/>If the earth leakage breaker is not installed, it can cause fire or electric shocks.</p> <p>● <b>Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.</b><br/>Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.</p> <p>● <b>Do not install the unit near the location where leakage of combustible gases can occur.</b><br/>If leaked gases accumulate around the unit, it can cause fire.</p> <p>● <b>Do not install the unit where corrosive gas (such as sulfuric acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.</b><br/>Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.</p> <p>● <b>Secure a space for installation, inspection and maintenance specified in the manual.</b><br/>Insufficient space can result in accident such as personal injury due to falling from the installation place.</p> <p>● <b>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.</b><br/>If safety facilities are not provided, it can cause personal injury due to falling from the installation place.</p> <p>● <b>Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.</b><br/>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.</p> <p>● <b>Do not install the outdoor unit in a location where insects and small animals can inhabit.</b><br/>Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.</p> | <p>● <b>Do not use the base frame for outdoor unit which is corroded or damaged due to long periods of operation.</b><br/>Using an old and damaged base frame can cause the unit falling down and cause personal injury.</p> <p>● <b>Do not install the unit in the locations listed below.</b><br/>-Locations where carbon fiber, metal powder or any powder is floating.<br/>-Locations with direct exposure of oil mist and steam such as kitchen and machine plant.<br/>-Vehicles and ships<br/>-Locations where cosmetic or special sprays are often used.<br/>-Locations where any substances that can affect the unit such as sulphide gas, chlorine gas, acid and alkaline can occur.<br/>-Locations where any machines which generate high frequency harmonics are used.<br/>-Locations with salty atmospheres such as coastlines<br/>-Locations with calcium chloride (e.g. snow melting agent).<br/>-Locations where the unit is exposed to chimney smoke<br/>-Locations at high altitude (more than 1000m high)<br/>-Locations with ammonia atmospheres (e.g. organic fertilizer).<br/>-Locations with calcium chloride (e.g. snow melting agent).<br/>-Locations where heat radiation from other heat source can affect the unit<br/>-Locations with poor air circulation.<br/>-Locations with any obstacles which can prevent inlet and outlet air of the unit<br/>-Locations where short-circuit of air can occur (in case of multiple units installation)<br/>-Locations where strong air blows against the air outlet of outdoor unit<br/>-Locations where something located above the unit could fall.<br/>It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.</p> <p>● <b>Do not install the outdoor unit in the locations listed below.</b><br/>-Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.<br/>-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.<br/>-Locations where vibration can be amplified and transmitted due to insufficient strength of structure.<br/>-Locations where vibration and operation sound generated by the outdoor unit can affect seriously, (on the wall or at the place near bed room)<br/>-Locations where an equipment affected by high harmonics is placed, (TV set or radio receiver is placed within 5m)<br/>-Locations where drainage cannot run off safely.<br/>It can affect surrounding environment and cause a claim.</p> <p>● <b>Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.</b><br/>It can cause the damage of the items.</p> <p>● <b>Do not touch any buttons with wet hands.</b><br/>It can cause electric shocks.</p> <p>● <b>Do not touch any refrigerant pipes with your hands when the system is in operation.</b><br/>During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.</p> <p>● <b>Do not clean up the unit with water.</b><br/>It can cause electric shocks.</p> <p>● <b>Do not operate the outdoor unit with any article placed on it.</b><br/>You may incur property damage or personal injury from a fall of the article.</p> <p>● <b>Do not step onto the outdoor unit.</b><br/>You may incur injury from a drop or fall.</p> <p>● <b>Do not touch the suction or aluminum fin on the outdoor unit.</b><br/>This may cause injury.</p> |
|--|---|

#### Notabilia as a unit designed for R32

- Do not use any refrigerant other than R32. R32 will rise to pressure about 1.6 times higher than that of a conventional refrigerant (R22 or R407C).
- A cylinder containing R32 has a light blue indication mark on the top.
- A unit designed for R32 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 size measurement have also been altered to raise strength against pressure. Accordingly, you are required to arrange dedicated R32 tools listed in the table on the right before installing or servicing this unit.
- All indoor units must be models designed exclusively for R32. Check connectable indoor unit models in a catalog, etc. (A wrong indoor unit, if connected into the system, will impair proper system operation)

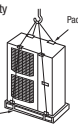
	Dedicated R32 and R410A tools
a)	Gauge manifold
b)	Charge hose
c)	Electronic scale for refrigerant charging
d)	Torque wrench
e)	Flare tool
f)	Protrusion control copper pipe gauge
g)	Vacuum pump adapter
h)	Gas leak detector

# 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.

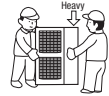
### 1) Delivery

- 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 strong wind will not blow against the outlet air blow of the unit.
  - 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.

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, consult a dealer.
3. Install the unit under eaves or provide the roof on site.



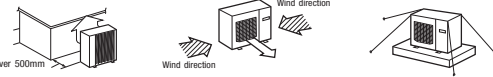
Since drain water generated by defrost control may freeze, following measures are required.

- Don't execute drain piping work by using a drain elbow and drain grommets (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.

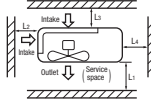
1. Install the outlet air blow side of the unit to face a wall of building, or provide a fence or a windbreak screen.
2. Install the outlet air blow side of the unit in a position perpendicular to the direction of wind.
3. The unit should be installed on the stable and level foundation. If the foundation is not level, tie down the unit with wires.



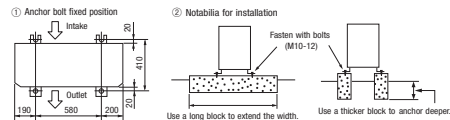
### 5) Installation space

- 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 levers.
- 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.

Size	Example installation (mm)		
	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5



### 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 15mm.
- 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 5mm 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, consult a dealer.

## 2. REFRIGERANT PIPING WORK

### 1) Restrictions on unit installation and use

● Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

Restrictions	Model for outdoor units	Dimensional restrictions	Installation type			
			Single type	Twin type	Triple type A	Triple type B
One-way pipe length	100WN, 125WN, 140WSX, 125WSX, 140WN, 140WSX	3m ~ 5" ≤ 100m (3)	L	L+L1 L+L2	L+L1+L2+L3	L+L1+L2+L3
Main pipe length	100WN, 125WN, 140WSX, 125WSX, 140WN, 140WSX	≤ 100m (3)	—	L	—	L
One-way pipe length between the first branch from to the second branch	140WN, 140WSX	≤ 5m	—	—	—	La
One-way pipe length after the first branch	100WN, 125WN, 140WSX, 125WSX, 140WN, 140WSX	≤ 30m	—	L1, L2	L1, L2, L3	L1 (f)
One-way pipe length from the first branch to indoor units through the second branch	140WN, 140WSX	≤ 27m	—	—	—	La+L2, La+L3 (f)
One-way pipe length difference between the first branch to the indoor unit	100WN, 125WN, 140WSX, 125WSX, 140WN, 140WSX	≤ 10m ≤ 3m ≤ 10m	—	L1-L2	L1-L2, L1-L3, L1-L4	L1-L2+L3, L1-L4+L3 (f)
One-way pipe length difference between the second branch to the indoor unit	140WN, 140WSX	≤ 10m	—	—	—	L1-L2, L3-1
Elevation difference between indoor and outdoor units	Outdoor unit is positioned higher.	≤ 50m (2)	H	H	H	H
Elevation difference between indoor units	Outdoor unit is positioned lower.	≤ 15m	—	—	—	—
Elevation difference between indoor units		≤ 0.5m	—	H	H1, H2, H3	H1, H2, H3

● 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 Notes (1) Install the indoor units so that L + L1 becomes the longest one-way pipe. (2) When the pipe length difference between L1 and (La + L2) or (La + L3) within 10m. (3) Maximum piping length is limited up to 65m for SRKSD triple type combination, and 85m for FDE50 triple type and FDE60, FDE71 twin type.

### 2) Determination of pipe size

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

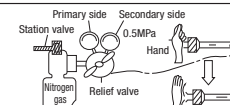
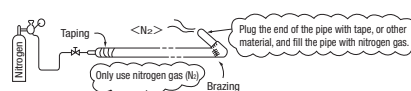
	Model 100V		Model 125V		Model 140V		
	Sleeve pipe	Liquid pipe	Sleeve pipe	Liquid pipe	Sleeve pipe	Liquid pipe	
Outdoor unit connected	φ15.88	φ9.52	φ15.88	φ9.52	φ15.88	φ9.52	
In the case of a single type	Flare	Flare	Flare	Flare	Flare	Flare	
Refrigerant piping (Main pipe L)	φ15.88	φ9.52	φ15.88	φ9.52	φ15.88	φ9.52	
Capacity of indoor unit	φ15.88	φ9.52	φ15.88	φ9.52	φ15.88	φ9.52	
Branching pipe set	DS-WA1G	DS-WA1G	Model 125V DS-WA1G	Model 140V DS-WA1G			
In the case of a twin type	Refrigerant piping (branch pipe L1, L2)	φ12.7	φ9.52	φ12.7	φ9.52	φ15.88	φ9.52
Capacity of indoor unit	φ12.7	φ6.35	φ12.7	φ6.35	φ15.88	φ9.52	
Branching pipe set	Model 50V+2	Model 60V+2		Model 71V+2 DS-1B1G			
In the case of a triple type A	Refrigerant piping (branch pipe L1, L2, L3)				φ12.7	φ9.52	
Capacity of indoor unit					φ12.7	φ6.35	
Branching pipe set					Model 50V+2 DS-3B1G	DS-3B1G	
In the case of a triple type B	Refrigerant piping (branch pipe L1)				φ15.88	φ9.52	
Refrigerant piping (branch pipe L2)					φ12.7	φ9.52	
Branching pipe set (after branch pipe La)					DS-WA1G	DS-WA1G	
Refrigerant piping (branch pipe L2, L3)					φ12.7	φ9.52	
Capacity of indoor unit					φ12.7	φ6.35	
Branching pipe set					Model 50V+2 DS-3B1G	DS-3B1G	

- 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.
- In the case of a triple type, branching pipe set shown in this table varies depending on the length difference of one way piping after the first branch. Please check the table above.

#### 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 R32. 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 H 3300

**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.

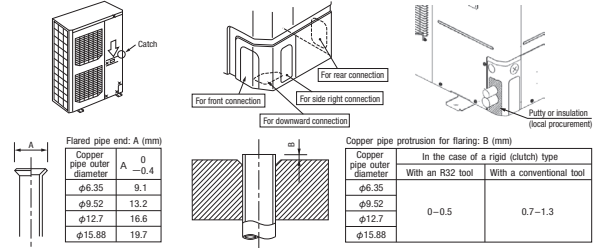
#### How to remove the service panel

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.

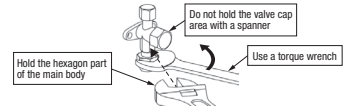
- The pipe can be laid in any of the following directions: side right, front, rear and downward.
- Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area.
- Please close the gap of piping connecting part with putty or insulation material (locally procured) after piping connection. Small animals or insects may intrude into the outdoor unit and it will cause electrical short.
- 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 R32 are different from those for conventional R22 and R407C. Although we recommend the use of flaring tools designed specifically for R32, conventional flaring tools can also be used by adjusting the measurement of protrusion B with a protrusion control gauge.
- Do not reuse existing flare, make new flare.
- 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 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.
- Do not apply refrigerating machine oil to the flared surface. It can cause refrigerant leakage.



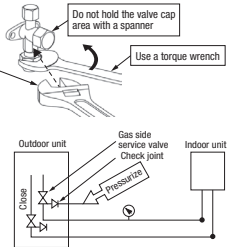
Service valve size	Tightening torque (N·m)
φ6.35 (1/4")	14–18
φ9.52 (3/8")	34–42
φ12.7 (1/2")	49–61
φ15.88 (5/8")	68–95



### 5) Air tightness test

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

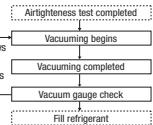
- Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
  - Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
  - Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
  - If no pressure drop is observed with an installation pressurized to the specified level and left for about one day, it is acceptable. When the ambient temperature fall 1°C, the pressure also fall approximately 0.01 MPa. The pressure, if changed, should be compensated for.
  - If an 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.



### 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.



Pay attention to the following points in addition to the above for the R32 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		Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
Capacity	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)		
100VX-140VX 100VXS-140VXS	0.054	4.0	30

<Twin, triple type>

Capacity	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		
100VX-140VX 100VXS-140VXS	0.054	0.054	4.0	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.
- 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**

$$\text{Additional charge volume (kg)} = (\text{Main pipe length (m)} - \text{Length covered without additional charge 30 (m)}) \times 0.054 (\text{kg/m}) + \text{Total length of branch pipes (m)} \times 0.054 (\text{kg/m})$$

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

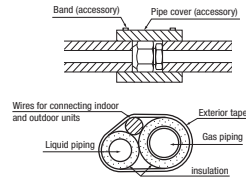
#### (2) Charging refrigerant

- Since R32 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.

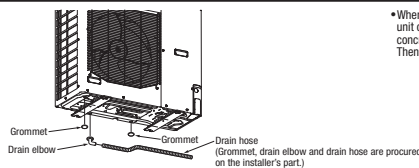
### 8) Heating and condensation prevention

- Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
- Use a heat insulating material that can withstand 120°C or higher temperature. Poor heat insulating capacity can cause heat insulation problems or cable deterioration.
  - Improper heat insulation/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 20mm or thicker heat insulation materials above the ceiling where relative humidity exceeds 70%.**

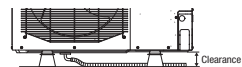


## 3. DRAIN PIPING WORK

- Execute drain piping by using a drain elbow and drain grommets supplied separately as 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.



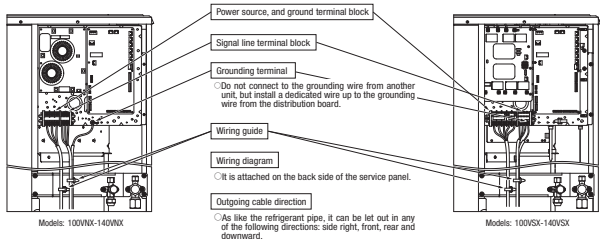
## 4. ELECTRICAL WIRING WORK

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 improper grounded, an electric shock or malfunction may result.
- A grounding wire must be connected before connecting the power source 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 source until the electrical work is completed.
- Do not use a condensive capacitor for power factor improvement under any circumstances. (It does not improve power factor, while it can cause an abnormal overheat accident.)
- For power 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 they may not touch the piping, etc.
- When cables are connected, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)
- Always use a three-core cable for an indoor-outdoor connecting cable. Never use a shield cable.
- 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.



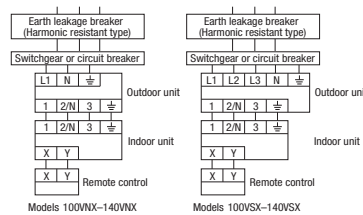
Cable type	Flat cable	4 cores cable	Shield cable
Model	Specification	Part No.	
100VX-140VX	250V 30A	PCAD06A091	
100VXS-140VXS	—	—	

Main fuse specification	
Model	Specification
100VX-140VX	250V 30A
100VXS-140VXS	—

**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.












## 1.8.4 Safety precautions in handling air-conditioners with flammable refrigerant


PSA012B839A 

### R32 REFRIGERANT USED

	This equipment uses flammable refrigerants. If the refrigerant is leaked, together with an external ignition source, there is a possibility of ignition.		There is information included in the user's manual and/or installation manual.
	The user's manual should be read carefully.		A service personnel should be handling this equipment with reference to the installation manual.

- This safety precaution sheet is for R32 refrigerant. If you want to know the type of refrigerant in the unit, check the label attached to the outdoor unit.
- 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.

#### **WARNING**

- Strict compliance of the domestic laws must be observed when disposing the appliance.
- Do not use means to accelerate the defrost operation process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.

#### **CAUTION**

- |  |   |   |
|--|---|---|
| <p><b>1. General</b></p> <ul style="list-style-type: none"> <li>• That the installation of pipe-work shall be kept to a minimum.</li> <li>• That pipe-work shall be protected from physical damage.</li> <li>• That compliance with national gas regulations shall be observed.</li> <li>• That mechanical connections shall be accessible for maintenance purposes.</li> <li>• Keep any required ventilation openings clear of obstruction.</li> <li>• Servicing shall be performed only as recommended by the manufacturer.</li> </ul> <p><b>2. Unventilated areas</b></p> <ul style="list-style-type: none"> <li>• The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.</li> </ul> <p><b>3. Qualification of workers</b></p> <ul style="list-style-type: none"> <li>• The staff in servicing operations must hold the national qualification or other relevant qualifications.</li> </ul> <p><b>4. Information on servicing</b></p> <p><b>4.1 Checks to the area</b></p> <ul style="list-style-type: none"> <li>• Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised.</li> <li>• For repair to the refrigerating system, 4.3 to 4.7 shall be completed prior to conducting work on the system.</li> </ul> <p><b>4.2 Work procedure</b></p> <ul style="list-style-type: none"> <li>• Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.</li> </ul> <p><b>4.3 General work area</b></p> <ul style="list-style-type: none"> <li>• All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out.</li> <li>• Work in confined spaces shall be avoided.</li> <li>• The area around the workspace shall be sectioned off.</li> <li>• Ensure that the conditions within the area have been made safe by control of flammable material.</li> </ul> <p><b>4.4 Checking for presence of refrigerant</b></p> <ul style="list-style-type: none"> <li>• The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres.</li> <li>• Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.</li> </ul> | <p><b>4.5 Presence of fire extinguisher</b></p> <ul style="list-style-type: none"> <li>• If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO<sub>2</sub> fire extinguisher adjacent to the charging area.</li> </ul> <p><b>4.6 No ignition sources</b></p> <ul style="list-style-type: none"> <li>• No person carrying out work in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.</li> <li>• All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.</li> <li>• Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks.</li> <li>• "No Smoking" signs shall be displayed.</li> </ul> <p><b>4.7 Ventilated area</b></p> <ul style="list-style-type: none"> <li>• Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.</li> <li>• A degree of ventilation shall continue during the period that the work is carried out.</li> <li>• The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.</li> </ul> <p><b>4.8 Checks to the refrigeration equipment</b></p> <ul style="list-style-type: none"> <li>• Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.</li> <li>• At all times the manufacturer's maintenance and service guidelines shall be followed.</li> <li>• If in doubt consult the manufacturer's technical department for assistance.</li> <li>• The following checks shall be applied to installations using flammable refrigerants: <ul style="list-style-type: none"> <li>– the charge size is in accordance with the room size within which the refrigerant containing parts are installed;</li> <li>– the ventilation machinery and outlets are operating adequately and are not obstructed;</li> <li>– if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;</li> <li>– marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;</li> <li>– refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.</li> </ul> </li> </ul> | <p><b>4.9 Checks to electrical devices</b></p> <ul style="list-style-type: none"> <li>• Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.</li> <li>• If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.</li> <li>• If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.</li> <li>• This shall be reported to the owner of the equipment so all parties are advised.</li> <li>• Initial safety checks shall include: <ul style="list-style-type: none"> <li>– that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;</li> <li>– that no live electrical components and wiring are exposed while charging, recovering or purging the system;</li> <li>– that there is continuity of earth bonding.</li> </ul> </li> </ul> <p><b>5. Repairs to sealed components</b></p> <ul style="list-style-type: none"> <li>• During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.</li> <li>• If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.</li> <li>• Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.</li> <li>• Ensure that the apparatus is mounted securely.</li> <li>• Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.</li> <li>• Replacement parts shall be in accordance with the manufacturer's specifications.</li> </ul> <p><b>NOTE</b></p> <p>The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.</p> |
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## ⚠ CAUTION

### 6. Repair to intrinsically safe components

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere.
- The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer.
- Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

### 7. Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

### 8. Detection of flammable refrigerants

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.

### 9. Leak detection methods

- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- If a leak is suspected, all naked flames shall be removed/extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.
- For appliances containing flammable refrigerants, oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

### 10. Removal and evacuation

- When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration.
- The following procedure shall be adhered to:
  - remove refrigerant;
  - purge the circuit with inert gas;
  - evacuate;
  - purge again with inert gas;
  - open the circuit by cutting or brazing.
- The refrigerant charge shall be recovered into the correct recovery cylinders.
- For appliances containing flammable refrigerants, the system shall be “flushed” with OFN to render the unit safe. This process may need to be repeated several times.
- Compressed air or oxygen shall not be used for purging refrigerant systems.

- For appliances containing flammable refrigerants, flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system.
- When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.
- Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation is available.

### 11. Charging procedures

- In addition to conventional charging procedures, the following requirements shall be followed.
  - Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
  - Cylinders shall be kept upright.
  - Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete (if not already).
  - Extreme care shall be taken not to overfill the refrigeration system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
- The system shall be leak-tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.

### 12. Decommissioning

- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.
- It is recommended good practice that all refrigerants are recovered safely.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant.
- It is essential that electrical power is available before the task is commenced.
  - a) Become familiar with the equipment and its operation.
  - b) Isolate system electrically.
  - c) Before attempting the procedure ensure that:
    - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
    - all personal protective equipment is available and being used correctly;
    - the recovery process is supervised at all times by a competent person;
    - recovery equipment and cylinders conform to the appropriate standards.
  - d) Pump down refrigerant system, if possible.
  - e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
  - f) Make sure that cylinder is situated on the scales before recovery takes place.
  - g) Start the recovery machine and operate in accordance with manufacturer's instructions.
  - h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
    - i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
    - j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
  - k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

### 13. Labelling

- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed.
- For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

### 14. Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge are available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants.
- In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.

### 15. Other safety precautions

- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts.
- Flammable refrigerant used, refrigerant tubing protected or enclosed to avoid mechanical damage (IEC/EN 60335-2-40/A1).
- Tubing protected to extent that it will not be handled or used for carrying during moving of product (IEC/EN 60335-2-40/A1).
- Flammable refrigerant used, low temperature solder alloys, such as lead/tin alloys, not acceptable for pipe connections (IEC/EN 60335-2-40/A1).
- Do not use flare nut indoor which is locally procured.

### Selection of installation location for the indoor unit

- Minimum installation area for indoor unit

**⚠ CAUTION**

The indoor unit shall be installed in a room with minimum installation area or more according to the refrigerant charge amount (factory refrigerant charge +additional refrigerant charge).  
 For factory refrigerant charge, refer to the outdoor unit label model name or installation sheet.  
 For additional refrigerant charge, refer to the outdoor unit installation sheet.

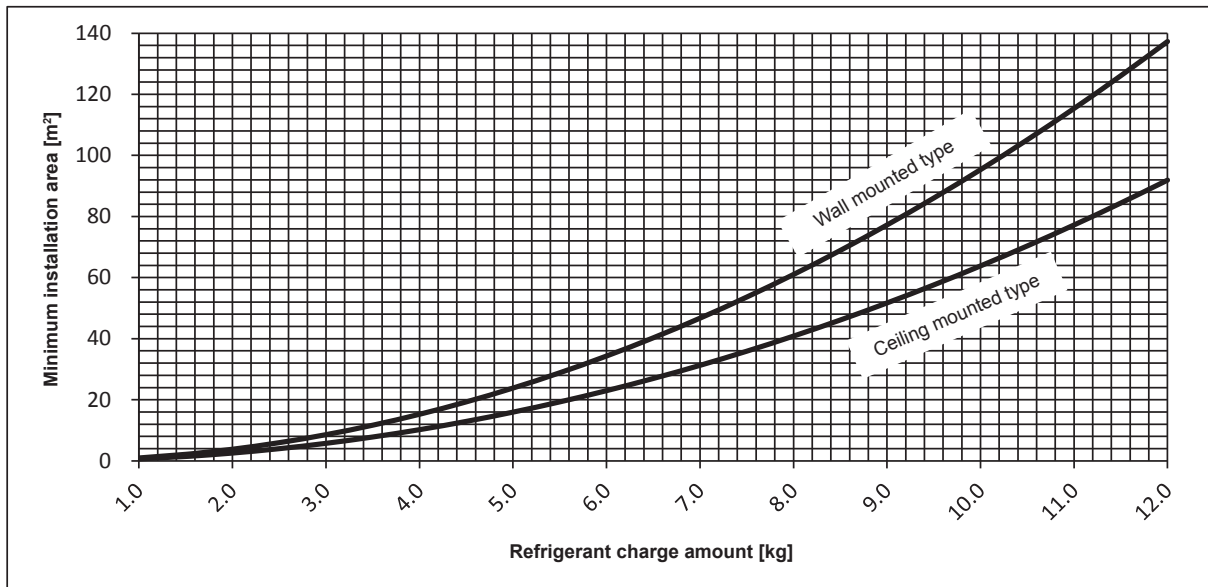
Ceiling mounted type	FDT,FDE,FDU,FDUM series
Wall mounted type	SRK series

Refrigerant charge amount [kg]	1.30	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	
Minimum installation area [m <sup>2</sup> ]	Ceiling mounted type	1.1	1.4	2.0	2.6	3.2	4.0	4.8	5.7	6.7	7.8	9.0	10.2	11.5	12.9	14.4
	Wall mounted type	1.6	2.1	2.9	3.8	4.8	6.0	7.2	8.6	10.1	11.7	13.4	15.3	17.2	19.3	21.5

Refrigerant charge amount [kg]	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	
Minimum installation area [m <sup>2</sup> ]	Ceiling mounted type	16	19	23	27	31	36	41	46	52	58	64	70	77	84	92
	Wall mounted type	24	29	34	40	47	54	61	69	77	86	95	105	115	126	137



The minimum floor area [m<sup>2</sup>] is determined based on the installation height of 1.8m for wall mounted type and 2.2m for ceiling mounted type.

- Ceiling opening area

**⚠ CAUTION**

In case of installing the indoor unit in an enclosed ceiling space, ensure there is a sufficient ventilation opening around the unit.  
 In the event of refrigerant leakage, this countermeasure would prevent an increased concentration of refrigerant.

# 1.9 TECHNICAL INFORMATION

## Model SRK100VNXWZRF

Information to identify the model(s) to which the information relates to:				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'.			
Indoor unit model name		SRK100ZR-WF		Average(mandatory)		Yes	
Outdoor unit model name		FDC100VNX-W		Warmer(if designated)		No	
Function(indicate if present)				Colder(if designated)			
cooling		Yes					
heating		Yes					
Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	10.0	kW	cooling	SEER	6.54	A++
heating / Average	Pdesignh	10.5	kW	heating / Average	SCOP/A	4.01	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			
heating / Average (-10°C)		Pdh 10.5 kW		heating / Average (-10°C)		elbu 0 kW	
heating / Warmer (2°C)		Pdh - kW		heating / Warmer (2°C)		elbu - kW	
heating / Colder (-22°C)		Pdh - kW		heating / Colder (-22°C)		elbu - kW	
Declared capacity for cooling, at indoor temperature 27(19)°C and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)°C and outdoor temperature Tj			
Tj=35°C		Pdc 10.00 kW		Tj=35°C		EERd 3.69 -	
Tj=30°C		Pdc 7.30 kW		Tj=30°C		EERd 5.70 -	
Tj=25°C		Pdc 4.70 kW		Tj=25°C		EERd 9.00 -	
Tj=20°C		Pdc 3.10 kW		Tj=20°C		EERd 10.60 -	
Declared capacity for heating / Average season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C		Pdh 9.29 kW		Tj=-7°C		COPd 2.38 -	
Tj=2°C		Pdh 5.65 kW		Tj=2°C		COPd 3.76 -	
Tj=7°C		Pdh 3.63 kW		Tj=7°C		COPd 5.90 -	
Tj=12°C		Pdh 2.87 kW		Tj=12°C		COPd 7.21 -	
Tj=bivalent temperature		Pdh 10.50 kW		Tj=bivalent temperature		COPd 2.20 -	
Tj=operating limit		Pdh 7.80 kW		Tj=operating limit		COPd 2.00 -	
Declared capacity for heating / Warmer season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=2°C		Pdh - kW		Tj=2°C		COPd - -	
Tj=7°C		Pdh - kW		Tj=7°C		COPd - -	
Tj=12°C		Pdh - kW		Tj=12°C		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°C and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C		Pdh - kW		Tj=-7°C		COPd - -	
Tj=2°C		Pdh - kW		Tj=2°C		COPd - -	
Tj=7°C		Pdh - kW		Tj=7°C		COPd - -	
Tj=12°C		Pdh - kW		Tj=12°C		COPd - -	
Tj=bivalent temperature		Pdh - kW		Tj=bivalent temperature		COPd - -	
Tj=operating limit		Pdh - kW		Tj=operating limit		COPd - -	
Tj=-15°C		Pdh - kW		Tj=-15°C		COPd - -	
Bivalent temperature				Operating limit temperature			
heating / Average		Tbiv -10 °C		heating / Average		Tol -20 °C	
heating / Warmer		Tbiv - °C		heating / Warmer		Tol - °C	
heating / Colder		Tbiv - °C		heating / Colder		Tol - °C	
Cycling interval capacity				Cycling interval efficiency			
for cooling		Pcycc - kW		for cooling		EERcyc - -	
for heating		Pcyhc - 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 535 kWh/a	
standby mode		Psb 20 W		heating / Average		Qhe 3671 kWh/a	
thermostat-off mode		Pto(cooling) 35 W		heating / Warmer		Qhe - kWh/a	
crankcase heater mode		Pto(heating) 60 W		heating / colder		Qhe - kWh/a	
		Pck 5 W					
Capacity control(indicate one of three options)				Other items			
fixed		No		Sound power level(indoor)		Lwa 63 dB(A)	
staged		No		Sound power level(outdoor)		Lwa 67 dB(A)	
variable		Yes		Global warming potential		GWP 675 kgCO <sub>2</sub> eq.	
				Rated air flow(indoor)		- 1470 m <sup>3</sup> /h	
				Rated air flow(outdoor)		- 6000 m <sup>3</sup> /h	
Contact details for obtaining more information				Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 5 The Square, Stockley Park, Uxbridge, Middlesex, UB11 1ET, United kingdom MHIAE SERVICES B.V. Herikerbergweg 238, Luna Arena, 1101 CM Amsterdam, Netherlands P.O.Box 23393 1100 DW Amsterdam, Netherlands			

## Model SRK100VSXWZRF

Information to identify the model(s) to which the information relates to:				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'.			
Indoor unit model name		SRK100ZR-WF					
Outdoor unit model name		FDC100VSX-W					
Function(indicate if present)				Average(mandatory)			
cooling		Yes		Warmer(if designated)		No	
heating		Yes		Colder(if designated)		No	
Item				Item			
symbol		value		symbol		value	
unit		unit		class		class	
Design load				Seasonal efficiency and energy efficiency class			
cooling		Pdesignc		cooling		SEER	
		10.0				6.54	
heating / Average		Pdesignh		heating / Average		SCOP/A	
		10.5				4.01	
heating / Warmer		Pdesignh		heating / Warmer		SCOP/W	
		-				-	
heating / Colder		Pdesignh		heating / Colder		SCOP/C	
		-				-	
				unit			
Declared capacity at outdoor temperature Tdesignh				Back up heating capacity at outdoor temperature Tdesignh			
heating / Average (-10°C)		Pdh		heating / Average (-10°C)		elbu	
		10.5				0	
heating / Warmer (2°C)		Pdh		heating / Warmer (2°C)		elbu	
		-				-	
heating / Colder (-22°C)		Pdh		heating / Colder (-22°C)		elbu	
		-				-	
Declared capacity for cooling, at indoor temperature 27(19)°C and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)°C and outdoor temperature Tj			
Tj=35°C		Pdc		Tj=35°C		EERd	
		10.00				3.69	
Tj=30°C		Pdc		Tj=30°C		EERd	
		7.30				5.70	
Tj=25°C		Pdc		Tj=25°C		EERd	
		4.70				9.00	
Tj=20°C		Pdc		Tj=20°C		EERd	
		3.10				10.60	
Declared capacity for heating / Average season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C		Pdh		Tj=-7°C		COPd	
		9.29				2.38	
Tj=2°C		Pdh		Tj=2°C		COPd	
		5.65				3.76	
Tj=7°C		Pdh		Tj=7°C		COPd	
		3.63				5.90	
Tj=12°C		Pdh		Tj=12°C		COPd	
		2.87				7.21	
Tj=bivalent temperature		Pdh		Tj=bivalent temperature		COPd	
		10.50				2.20	
Tj=operating limit		Pdh		Tj=operating limit		COPd	
		7.80				2.00	
Declared capacity for heating / Warmer season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=2°C		Pdh		Tj=2°C		COPd	
		-				-	
Tj=7°C		Pdh		Tj=7°C		COPd	
		-				-	
Tj=12°C		Pdh		Tj=12°C		COPd	
		-				-	
Tj=bivalent temperature		Pdh		Tj=bivalent temperature		COPd	
		-				-	
Tj=operating limit		Pdh		Tj=operating limit		COPd	
		-				-	
Declared capacity for heating / Colder season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C		Pdh		Tj=-7°C		COPd	
		-				-	
Tj=2°C		Pdh		Tj=2°C		COPd	
		-				-	
Tj=7°C		Pdh		Tj=7°C		COPd	
		-				-	
Tj=12°C		Pdh		Tj=12°C		COPd	
		-				-	
Tj=bivalent temperature		Pdh		Tj=bivalent temperature		COPd	
		-				-	
Tj=operating limit		Pdh		Tj=operating limit		COPd	
		-				-	
Tj=-15°C		Pdh		Tj=-15°C		COPd	
		-				-	
Bivalent temperature				Operating limit temperature			
heating / Average		Tbiv		heating / Average		Tol	
		-10				-20	
heating / Warmer		Tbiv		heating / Warmer		Tol	
		-				-	
heating / Colder		Tbiv		heating / Colder		Tol	
		-				-	
Cycling interval capacity				Cycling interval efficiency			
for cooling		Pcycc		for cooling		EERcyc	
		-				-	
for heating		Pcyhc		for heating		COPcyc	
		-				-	
Degradation coefficient				Degradation coefficient			
cooling		Cdc		heating		Cdh	
		0.25				0.25	
Electric power input in power modes other than 'active mode'				Annual electricity consumption			
off mode		Poff		cooling		Qce	
		20				535	
standby mode		Psb		heating / Average		Qhe	
		20				3671	
thermostat-off mode		Pto(cooling)		heating / Warmer		Qhe	
		35				-	
crankcase heater mode		Pck		heating / colder		Qhe	
		5				-	
Capacity control(indicate one of three options)				Other items			
fixed		No		Sound power level(indoor)		Lwa	
						63	
staged		No		Sound power level(outdoor)		Lwa	
						67	
variable		Yes		Global warming potential		GWP	
						675	
				Rated air flow(indoor)		-	
						1470	
				Rated air flow(outdoor)		-	
						6000	
Contact details for obtaining more information				Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 5 The Square, Stockley Park, Uxbridge, Middlesex, UB11 1ET, United kingdom MHIAE SERVICES B.V. Herikerbergweg 238, Luna Arena, 1101 CM Amsterdam, Netherlands P.O.Box 23393 1100 DW Amsterdam, Netherlands			

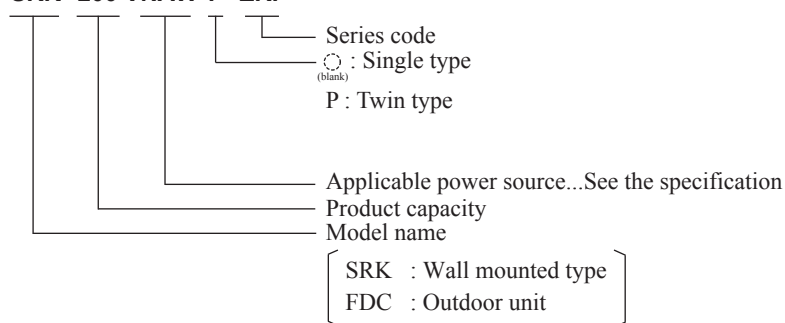
## 2. MICRO INVERTER PACKAGED AIR-CONDITIONERS

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#### ■ How to read the model name

Example: SRK 200 VNAW P ZRF





## 2.1 SPECIFICATIONS

### (1) Single type

Item		Model		SRK100VNAWZRF		
				Indoor unit SRK100ZR-WF	Outdoor unit FDC100VNA-W	
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	3.19		
		Heating		3.04		
	Max power consumption		6.40			
	Running current	Cooling	A	14.3 / 14.9		
		Heating		13.6 / 14.2		
	Inrush current, max current		5 , 24			
	Power factor	Cooling	%	97		
		Heating		97		
	EER	Cooling		3.13		
	COP	Heating		3.68		
	Sound power level	Cooling	dB(A)	63		69
Heating				70		
Sound pressure level	Cooling	dB(A)	Hi : 48 Me : 45 Lo : 40 ULo : 27		54	
	Heating		Hi : 48 Me : 43 Lo : 38 ULo : 30		55	
Silent mode sound pressure level			48 / 44 (Normal / Silent)			
Exterior dimensions (Height x Width x Depth)	mm	339×1197×262		845×970×370		
Exterior appearance (Munsell color) (RAL color)		Fine snow ( 8.0Y9.3/0.1 ) near equivalent (RAL 9003) near equivalent		Stucco white ( 4.2Y7.5/1.1 ) near equivalent (RAL 7044) near equivalent		
Net weight	kg	16.5		77		
Compressor type & Q'ty		—		RMT5126SWP3×1		
Compressor motor (Starting method)	kW	—		Direct line start		
Refrigerant oil (Amount, type)	L	—		0.9 (M-MB75)		
Refrigerant (Type, amount, pre-charge length)	kg	R32 3.3 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		Tangential fan x 1		Propeller fan x1		
Fan motor (Starting method)	W	56 x 1 < Direct line start >		86 < Direct line start >		
Air flow	Cooling	m <sup>3</sup> /min	Hi : 24.5 Me : 21.3 Lo : 17.6 ULo : 10.4		75	
	Heating		Hi : 27.5 Me : 23.2 Lo : 19.1 ULo : 13.6		73	
Available external static pressure	Pa	0		0		
Outside air intake		Not possible		—		
Air filter, Quality / Quantity		Polypropylene net (Washable) x 2		—		
Shock & vibration absorber		Rubber sleeve(for fan motor)		Rubber sleeve(for fan motor & compressor )		
Electric heater	W	—		20 (Crank case heater)		
Operation control	Remote control	(Option) Wired : RC-EX3A, RC-E5 , RCH-E3 Interface kit : SC-BIKN2-E				
	Room temperature control	Wireless LAN connecting (Cannot be used at the same time interface kit)				
	Operation display	Thermostat by electronics RUN : Green, TIMER : Yellow, HI POWER : Green, 3D AUTO : Green				
Safety equipments		Overload protection for fan motor Frost protection thermostat Internal thermostat for fan motor Abnormal discharge temperature protection				
Installation data	Refrigerant piping size (O.D.)	Liquid line	I/U φ 9.52 (3/8") Pipe φ 9.52(3/8")x0.8 O/U φ 9.52 (3/8")			
		Gas line	φ 15.88 (5/8") Pipe φ 15.88(5/8")x1.0 φ 15.88 (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.50			
Vertical height diff. between O/U and I/U	m	Max.50(Outdoor unit is higher)		Max.15(Outdoor unit is lower)		
Drain hose		Hose connectable with VP16		Hole size φ 20 x 3 pcs.		
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		φ 1.6mm x 3 cores + earth cable / Terminal block(Screw fixing type)				
IP number		IPX0		IP24		
Standard accessories		Mounting kit, Clean filter		—		
Option parts		—				
Notes (1) The data are measured at the following conditions.		The pipe length is 7.5m.				
	Item	Indoor air temperature		Outdoor air temperature		
	Operation	DB	WB	DB	WB	
	Cooling	27°C	19°C	35°C	24°C	
	Heating	20°C	—	7°C	6°C	
				Standards		
				ISO5151-T1		
				ISO5151-H1		
(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) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.						

Model			SRK100VSAWZRF				
Item			Indoor unit SRK100ZR-WF		Outdoor unit FDC100VSA-W		
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	3.19			
		Heating		3.04			
	Max power consumption		10.20				
	Running current	Cooling	A	4.8 / 5.1			
		Heating		4.6 / 4.8			
	Inrush current, max current		5 , 15				
	Power factor	Cooling	%	95			
		Heating		96			
	EER	Cooling		3.13			
	COP	Heating		3.68			
	Sound power level	Cooling	dB(A)	63		69	
Heating				70			
Sound pressure level	Cooling	dB(A)	Hi : 48 Me : 45 Lo : 40 ULo : 27		54		
	Heating		Hi : 48 Me : 43 Lo : 38 ULo : 30		55		
Silent mode sound pressure level			-		48 / 44 (Normal / Silent)		
Exterior dimensions (Height x Width x Depth)	mm	339x1197x262		845x970x370			
Exterior appearance (Munsell color) (RAL color)		Fine snow ( 8.0Y9.3/0.1 ) near equivalent (RAL 9003) near equivalent		Stucco white ( 4.2Y7.5/1.1 ) near equivalent (RAL 7044) near equivalent			
Net weight	kg	16.5		78			
Compressor type & Q'ty		-		RMT5126SWP4x1			
Compressor motor (Starting method)	kW	-		Direct line start			
Refrigerant oil (Amount, type)	L	-		0.9 (M-MB75)			
Refrigerant (Type, amount, pre-charge length)	kg	R32 3.3 in outdoor unit (Incl. the amount for the piping of 30m)					
Heat exchanger		Louver fins & inner grooved tubing		M shape fin & inner grooved tubing			
Refrigerant control		Electronic expansion valve					
Fan type & Q'ty		Tangential fan x 1		Propeller fan x1			
Fan motor (Starting method)	W	56 x 1 < Direct line start >		86 < Direct line start >			
Air flow	Cooling	m <sup>3</sup> /min	Hi : 24.5 Me : 21.3 Lo : 17.6 ULo : 10.4		75		
	Heating		Hi : 27.5 Me : 23.2 Lo : 19.1 ULo : 13.6		73		
Available external static pressure	Pa	0		0			
Outside air intake		Not possible		-			
Air filter, Quality / Quantity		Polypropylene net (Washable) x 2		-			
Shock & vibration absorber		Rubber sleeve(for fan motor)		Rubber sleeve(for fan motor & compressor )			
Electric heater	W	-		20 (Crank case heater)			
Operation control	Remote control	(Option) Wired : RC-EX3A, RC-E5 , RCH-E3 Interface kit : SC-BIKN2-E					
	Room temperature control	Wireless LAN connecting (Cannot be used at the same time interface kit)					
	Operation display	Thermostat by electronics RUN : Green, TIMER : Yellow, HI POWER : Green, 3D AUTO : Green					
Safety equipments		Overload protection for fan motor Internal thermostat for fan motor Frost protection thermostat Abnormal discharge temperature protection					
Installation data	Refrigerant piping size ( O.D. )	Liquid line	I/U φ 9.52 (3/8") Pipe φ 9.52(3/8")x0.8 O/U φ 9.52 (3/8")				
		Gas line	φ 15.88 (5/8") Pipe φ 15.88(5/8")x1.0 φ 15.88 (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.50				
	Vertical height diff. between O/U and I/U	m	Max.50(Outdoor unit is higher)		Max.15(Outdoor unit is lower)		
Drain hose		Hose connectable with VP16		Hole size φ 20 x 3 pcs.			
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		φ 1.6mm x 3 cores + earth cable / Terminal block(Screw fixing type)					
IP number		IPX0		IP24			
Standard accessories		Mounting kit, Clean filter		-			
Option parts		-					
Notes (1) The data are measured at the following conditions.			The pipe length is 7.5m.				
	Item	Indoor air temperature		Outdoor air temperature		Standards	
	Operation	DB	WB	DB	WB		
	Cooling	27°C	19°C	35°C	24°C		
	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) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.							

## (2) Twin type

Item		Model		SRK200VSAWPZRF				
				Indoor unit SRK100ZR-WF(2 units)		Outdoor unit FDC200VSA-W		
Power source				3 Phase 380-415V 50Hz / 380V 60Hz				
Operation data	Nominal cooling capacity (range)	kW		20.0 [ 7.0(Min.) - 22.4(Max.)]				
	Nominal heating capacity (range)	kW		22.4 [ 6.6(Min.) - 25.0(Max.)]				
	Power consumption	Cooling	kW		7.46			
		Heating	kW		6.87			
	Max power consumption			12.00				
	Running current	Cooling	A		11.8 / 12.5			
		Heating	A		10.8 / 11.3			
	Inrush current, max current			5 , 19				
	Power factor	Cooling	%		91			
		Heating	%		92			
	EER	Cooling		2.68				
	COP	Heating		3.26				
Sound power level	Cooling	dB(A)		63		72		
	Heating	dB(A)		63		74		
Sound pressure level	Cooling	dB(A)		Hi : 48 Me : 45 Lo : 40 ULo : 27		58		
	Heating	dB(A)		Hi : 48 Me : 43 Lo : 38 ULo : 30		59		
Silent mode sound pressure level	Cooling			-		55 / 53 (Normal / Silent)		
	Heating			-		56 / 54 (Normal / Silent)		
Exterior dimensions (Height x Width x Depth)		mm		339 x 1197 x 262		1505x970x370		
Exterior appearance (Munsell color) (RAL color)				Plaster white (8.0Y9.3/0.1) near equivalent (RAL 9003) near equivalent		Stucco white (4.2Y7.5/1.1) near equivalent (RAL 7044) near equivalent		
Net weight		kg		16.5		144		
Compressor type & Q'ty				-		GTC5150SC40MF x 1		
Compressor motor (Starting method)		kW		-		Direct line start		
Refrigerant oil (Amount, type)		L		-		1.55 (M-MB75R)		
Refrigerant (Type, amount, pre-charge length)		kg		R32 4.3 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				Tangential fan x 1		Propeller fan x2		
Fan motor (Starting method)		W		56 x 1 < Direct line start >		86 x 2 < Direct line start >		
Air flow	Cooling	m <sup>3</sup> /min		Hi : 24.5 Me : 21.3 Lo : 17.6 ULo : 10.4		148		
	Heating	m <sup>3</sup> /min		Hi : 27.5 Me : 23.2 Lo : 19.1 ULo : 13.6		134		
Available external static pressure		Pa		0				
Outside air intake				Not possible				
Air filter, Quality / Quantity				Polypropylene net (Washable) x 2				
Shock & vibration absorber				Rubber sleeve(for fan motor)		Rubber sleeve (for fan motor & compressor)		
Electric heater		W		-		20 (Crank case heater)		
Operation control	Remote control			(Option) Wired : RC-EX3A, RC-E5, RCH-E3 Interface kit : SC-BIKN2-E Wireless LAN connecting (Cannot be used at the same time interface kit)				
	Room temperature control			Thermostat by electronics				
	Operation display			RUN : Green, TIMER : Yellow, HI POWER : Green, 3D AUTO : Green				
Safety equipments				Overload protection for fan motor. Frost protection thermostat. Internal thermostat for fan motor. Abnormal discharge temperature protection.				
Installation data	Refrigerant piping size (O.D.)	Liquid line	mm	I/U φ 9.52 (3/8") Pipe ② φ 9.52(3/8")x0.8 ① φ 9.52(3/8")x0.8 or φ 12.7(1/2")x0.8 O/U φ 9.52 (3/8")				
		Gas line		I/U φ 15.88 (5/8") Pipe ② φ 15.88(5/8")x1.0 ① φ 22.22(7/8")x1.0 or φ 25.4(1")x1.0 or φ 28.58(1 1/8")x1.0 O/U φ 22.22 (7/8")				
	Connecting method			Flare piping		Liquid : Flare piping / 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			Max.50m (Outdoor unit is higher & Outdoor air temperature ≤ 43°C)					
			Max.30m (Outdoor unit is higher & Outdoor air temperature > 43°C)					
			Max.15m (Outdoor unit is lower)					
Drain hose				Hose connectable with VP16		Hole size φ 20 x 3 pcs.		
Drain pump, max lift height		mm		-				
Recommended breaker size		A		-				
L.R.A. (Locked rotor ampere)		A		5				
Interconnecting wires   Size x Core number				φ 1.6mm x 3 cores + earth cable / Terminal block (Screw fixing type)				
IP number				IPX0		IP24		
Standard accessories				Mounting kit, Clean filter		Connecting pipe		
Option parts				-				
Notes (1) The data are measured at the following conditions.				The pipe length is 7.5m.				
	Item	Indoor air temperature		Outdoor air temperature		Standards		
Operation	DB	WB	DB	WB				
	Cooling	27°C	19°C	35°C	24°C	ISO5151-T1		
	Heating	20°C	-	7°C	6°C	ISO5151-H1		
(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) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.								
(6) Indoor unit specifications for one unit. Capacity and operation data is two indoor units are combined and run together.								
(7) Branching pipe set "DIS-WB1G x 1 (Option). ① : Pipe of O/U - Branch, ② : Pipe for Branch - I/U								
(8) Use 1/2H pipes having a 1.0mm or thicker wall for φ 19,05 or larger pipes.								
(9) A wired remote control and SC-BIKN2-E must be installed with SRK plural connection.								
The wireless remote control included in the SRK unit cannot be used in case of SRK plural connection.								

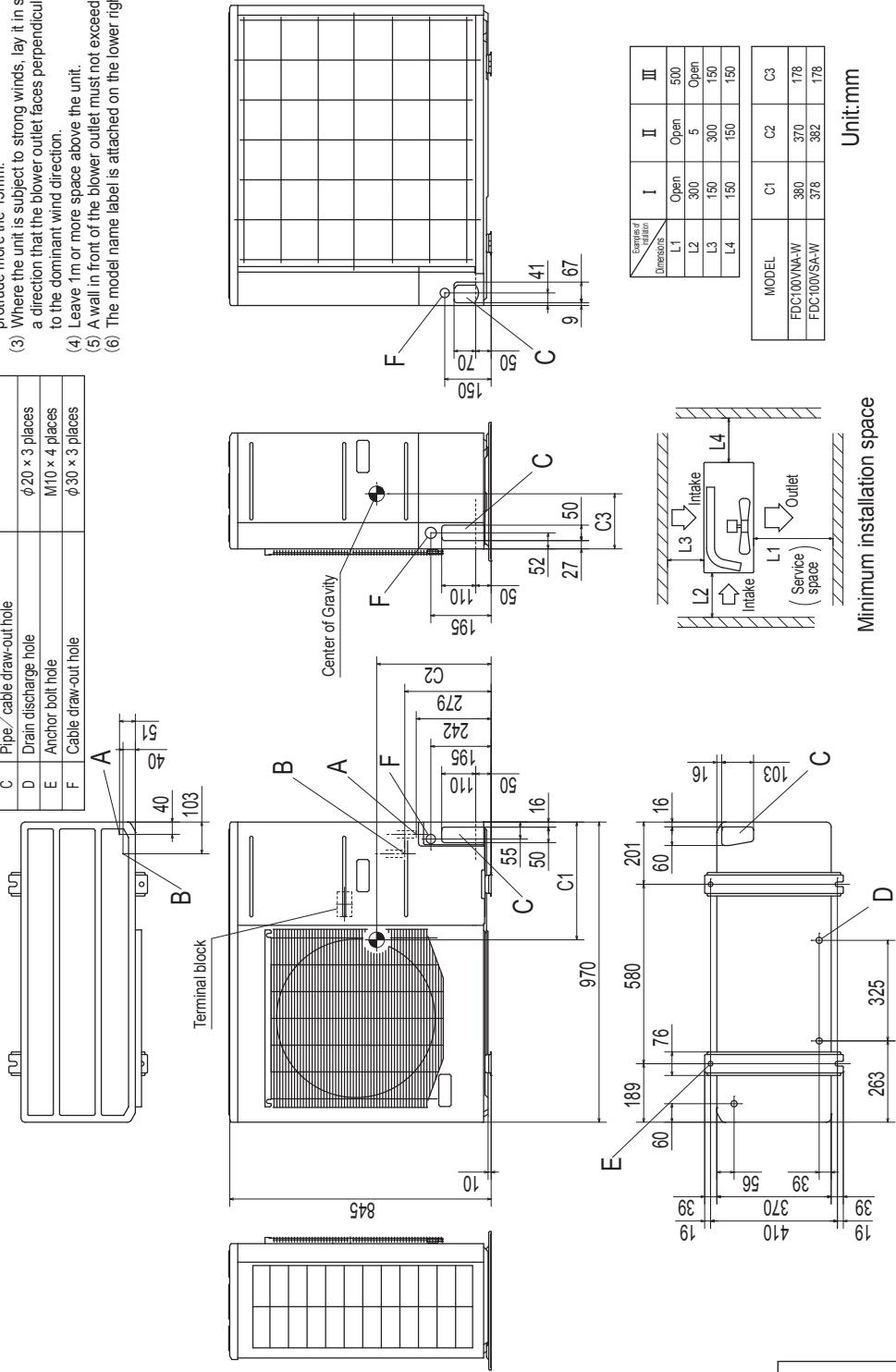
## 2.2 EXTERIOR DIMENSIONS

- (1) Indoor unit ..... See page 5.  
 (2) Outdoor units

Models FDC100VNA-W  
 100VSA-W

- 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.

Symbol	Content
A	Service valve connection (gas side) $\phi 15.88 (5/8")$ (Flare)
B	Service valve connection (liquid side) $\phi 9.52 (3/8")$ (Flare)
C	Pipe/cable draw-out hole
D	Drain discharge hole $\phi 20 \times 3$ places
E	Anchor bolt hole M10 x 4 places
F	Cable draw-out hole $\phi 30 \times 3$ places



Example of Dimensions	Example of Dimensions		
	I	II	III
Open	Open	Open	500
L1	300	5	Open
L2	150	300	150
L3	150	150	150
L4	150	150	150

MODEL	C1	C2	C3
FDC100VNA-W	360	370	178
FDC100VSA-W	378	382	178

Unit:mm



## 2.3 ELECTRICAL WIRING

- (1) Indoor unit ..... See page 10.  
 (2) Outdoor units

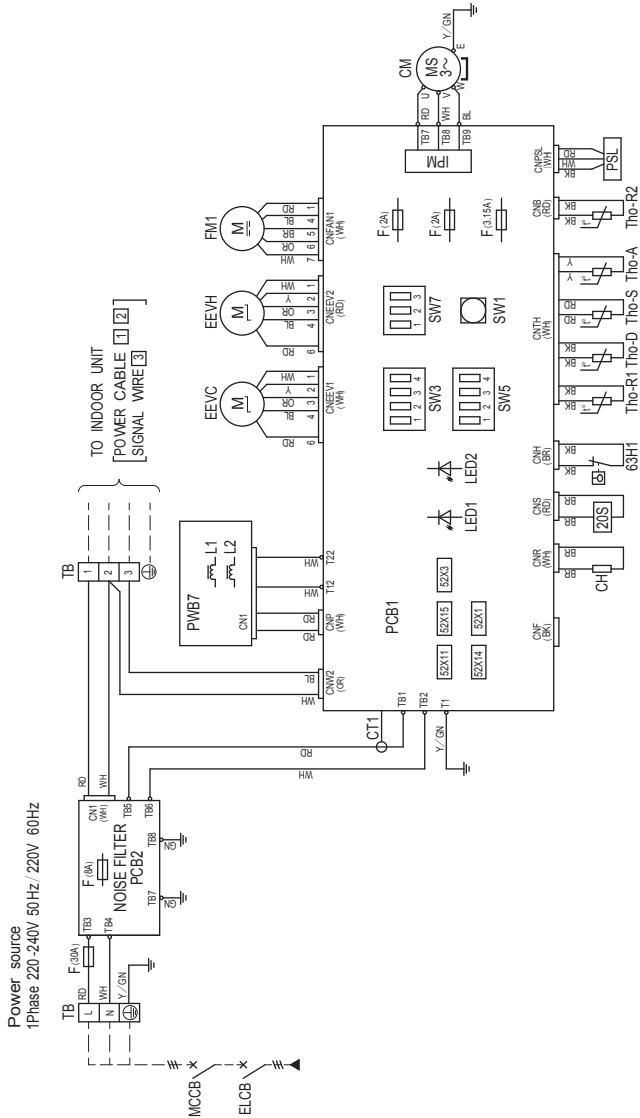
### Model FDC100VNA-W

Meaning of marks

Item	Description
CH	Crankcase heater
CM	Compressor motor
CN	Connector
CT1	Current sensor
EEVC	Expansion valve for cooling
EEVH	Expansion valve for heating
F	Fuse
FM1	Fan motor
IPM	Intelligent power module
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
L1,2	Reactor
PSL	Low pressure sensor
SW1	Switch
SW3,5,7	Local setting switch
TB	Terminal block
Tho-A	Temperature sensor (Outdoor air)
Tho-D	Temperature sensor (Discharge pipe)
Tho-R1,R2	Temperature sensor (Heat exchanger)
Tho-S	Temperature sensor (Suction pipe)
20S	Solenoid valve for 4-way valve
52X1	Auxiliary relay
52X3	Auxiliary relay
52X11	Auxiliary relay (for 20S)
52X14	Auxiliary relay (for CH)
52X15	Auxiliary relay
63H1	High pressure switch

Color marks

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



Local setting switch SW3,5,7 (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°C 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.
SW5-2	High height difference operation control	Set this switch to ON when outdoor unit is installed at a position higher than indoor unit by 30m or more.
SW7-2	Defrost control change	Set this switch to ON when managing unit operation by remote control connected external equipment.
SW7-3	Lower noise silent mode	Upper limit of compressor speed and fan speed becomes lower in silent mode.

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm <sup>2</sup> )	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm)
100	24	5.5	22	φ 1.6mm x 3	φ 1.6

- 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.

PCA001Z854

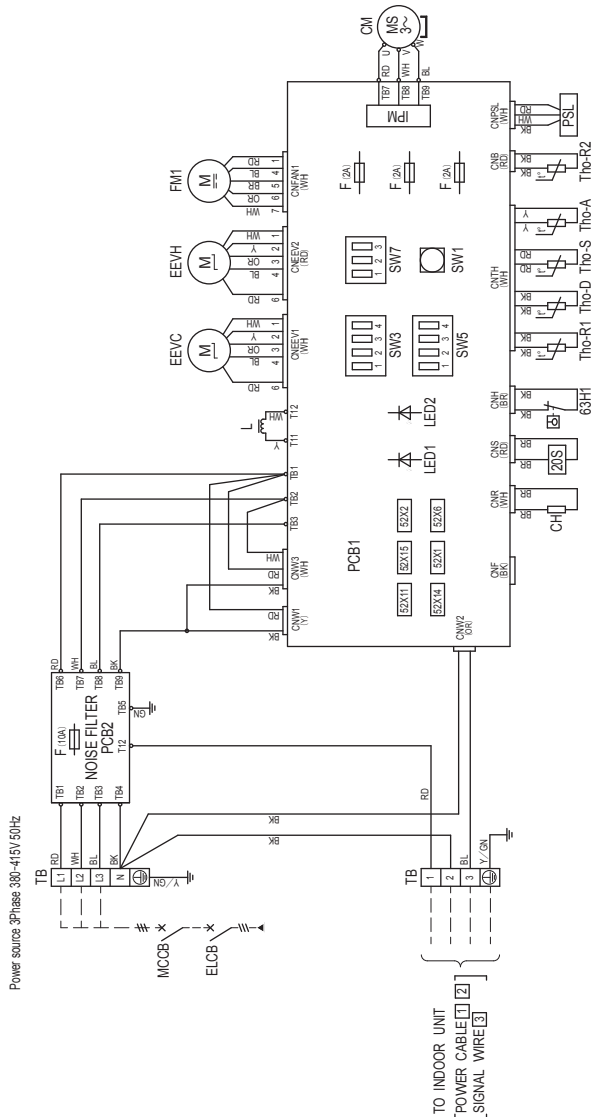
Model FDC100VSA-W

Meaning of marks

Item	Description
CH	Crankcase heater
CM	Compressor motor
CN	Connector
EEVC	Expansion valve for cooling
EEVH	Expansion valve for heating
F	Fuse
FM1	Fan motor
IPM	Intelligent power module
L	Reactor
LED1	Indication lamp (GREEN)
LED2	Indication lamp (RED)
P5L	Low pressure sensor
SW1	Switch
SW3,5,7	Local setting switch
TB	Terminal block
Tho-A	Temperature sensor (Outdoor air)
Tho-D	Temperature sensor (Discharge pipe)
Tho-R1,R2	Temperature sensor (Heat exchanger)
Tho-S	Temperature sensor (Suction pipe)
ZOS	Solenoid valve for 4-way valve
52X1	Auxiliary relay
52X2	Auxiliary relay
52X6	Auxiliary relay (for FM1)
52X11	Auxiliary relay (for 20S)
52X14	Auxiliary relay (for CH)
52X15	Auxiliary relay
63H1	High pressure switch

Color marks

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



Local setting switch SW3,5,7 (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°C 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. Set this switch to ON when outdoor unit is installed at a position higher than indoor unit by 30m or more. Set this switch to ON when managing unit operation by remote control connected external equipment. Upper limit of compressor speed and fan speed becomes lower in silent mode.
SW5-2	High height difference operation control	
SW7-2	Defrost control change	
SW7-3	Lower noise silent mode	

Model	MAX over current (A)	Power cable size (mm <sup>2</sup> )	Power cable length (m)	Indoor-outdoor wire size x number	Earth wire size (mm)
100	15	3.5	46	φ 1.6mm x 3	φ 1.6

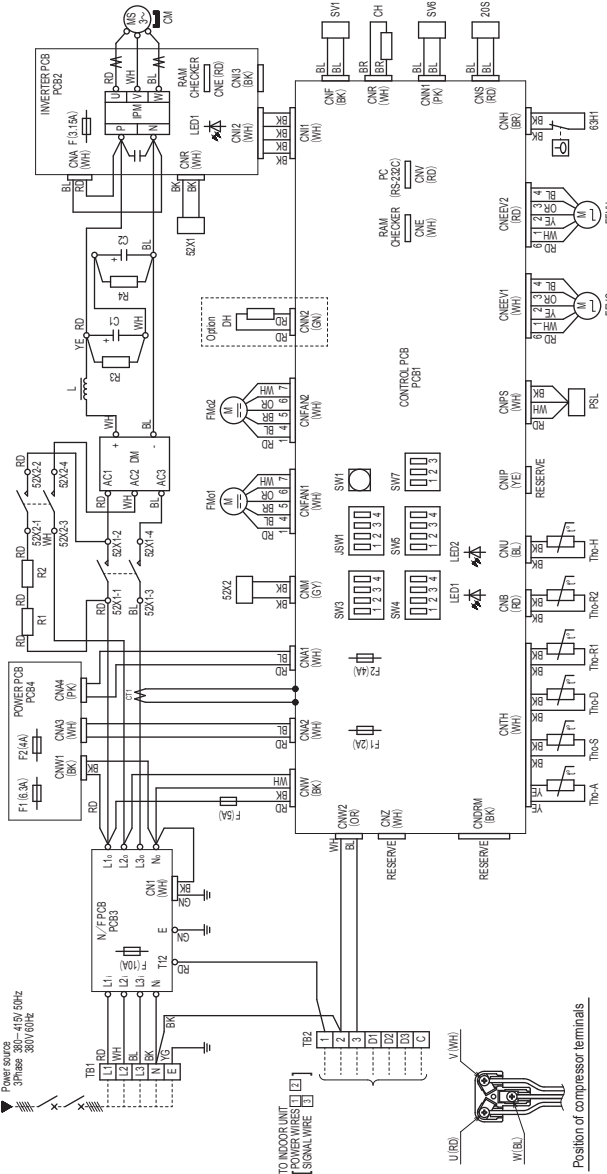
- The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- Switchgear of circuit breaker capacity which is calculated from MAX. over current should be chosen along the 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.

PCA001Z855

Model FDC200VSA-W

Meaning of marks

Item	Description
CH	Crankcase heater
CM	Compressor motor
CMA-Z	Connector
CT	Current sensor
DH	Drain pan heater
DM	Diode module
F	Fuse
FMo 1, 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	Temperature sensor (Outdoor air)
Tho-D	Temperature sensor (Discharge pipe)
Tho-R, 1R2	Temperature sensor (Heat exchanger)
Tho-H	Temperature sensor (Compressor under-dome)
Tho-S	Temperature sensor (Suction pipe)
ZUS	Solenoid coil for 4-way valve
SV1, 6	Solenoid coil for 2-way valve
52X1, 2	Relay
63HT	High pressure switch



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

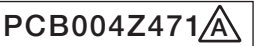
Local setting switch SW3 (Set up at shipment OFF)

SW3-1	Defrost control change
SW3-2	Snow guard fan control
SW3-3,4	Trial operation

Power cable, indoor-outdoor connecting wires

Model	MAX over current (A)	Power cable size (mm <sup>2</sup> )	Power cable length (m)	Indoor-outdoor wire size X number	Earth wire size
200V	19	5.5	72	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 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.





## 2.4 NOISE LEVEL

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

Ambient air temperature: Indoor unit 27°CWB. Outdoor unit 35°CDB.

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

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

### (1) Indoor unit

Model SRK100ZR-WF ..... See page 13.

### (2) Outdoor units

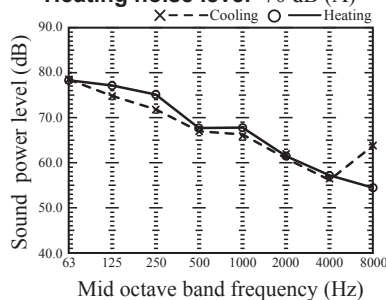
#### (a) Sound power level

##### (i) Rated capacity value

Models FDC100VNA-W, 100VSA-W

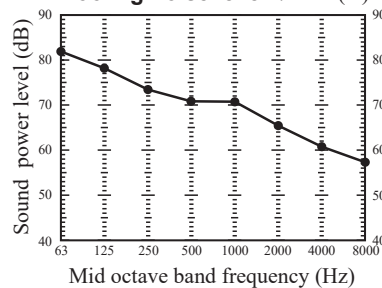
Cooling noise level 69 dB (A)

Heating noise level 70 dB (A)

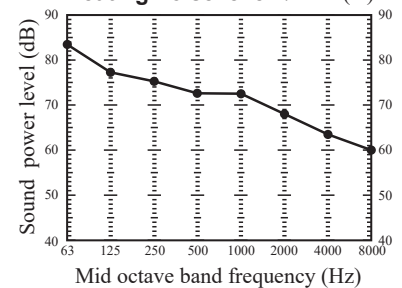


Model FDC200VSA-W

Cooling noise level 72 dB (A)



Heating noise level 74 dB (A)



#### (b) Sound pressure level

Measured based on JIS B 8616

Mike position: at highest noise level in position as mentioned below

Distance from front side 1m

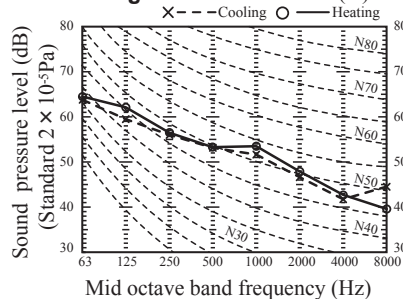
Height 1m

##### (i) Rated capacity value

Models FDC100VNA-W, 100VSA-W

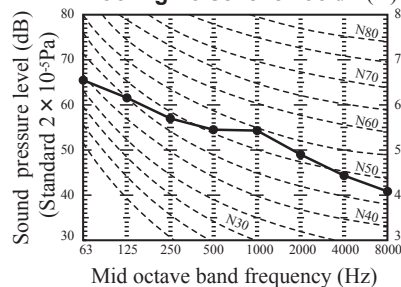
Cooling noise level 54 dB (A)

Heating noise level 55 dB (A)

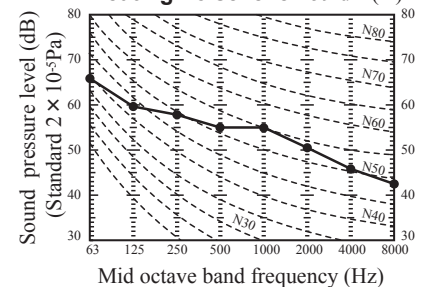


Model FDC200VSA-W

Cooling noise level 58 dB (A)



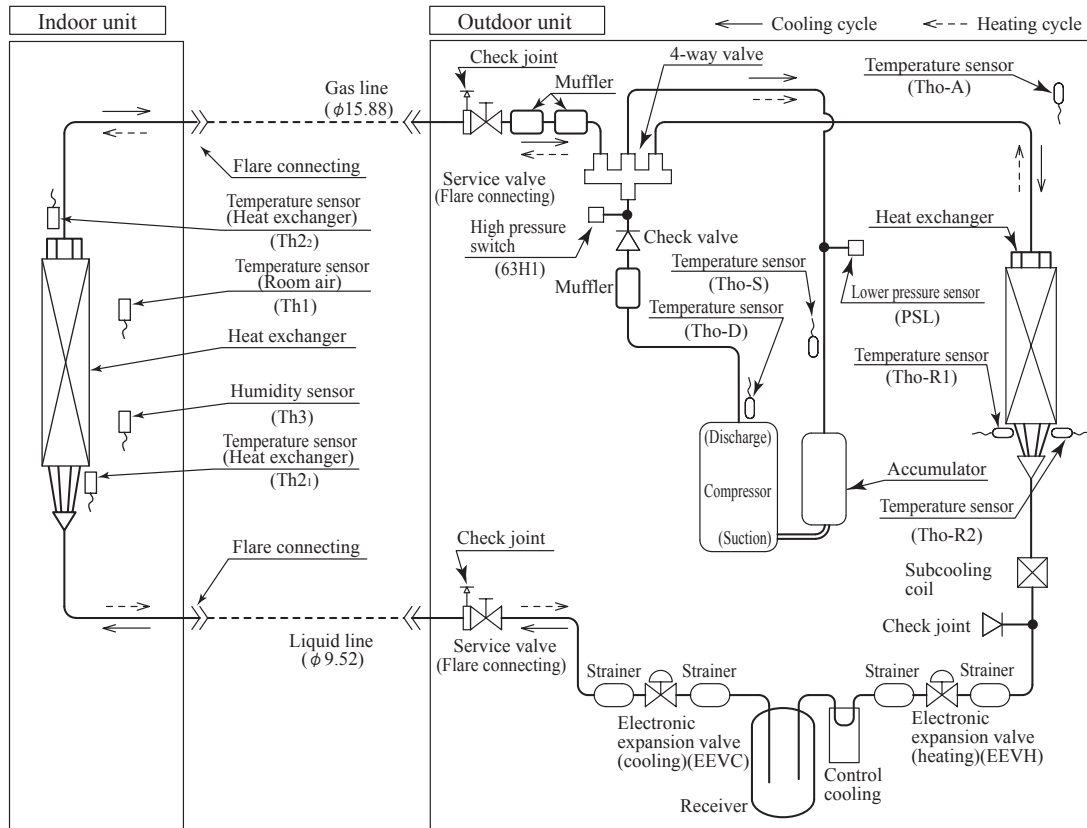
Heating noise level 59 dB (A)



## 2.5 PIPING SYSTEM

### (1) Single type

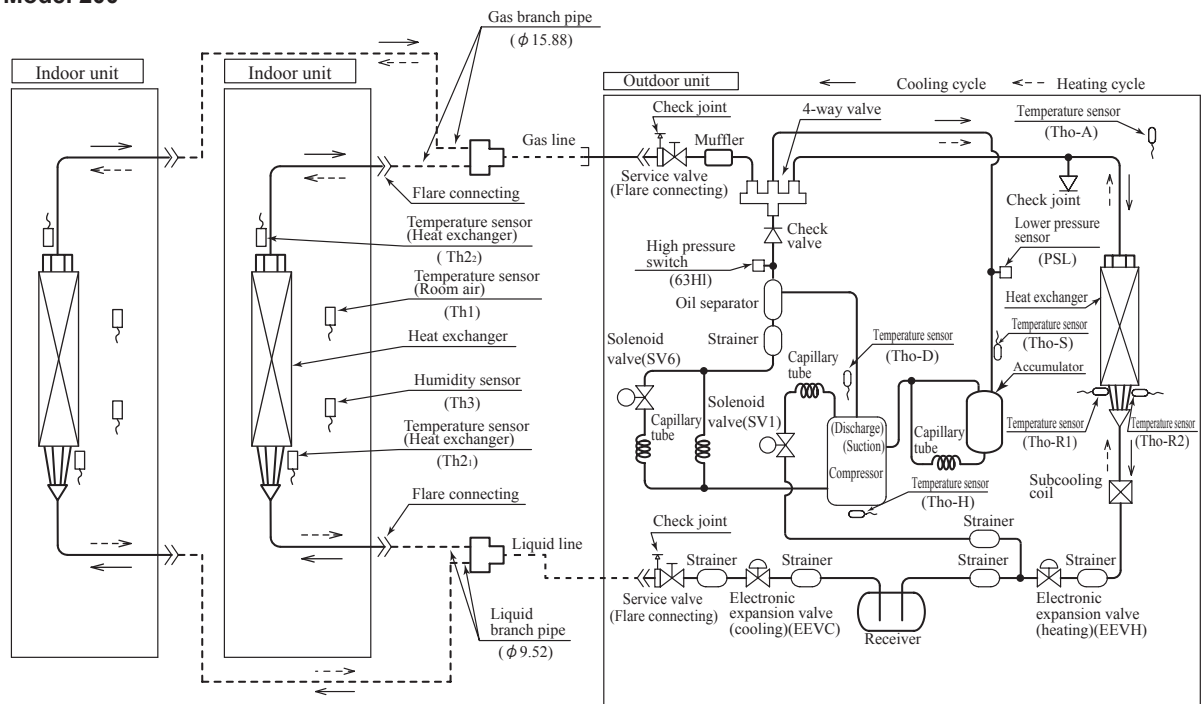
#### Model 100



### Preset point of the protective devices

Parts name	Mark	Equipped unit	100 model
Temperature sensor (for protection over-loading in heating)	Tho-A	Outdoor unit	Active 17°C Inactive 16°C
Temperature sensor (for frost prevention)	Th2	Indoor unit	Active 2.5°C Inactive 8°C
Temperature sensor (for protection high pressure in cooling)	Tho-R	Outdoor unit	Active 65°C Inactive 51°C
Temperature sensor (for detecting discharge pipe temperature)	Tho-D	Outdoor unit	Active 115°C Inactive 85°C
High pressure switch (for protection)	63H1	Outdoor unit	Active 4.15MPa Inactive 3.15MPa
Low pressure sensor (for protection)	PSL	Outdoor unit	Active 0.079MPa Inactive 0.227MPa

(2) Twin type  
Model 200



●Refrigerant line (one way) pipe size

Model	Gas line	Liquid line
200	In case of $\phi$ 22.22 : 35m In case of $\phi$ 25.4 or $\phi$ 28.58 : 70m (200)	In case of $\phi$ 9.52 : 40m (200) In case of $\phi$ 12.7 : 70m (200)

## Preset point of the protective devices

Parts name	Mark	Equipped unit	200 model
Temperature sensor (for protection over-loading in heating)	Tho-A	Outdoor unit	Active 17°C Inactive 16°C
Temperature sensor (for frost prevention)	Th2	Indoor unit	Active 2.5°C Inactive 8°C
Temperature sensor (for protection high pressure in cooling)	Tho-R	Outdoor unit	Active 64°C Inactive 50°C
Temperature sensor (for detecting discharge pipe temperature)	Tho-D	Outdoor unit	Active 115°C Inactive 85°C
High pressure switch (for protection)	63H1	Outdoor unit	Active 4.15MPa Inactive 3.15MPa
Low pressure sensor (for protection)	PSL	Outdoor unit	Active 0.079MPa Inactive 0.227MPa

## 2.6 RANGE OF USAGE & LIMITATIONS

### (1) Models FDC100VNA-W,100VSA-W

Operating temperature range		See next page.
		When used below -5°C, install a snow hood (locally procured).
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 : 28°C or less, relative humidity : 80% or less
Limitations on unit and piping installation		See page 61.
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 $\pm 10\%$
	Voltage drop at start-up	Min.85% of rating
	Phase-to-phase unbalance	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 (10mm or thicker) on the outer plate of indoor unit.

Note 3. Both gas and liquid pipes need to be covered with 20mm or thicker heat insulation materials at the place where humidity exceeds 70%.

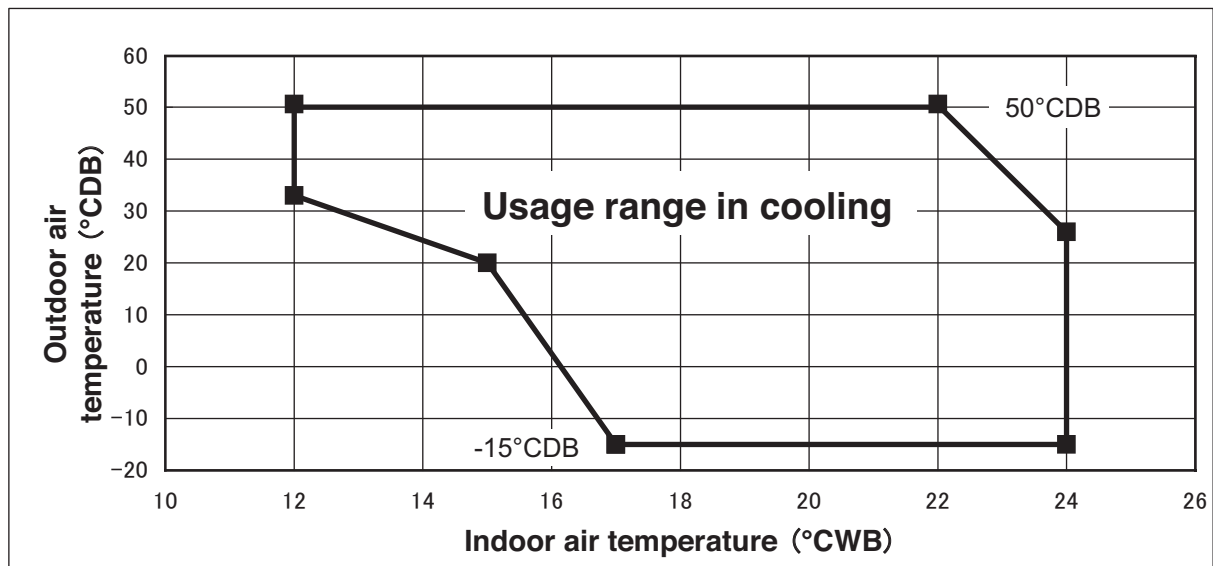
Note 4. When snow accumulate, install a snow hood on site.

Note 5. The indoor unit shall be installed in a room with minimum installation area or more according to the refrigerant charge amount. (for details, refer to installation sheet)

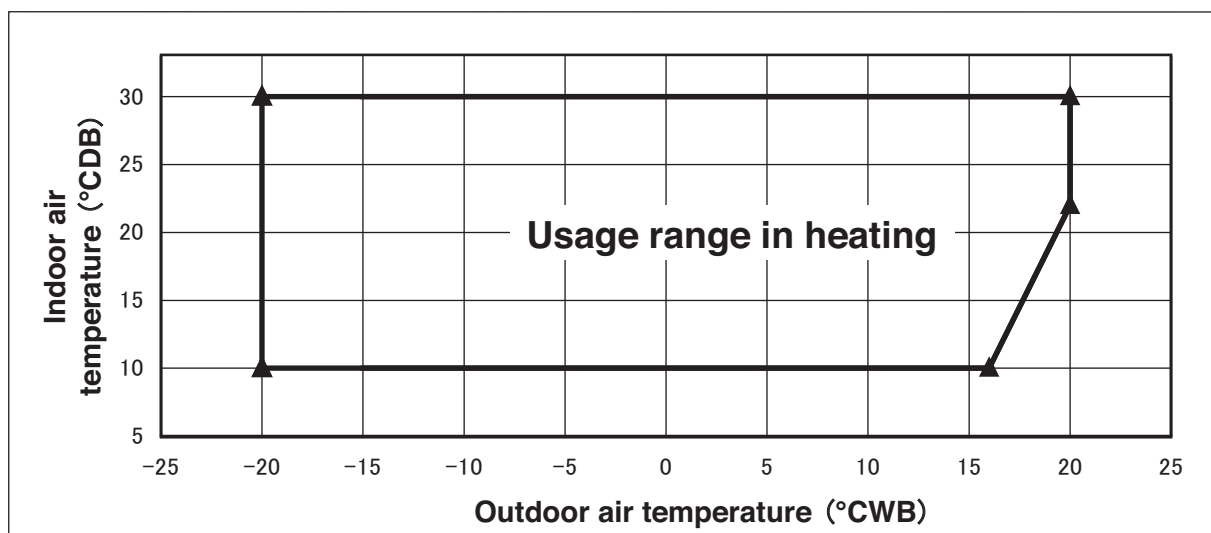
PCA001Z858

## 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 air flow rate.

PCA001Z858

#### “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.

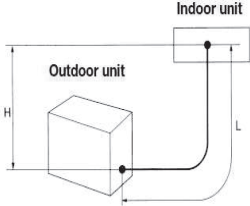
#### [Precaution]

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  $-5^{\circ}\text{C}$  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				
Descriptions	Model for outdoor units		Dimensional limitations	Marks appearing in the drawing
				Single type
One-way pipe length	100V		$\leq 50\text{m}$	L
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher	100V	$\leq 30\text{m}$ ( $\leq 50\text{m}$ ) *	H
	When the outdoor unit is positioned lower	100V	$\leq 15\text{m}$	
<p>Single type</p>  <p>(1) In case of the outdoor unit is positioned higher, dimensional limitation change from 30m to 50m by changing SW5-2 of outdoor unit control PCB to ON. (* mark)</p>				

**(2) Model FDC200VSA-W**

Operating temperature range		See next page.
		When used below -5°C, install a snow hood (Option).
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 : 28°C or less, relative humidity : 80% or less
Limitations on unit and piping installation		See pages 64,65.
Limitation of refrigerant		7.95kg See page 65.
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 $\pm 10\%$
	Voltage drop at start-up	Min.85% of rating
	Phase-to-phase unbalance	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.
- 17) Location with receiving heat radiation from another heat source.

Note 2. If ambient temperature and humidity exceed the above conditions, add polyurethane foam insulation (10mm or thicker) on the outer plate of indoor unit.

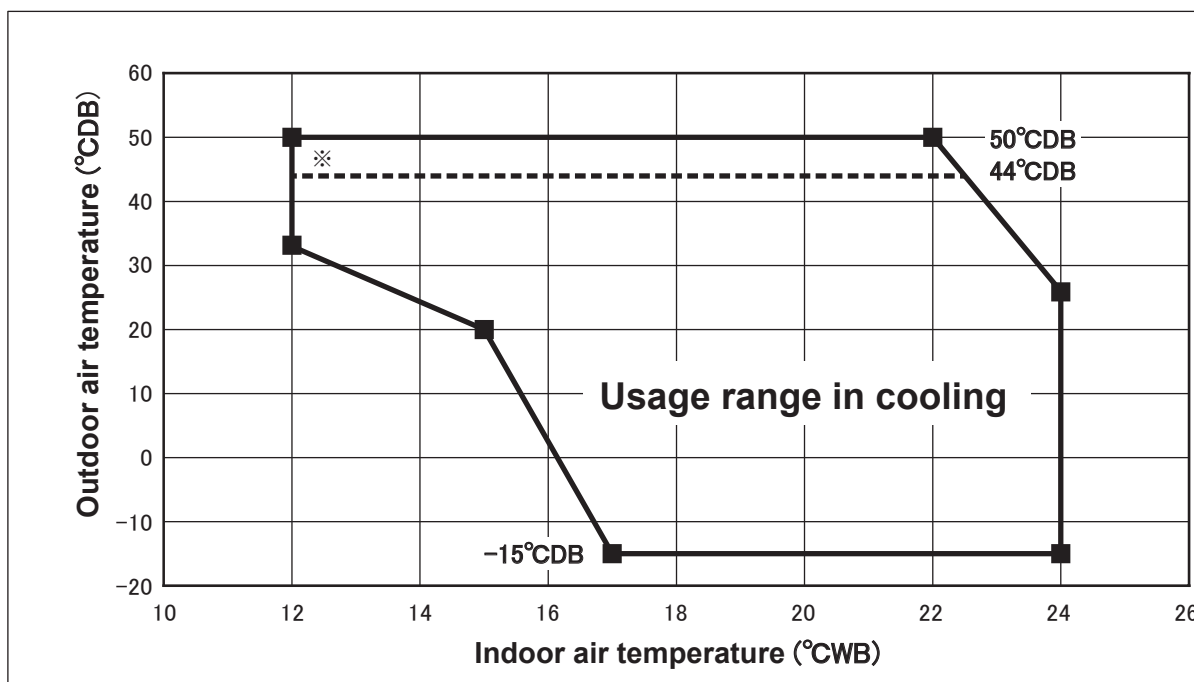
Both gas and liquid pipes need to be covered with 20mm or thicker heat insulation materials at the place where humidity exceeds 70%.

Note 3. When used below -5°C, install a snow hood on site.

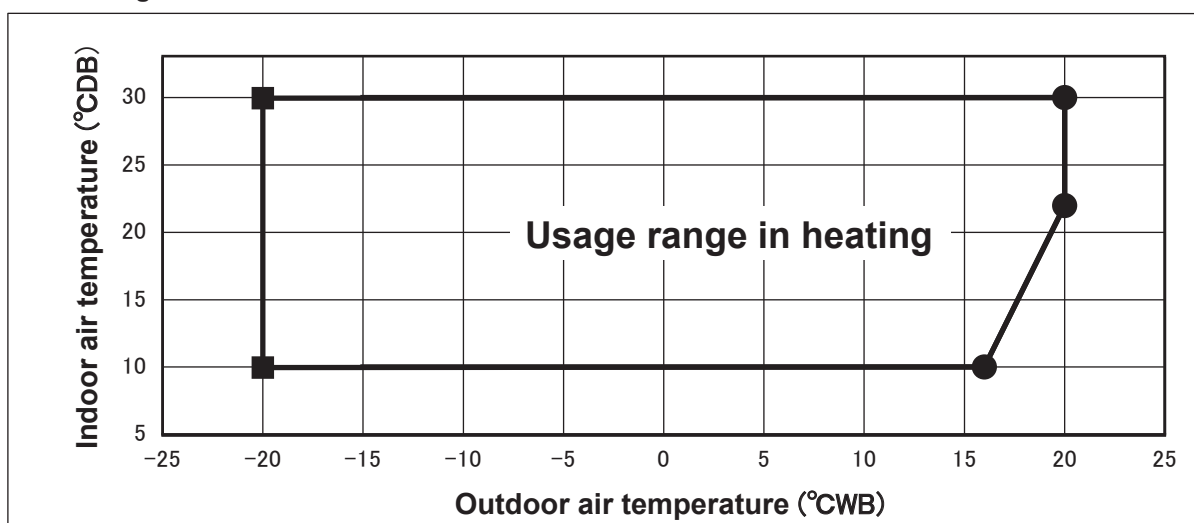
Regarding outline of a snow hood, refer to our technical manual.

## 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 air flow 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°C 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.

※Strict installation restrictions apply when outdoor temperature exceeds 44°C.

For details, refer to chapter 2.8.3 (2) Installation of outdoor unit, 1. HAULAGE AND INSTALLATION, 5) Installation space.



Limitation on unit and piping installation - single,twin,triple,W-twin.

- Check the following points against the specification of the indoor unit and the installation site.
- Observe the following restrictions regarding unit installation and use. Improper installation can cause compressor failure or degradation of performance.
- The total liquid piping length of the system is restricted by the equivalent length (Le).  
The equivalent length (Le) is a virtual length corresponding to an equivalent length of liquid piping using a diameter of 12.7mm.

#### ● FDC200V

Restriction	Dimensional restrictions	Marks appearing in the drawing					
		Single	Twin	Triple (A)	Triple(B) <sup>(2)</sup>	W-twin	
Total equivalent length (Liquid piping)	≤ 70 m	Le	Le	Le	Le	Le	
One-way pipe length of refrigerant piping	Liquid piping	≤ 40m (L : φ 9.52)					
	Gas piping	40-70m(L : φ 12.7)	L	L+L1 L+L2	L+L1, L+L2, L+L3	L+L1 (1)	L+La+L1, L+La+L2 L+Lb+L3, L+Lb+L4
Main pipe length	Liquid piping	≤ 70m					
	Gas piping	≤ 35m (L : φ 22.22) 35-70m (L : φ 25.4 or φ 28.58)	L	L	L	L	
One way pipe length from the first branching point to the second branching point	≤ 5m	-	-	-	La	-	
One-way pipe length after the first branching point	≤ 30m	-	L1,L2	L1,L2,L3	L1	La+L1, La+L2 La+L3, La+L4	
One-way pipe length from the first branching point to indoor units through the second branching point	≤ 27m	-	-	-	La+L2,La+L3	-	
One-way pipe length difference from the first branching point to the indoor units	Twin Type, W-Twin	≤ 10m	-	IL1-L2I	-	-	((L1+La)-(L3+Lb)), ((L1+La)-(L4+Lb)), ((L2+La)-(L3+Lb)), ((L2+La)-(L4+Lb)), IL1-L2I, IL3-L4I
	Triple Type(A)	≤ 3m	-	-	IL1-L2I,IL2-L3I,IL3-L1I	-	-
	Triple Type(B)	3m - 10m	-	-	-	L1-(La+L2), L1-(La+L3) <sup>(1)</sup>	-
One-way pipe length difference from the second branching point to the indoor unit	≤ 10m	-	-	-	IL2-L3I	IL1-L2I,IL3-L4I	
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	≤ 50m <sup>(3)</sup>	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	

[Formula to calculate equivalent length (Le)]

In case of new piping	$Le = (\text{length of } \phi 12.7) + 0.52 \times (\text{length of } \phi 9.52)$
In case of existing piping	$Le = (\text{length of } \phi 12.7) + 0.52 \times (\text{length of } \phi 9.52) + 1.56 \times (\text{length of } \phi 15.88)$

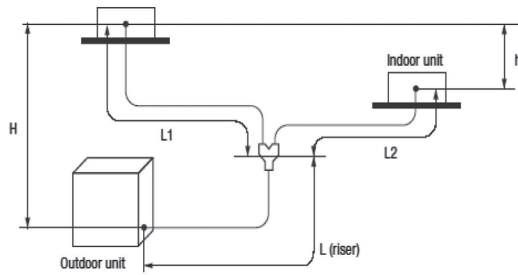
### CAUTION

- For model 200V, always use φ 12.7mm liquid main pipe when one-way piping length exceeds 40m and φ 9.52mm if it is 40m or less.  
If φ 9.52mm liquid pipe is used in an installation having one-way pipe longer than 40m, it may cause degradation of performance and/or water drops in the indoor unit.
- Always use φ 25.4mm or φ 28.58mm gas main pipe "L" when the length of "L" exceeds 35m.  
If φ 22.22mm gas pipe is used in an installation having one-way pipe longer than 35m, it may cause degradation of performance and/or water drops in the indoor unit.

Notes:

- (1) Install the indoor units so that L + L1 becomes the longest one-way pipe.
- (2) Connect the indoor unit with the maximum capacity to L1.
- (3) If the outdoor temperature is above 43°C, the dimensional restriction is ≤ 30m.

Twin type



Twin type

Model for outdoor units	Branch piping set(Optional)
200V	DIS-WB1G

- (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.

**Limitation of refrigerant and additional refrigerant charge**

- (1) Determine if the factory refrigerant charge of the outdoor unit is sufficient to cover the total liquid piping length.

Item	Factory refrigerant charge (kg)	Liquid piping length covered with factory refrigerant charge (m)
Capacity 200V	4.3	30

- (2) If the factory charge does not cover the total liquid piping length, an addition of refrigerant is necessary.

**Step1** - Calculate the total equivalent length, Le:

**[Formula to calculate equivalent length (Le)]**

In case of new piping	$Le = (\text{length of } \phi 12.7) + 0.52 \times (\text{length of } \phi 9.52)$
In case of existing piping	$Le = (\text{length of } \phi 12.7) + 0.52 \times (\text{length of } \phi 9.52) + 1.56 \times (\text{length of } \phi 15.88)$

**Step2** - Determine from the table below the additional refrigerant charge:

Model FDC200 *	Equivalent length (Le)				
	$\leq 30$ m	$30 < Le \leq 40$ m	$40 < Le \leq 50$ m	$50 < Le \leq 60$ m	$60 < Le \leq 70$ m
Additional refrigerant charge (kg)	0kg	0.20kg	2.11kg	2.98kg	3.65kg

\*For FDC200VSA-W only, even if the total liquid piping length > 30m, there may be cases where additional refrigerant charge is not required.

- It is not necessary to remove or add refrigerant charge even if the total liquid piping length is less than 3m.
- If an existing pipe system is used, the refrigerant charge will vary according to the liquid pipe size. For further information, see "6. UTILIZATION OF EXISTING PIPING" in chapter 2.8.3 (2) Installation of outdoor unit.

Examples:

FDC200VSA-W - Twin system with  $L(\phi 9.52) = 30$  m;  $L1(\phi 9.52) = L2(\phi 9.52) = 6$  m  
 Total liquid piping length = 42 m, additional refrigerant charge might be necessary  
 Step 1:  $Le = 0 + 0.52 \times (30 + 6 + 6) = 21.84$  m  
 Step 2: additional refrigerant charge = 0 kg

## 2.7 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 (2.7.1) × Correction factors shown in the table (2.7.2) (2.7.3) (2.7.4)**

**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.

### 2.7.1 Capacity tables

#### (1) Single type

Model **SRK100VNAWZRF**

Indoor unit **SRK100ZR-WF**

Outdoor unit **FDC100VNA-W**

Cooling mode


(kW)

Heating mode:HC

(kW)

Outdoor air temperature °CDB	Indoor air temperature																		
	18 °CDB		21 °CDB		23 °CDB		26 °CDB		27 °CDB		28 °CDB		31 °CDB		33 °CDB				
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC			
-15								11.02	8.14	11.60	8.06	11.92	7.90	12.55	8.26	13.18	7.90		
-10								10.67	8.04	11.23	7.97	11.53	7.81	12.13	8.18	12.73	7.82		
-5								10.31	7.95	10.85	7.87	11.35	7.77	12.35	8.22	13.36	7.93		
0						8.55	7.00	10.33	7.95	11.22	7.96	11.56	7.82	12.25	8.20	12.93	7.85		
5						9.01	7.14	10.41	7.97	11.11	7.93	11.44	7.79	12.09	8.17	12.74	7.82		
11						9.41	7.26	10.44	7.98	10.96	7.90	11.36	7.77	12.15	8.18	12.94	7.86		
13						9.80	7.38	10.47	7.99	10.81	7.86	11.27	7.75	12.20	8.19	13.13	7.89		
15						10.19	7.50	10.50	8.00	10.66	7.82	11.19	7.73	12.26	8.20	13.32	7.92		
17						9.83	7.38	10.59	8.02	10.97	7.90	11.40	7.78	12.26	8.20	13.13	7.89		
19						10.26	7.52	10.67	8.04	11.27	7.98	11.61	7.83	12.27	8.20	12.94	7.86		
21						10.08	7.46	10.56	8.01	11.15	7.95	11.49	7.80	12.15	8.18	12.82	7.84		
23						9.90	7.41	10.45	7.98	11.04	7.92	11.37	7.77	12.03	8.16	12.70	7.82		
25						9.79	7.94	9.81	7.38	10.40	7.97	10.98	7.90	11.31	7.76	11.97	8.14	12.63	7.81
27						9.62	7.88	9.72	7.35	10.35	7.96	10.92	7.89	11.39	7.78	11.86	8.12		
29						9.42	7.81	9.49	7.28	10.11	7.89	10.69	7.83	11.16	7.72	11.63	8.08		
31						9.26	7.74	9.26	7.21	9.87	7.83	10.46	7.77	10.93	7.67	11.39	8.03		
33	7.82	6.89	8.42	7.47	9.03	7.14	9.64	7.77	10.23	7.71	10.70	7.61	11.16	7.99					
35	7.68	6.84	8.24	7.41	8.80	7.08	9.40	7.71	10.00	7.66	10.46	7.56	10.93	7.94					
37	7.59	6.81	8.11	7.36	8.63	7.03	9.18	7.65	9.72	7.59	10.15	7.49	10.57	7.88					
39	7.50	6.77	7.98	7.32	8.46	6.98	8.95	7.59	9.44	7.52	9.83	7.42	10.22	7.81					
41	7.40	6.74	7.85	7.28	8.29	6.93	8.72	7.54	9.16	7.46	9.51	7.35	9.86	7.75					
43	7.31	6.70	7.72	7.23	8.12	6.88	8.50	7.48	8.88	7.39	9.19	7.28	9.50	7.68					
46	7.17	6.65	7.52	7.17	7.87	6.81	8.16	7.40	8.46	7.30	8.71	7.18	8.97	7.59					
50	5.60	5.49	5.73	5.62	5.90	5.78	6.05	5.93	6.17	6.05	6.28	6.15	6.38	6.26					

Outdoor air temperature		Indoor air temperature				
°CDB	°CWB	°CDB				
		16	18	20	22	24
-19.8	-20	6.47	6.40	6.32	6.24	6.16
-17.7	-18	6.52	6.46	6.40	6.30	6.20
-15.7	-16	7.37	7.29	7.20	7.11	7.02
-13.5	-14	7.66	7.57	7.47	7.38	7.30
-11.5	-12	8.23	8.12	8.01	7.93	7.85
-9.5	-10	8.80	8.67	8.54	8.47	8.40
-7.5	-8	9.38	9.23	9.08	9.02	8.95
-5.5	-6	9.56	9.41	9.26	9.20	9.14
-3.0	-4	9.74	9.59	9.45	9.38	9.32
-1.0	-2	9.92	9.77	9.63	9.57	9.50
1.0	0	10.10	9.96	9.81	9.75	9.68
2.0	1	10.19	10.05	9.91	9.84	9.77
3.0	2	10.45	10.31	10.17	10.10	10.03
5.0	4	10.96	10.82	10.68	10.62	10.55
7.0	6	11.48	11.34	11.20	11.13	11.07
9.0	8	11.79	11.65	11.51	11.45	11.39
11.5	10	12.09	11.96	11.82	11.77	11.71
13.5	12	12.72	12.57	12.41	12.35	12.29
15.5	14	13.35	13.18	13.01	12.94	12.88
16.5	16	13.67	13.49	13.31	13.24	13.17

PCA001Z877 

Model **SRK100VSAWZRF**

Indoor unit **SRK100ZR-WF**

Outdoor unit **FDC100VSA-W**

Cooling mode

(kW)

Heating mode:HC

(kW)

Outdoor air temperature °CDB	Indoor air temperature																		
	18 °CDB		21 °CDB		23 °CDB		26 °CDB		27 °CDB		28 °CDB		31 °CDB		33 °CDB				
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC			
-15								11.02	8.01	11.60	8.07	11.92	8.00	12.55	8.32	13.18	8.14		
-10								10.67	7.86	11.23	7.91	11.53	7.84	12.13	8.16	12.73	7.99		
-5								10.31	7.71	10.85	7.75	11.35	7.77	12.35	8.24	13.36	8.20		
0						8.55	6.70	10.33	7.72	11.22	7.91	11.56	7.86	12.25	8.20	12.93	8.05		
5						9.01	6.90	10.41	7.75	11.11	7.86	11.44	7.80	12.09	8.15	12.74	7.99		
11						9.41	7.08	10.44	7.77	10.96	7.80	11.36	7.77	12.15	8.17	12.94	8.05		
13						9.80	7.26	10.47	7.78	10.81	7.74	11.27	7.74	12.20	8.19	13.13	8.12		
15						10.19	7.44	10.50	7.79	10.66	7.68	11.19	7.71	12.26	8.21	13.32	8.19		
17						9.83	7.27	10.59	7.83	10.97	7.80	11.40	7.79	12.26	8.21	13.13	8.12		
19						10.26	7.47	10.67	7.86	11.27	7.93	11.61	7.87	12.27	8.21	12.94	8.05		
21						10.08	7.39	10.56	7.82	11.15	7.88	11.49	7.82	12.15	8.17	12.82	8.01		
23						9.90	7.31	10.45	7.77	11.04	7.83	11.37	7.78	12.03	8.12	12.70	7.97		
25						9.79	7.71	9.81	7.27	10.40	7.75	10.98	7.81	11.31	7.75	11.97	8.10	12.63	7.95
27						9.62	7.62	9.72	7.22	10.35	7.72	10.92	7.78	11.39	7.79	11.86	8.06		
29						9.42	7.52	9.49	7.12	10.11	7.62	10.69	7.69	11.16	7.69	11.63	7.98		
31						9.26	7.42	9.26	7.01	9.87	7.52	10.46	7.59	10.93	7.60	11.39	7.89		
33	7.82	6.54	8.42	7.03	9.03	6.91	9.64	7.42	10.23	7.50	10.70	7.51	11.16	7.81					
35	7.68	6.47	8.24	6.95	8.80	6.81	9.40	7.33	10.00	7.41	10.46	7.42	10.93	7.72					
37	7.59	6.43	8.11	6.89	8.63	6.73	9.18	7.23	9.72	7.29	10.15	7.30	10.57	7.60					
39	7.50	6.38	7.98	6.82	8.46	6.66	8.95	7.14	9.44	7.18	9.83	7.17	10.22	7.47					
41	7.40	6.33	7.85	6.76	8.29	6.58	8.72	7.05	9.16	7.07	9.51	7.05	9.86	7.35					
43	7.31	6.28	7.72	6.70	8.12	6.51	8.50	6.96	8.88	6.96	9.19	6.93	9.50	7.22					
46	7.17	6.21	7.52	6.61	7.87	6.40	8.16	6.82	8.46	6.80	8.71	6.76	8.97	7.04					
50	5.60	5.45	5.73	5.62	5.90	5.58	6.05	5.93	6.17	5.95	6.28	5.89	6.38	6.20					

Outdoor air temperature		Indoor air temperature				
°CDB	°CWB	°CDB				
		16	18	20	22	24
-19.8	-20	6.47	6.40	6.32	6.24	6.16
-17.7	-18	6.52	6.46	6.40	6.30	6.20
-15.7	-16	7.37	7.29	7.20	7.11	7.02
-13.5	-14	7.66	7.57	7.47	7.38	7.30
-11.5	-12	8.23	8.12	8.01	7.93	7.85
-9.5	-10	8.80	8.67	8.54	8.47	8.40
-7.5	-8	9.38	9.23	9.08	9.02	8.95
-5.5	-6	9.56	9.41	9.26	9.20	9.14
-3.0	-4	9.74	9.59	9.45	9.38	9.32
-1.0	-2	9.92	9.77	9.63	9.57	9.50
1.0	0	10.10	9.96	9.81	9.75	9.68
2.0	1	10.19	10.05	9.91	9.84	9.77
3.0	2	10.45	10.31	10.17	10.10	10.03
5.0	4	10.96	10.82	10.68	10.62	10.55
7.0	6	11.48	11.34	11.20	11.13	11.07

(2) Twin type

Model **SRK200VSAWPZRF**

Indoor unit SRK100ZR-WF (2 units)

Outdoor unit FDC200VSA-W

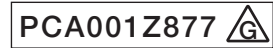
Cooling mode

(kW) Heating mode : HC

(kW)

Outdoor air temperature	Indoor air temperature																Outdoor air temperature		Indoor air temperature				
	12°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB		°CDB	°CWB	°CDB				
	18°CWB	14°CWB	16°CWB	18°CWB	19°CWB	20°CWB	22°CWB	24°CWB	°CDB	°CWB	16	18	20	22	24								
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	°CDB	°CWB	16	18	20	22	24
11							18.50	14.49	18.93	14.39	19.37	14.25	20.27	14.87	21.16	14.57	-19.8	-20	8.93	8.81	8.69	8.58	8.47
13							19.24	14.83	19.72	14.70	20.23	14.58	21.24	15.22	22.26	14.93	-17.7	-18	9.65	9.52	9.39	9.27	9.15
15							19.99	15.14	20.52	15.03	21.09	14.92	22.22	15.60	23.35	15.31	-15.7	-16	10.36	10.22	10.08	9.95	9.82
17							20.15	15.21	20.72	15.11	21.30	15.00	22.47	15.69	23.64	15.41	-13.5	-14	11.08	10.93	10.78	10.64	10.50
19							20.30	15.27	20.91	15.18	21.52	15.11	22.73	15.78	23.94	15.51	-11.5	-12	11.78	11.64	11.50	11.34	11.19
21							20.45	15.34	21.11	15.29	21.73	15.19	22.98	15.87	24.24	15.61	-9.5	-10	12.49	12.35	12.22	12.04	11.87
23							20.61	15.40	21.30	15.37	21.95	15.28	23.24	15.97	24.53	15.71	-7.5	-8	12.81	12.70	12.60	12.41	12.22
25	19.82	15.50	19.82	15.50	19.45	14.63	20.76	15.49	21.49	15.45	22.16	15.37	23.49	16.09	24.83	15.84	-5.5	-6	13.14	13.06	12.97	12.77	12.58
27	19.25	15.21	19.25	15.21	19.13	14.48	20.42	15.33	21.20	15.33	21.85	15.24	23.17	15.94			-3.0	-4	13.46	13.41	13.35	13.14	12.93
29	18.67	14.93	18.67	14.93	18.81	14.34	20.09	15.18	20.90	15.18	21.55	15.12	22.85	15.82			-1.0	-2	13.79	13.76	13.73	13.50	13.28
31	18.09	14.64	18.09	14.64	18.49	14.19	19.76	15.04	20.60	15.06	21.24	14.98	22.52	15.71			1.0	0	14.12	14.11	14.10	13.87	13.63
33	17.52	14.36	17.52	14.36	18.17	14.04	19.42	14.90	20.30	14.94	20.93	14.86	22.20	15.59			2.0	1	14.28	14.29	14.29	14.05	13.81
35	16.94	14.08	16.94	14.08	17.84	13.90	19.09	14.76	20.00	14.81	20.63	14.74	21.88	15.47			3.0	2	15.93	15.92	15.91	15.65	15.39
37	16.36	13.79	16.36	13.79	17.31	13.66	18.53	14.51	19.36	14.56	19.98	14.49	21.24	15.22			5.0	4	19.23	19.19	19.16	18.85	18.55
39	15.79	13.51	15.79	13.51	16.78	13.40	17.97	14.27	18.71	14.28	19.34	14.24	20.60	14.99			7.0	6	22.53	22.46	22.40	22.06	21.72
41	15.21	13.24	15.21	13.24	16.25	13.17	17.42	14.05	18.07	14.02	18.70	13.97	19.96	14.77			9.0	8	23.70	23.39	23.07	22.69	22.31
43	14.63	12.97	14.63	12.97	15.72	12.94	16.86	13.82	17.43	13.77	18.06	13.73	19.32	14.55			11.5	10	24.87	24.31	23.75	23.32	22.90
46	13.33	12.35	13.33	12.35	14.21	12.27	15.05	13.07	15.41	12.97	15.90	12.90	16.86	13.62			13.5	12	26.04	25.60	25.15	24.77	24.40
50	11.58	11.57	11.58	11.57	12.20	11.43	12.64	12.12	12.72	11.94	13.01	11.85	13.59	12.54			15.5	14	27.21	26.88	26.55	26.23	25.90
																	16.5	16	28.39	28.14	27.89	27.64	27.40

- Notes(1) These data show average status.  
 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)

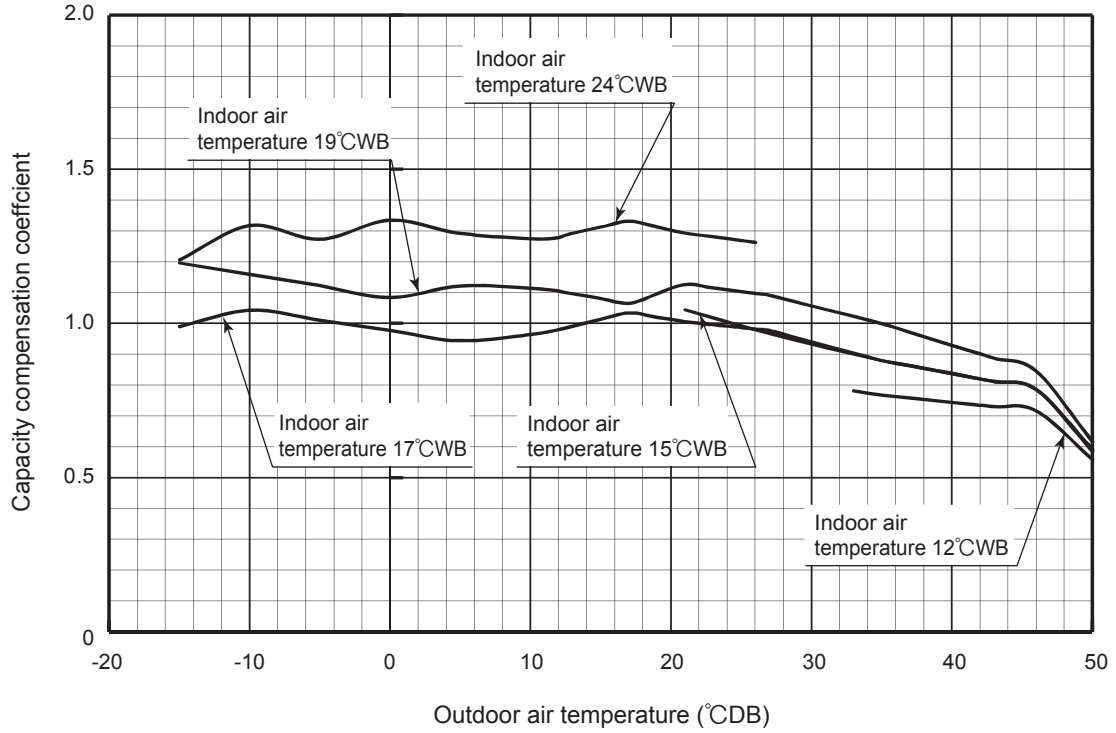


[References data]

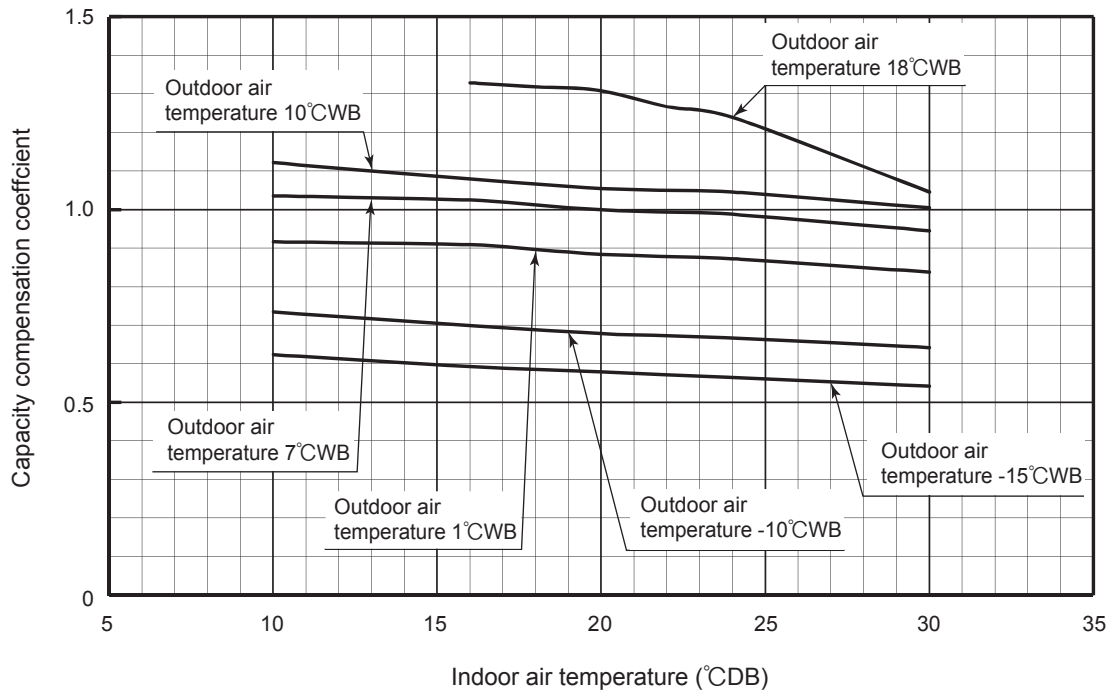
The following figures show capacity variation against outdoor and indoor temperature. Capacity compensation coefficient shows the ratio of maximum capacity at any temperature to nominal capacity.

(I) Models FDC100VNA-W, 100VSA-W

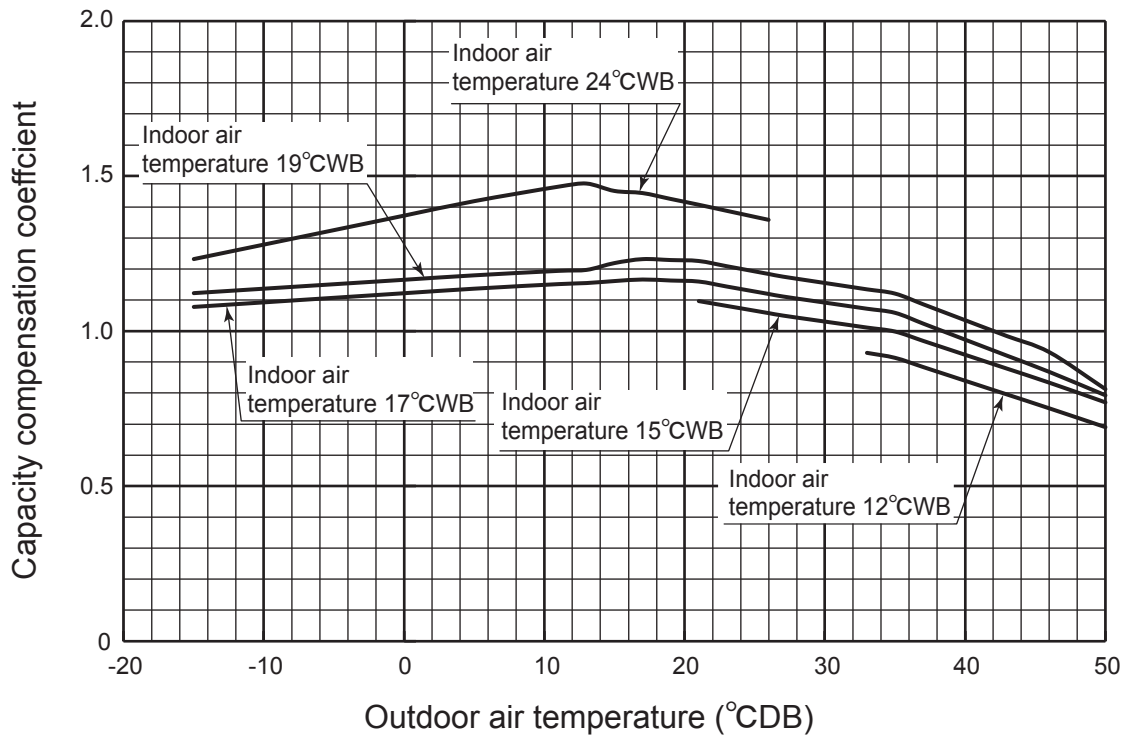
① Cooling



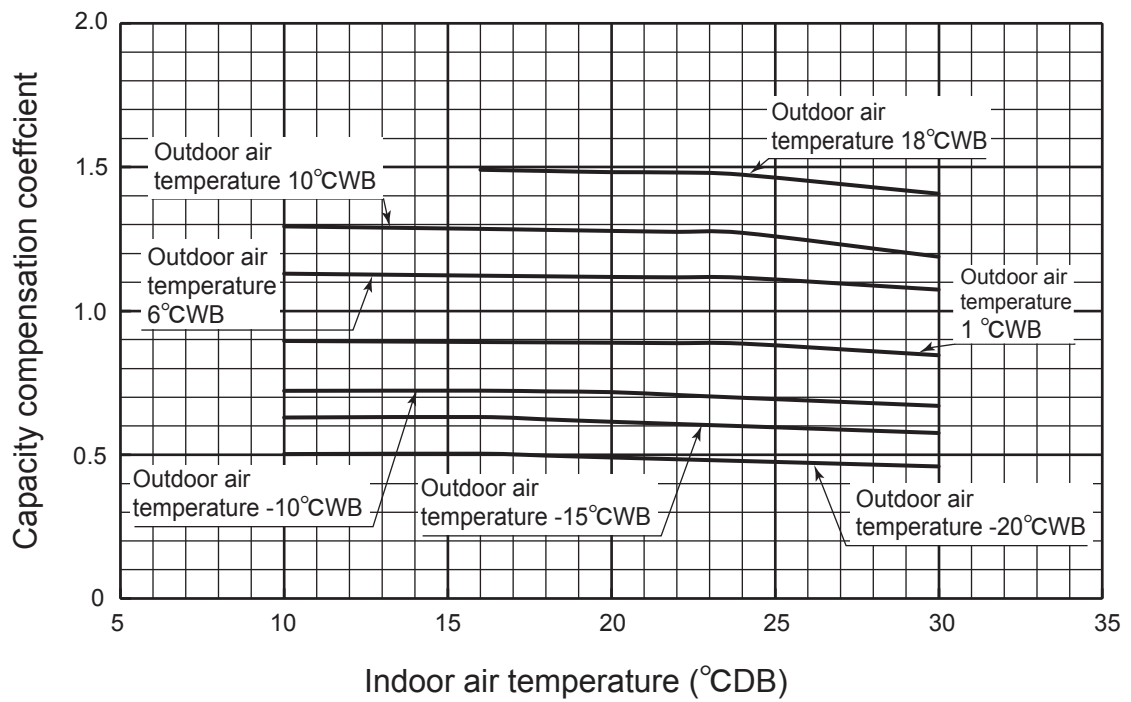
② Heating



(II) Model FDC200VSA-W  
 ① Cooling



② Heating



Note (1) These data show the case where the operation frequency of a compressor is maximum.

## 2.7.2 Correction of cooling and heating capacity in relation to air flow rate control (Fan speed)

Fan speed	Hi	Me	Lo
Coefficient	1.00	0.97	0.95

## 2.7.3 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.

### Model 100

Equivalent piping length <sup>(1)</sup> (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	100 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
	100 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

### Model FDC200

Equivalent piping length <sup>(1)</sup> (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	200model	φ 22.22	1	0.997	0.991	0.984	0.978	0.971	0.965	-	-	-	-	-	-	-	
	200model	φ 25.4	-	-	-	-	-	-	0.988	0.984	0.981	0.977	0.974	0.970	0.967	0.963	0.960
	200model	φ 28.58	-	-	-	-	-	-	0.999	0.997	0.995	0.993	0.991	0.989	0.987	0.985	0.983

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

## 2.7.4 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	35m	40m	45m	50m
Adjustment coefficient	0.99	0.98	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90

### Piping length limitations

Item	Model	FDC100	FDC200
Max. one way piping length		50m	70m
Max. vertical height difference		Outdoor unit is higher 50m Outdoor unit is higher 15m	Outdoor unit is higher 50m (Outdoor air temperature ≤ 43°C) Outdoor unit is higher 30m (Outdoor air temperature > 43°C) 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 SRK100VNAWZRF with the air flow "High", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0°C and outdoor dry-bulb temperature 35°C is

$$\text{Net cooling capacity} = \frac{10.0}{\uparrow} \times \frac{1.00}{\uparrow} \times \frac{0.978}{\uparrow} \times \frac{0.99}{\uparrow} = 9.7\text{kW}$$

Net cooling total capacity of SRK100VNAWZRF (Outdoor temp. : 35°CDB Indoor temp. : 19°CWB) shown in table 2.7.1

Air flow : Hi shown in table 2.7.2

Piping length : 15m (Gas pipe size is φ15.88) shown in table 2.7.3

Height diff. : 5m (Outdoor unit : below) shown in table 2.7.4

# 2.8 APPLICATION DATA

- 2.8.1 Installation of indoor unit ..... See page 22.
- 2.8.2 Installation of wired remote control (Option parts) ..... See page 26.
- 2.8.3 Installation of outdoor unit

## (1) Models FDC100VNA-W,100VSA-W

⊙ This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 22.  
 ⊙ 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

PSC012D120B

### 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
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- For 3 phase power source outdoor unit, EN61000-3-2 is not applicable if consent by the utility company or notification 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.
- 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

Inverter driven split PAC
100, 125, 140 VNA-W 100, 125, 140 VSA-W
Designed for R32 refrigerant

### Check before installation work

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

### WARNING

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>● <b>Installation must be carried out by the qualified installer.</b><br/>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.</li> <li>● <b>Install the system in full accordance with the instruction manual.</b><br/>Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.</li> <li>● <b>Use the original accessories and the specified components for installation.</b><br/>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.</li> <li>● <b>When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with ISO5149.</b><br/>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.</li> <li>● <b>Ventilate the working area well in the event of refrigerant leakage during installation.</b><br/>If the refrigerant comes into contact with naked flames, poisonous gas is produced.</li> <li>● <b>After completed installation, check that no refrigerant leaks from the system.</b><br/>If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.</li> <li>● <b>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.</b><br/>An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit.</li> <li>● <b>Install the unit in a location with good support.</b><br/>Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.</li> <li>● <b>Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.</b><br/>Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.</li> <li>● <b>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.</b><br/>Power source with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.</li> <li>● <b>Be sure to shut off the power before starting electrical work.</b><br/>Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.</li> <li>● <b>Be sure to use the cables conformed to safety standard and cable capacity for power distribution work.</b><br/>Unconformable cables can cause electric leak, anomalous heat production or fire.</li> <li>● <b>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.</b><br/>Loose connections or cable mountings can cause anomalous heat production or fire.</li> <li>● <b>Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.</b><br/>Incorrect installation can cause electric shocks or fire.</li> <li>● <b>Do not perform brazing work in the airtight room.</b><br/>It can cause lack of oxygen.</li> <li>● <b>Use the prescribed pipes, flare nuts and tools for R32 and R410A.</b><br/>Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.</li> </ul> | <ul style="list-style-type: none"> <li>● <b>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.</b><br/>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.</li> <li>● <b>Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.</b><br/>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.</li> <li>● <b>Only use prescribed option parts. The installation must be carried out by the qualified installer.</b><br/>If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.</li> <li>● <b>Do not perform any change of protective device itself or its setup condition</b><br/>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.</li> <li>● <b>Be sure to switch off the power source in the event of installation, inspection or servicing.</b><br/>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.</li> <li>● <b>Consult the dealer or an expert regarding removal of the unit.</b><br/>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.</li> <li>● <b>Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.</b><br/>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.</li> <li>● <b>Be sure to wear protective goggles and gloves while at work.</b></li> <li>● <b>This unit is designed specifically for R32.</b><br/>Using any other refrigerant can cause unit failure and personal injury.</li> <li>● <b>Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.</b><br/>If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.</li> <li>● <b>Do not run the unit with removed panels or protections</b><br/>Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.</li> <li>● <b>Be sure to fix up the service panels.</b><br/>Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.</li> <li>● <b>Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair.</b><br/>Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.</li> <li>● <b>Do not process or splice the power cord, or share the socket with other power plugs.</b><br/>This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.</li> <li>● <b>Do not bundle or wind or process the power cord. Do not deform the power cord by treating it.</b><br/>This may cause fire or heating.</li> </ul> |
|--|--|

### CAUTION

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>● <b>Carry out the electrical work for ground lead with care</b><br/>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.</li> <li>● <b>Use the circuit breaker for all pole with correct capacity.</b><br/>Using the incorrect circuit breaker, it can cause the unit malfunction and fire.</li> <li>● <b>Install isolator or disconnect switch on the power source wiring in accordance with the local codes and regulations.</b><br/>The isolator should be locked in accordance with EN60204-1.</li> <li>● <b>Take care when carrying the unit by hand.</b><br/>If the unit weighs 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.</li> <li>● <b>Dispose of any packing materials correctly.</b><br/>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 of them according to the local regulations.</li> <li>● <b>Pay attention not to damage the drain pan by weld spatter when welding work is done near the indoor unit.</b><br/>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 packaging or cover it.</li> <li>● <b>Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.</b><br/>Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.</li> <li>● <b>Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.</b><br/>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.</li> <li>● <b>Perform installation work properly according to this installation manual.</b><br/>Improper installation can cause abnormal vibrations or increased noise generation.</li> <li>● <b>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.</b></li> <li>● <b>Earth leakage breaker must be installed</b><br/>If the earth leakage breaker is not installed, it can cause fire or electric shocks.</li> <li>● <b>Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.</b><br/>Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.</li> <li>● <b>Do not install the unit near the location where leakage of combustible gases can occur.</b><br/>If leaked gases accumulate around the unit, it can cause fire.</li> <li>● <b>Do not install the unit where corrosive gas (such as sulfuric acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.</b><br/>Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.</li> <li>● <b>Secure a space for installation, inspection and maintenance specified in the manual.</b><br/>Insufficient space can result in accident such as personal injury due to falling from the installation place.</li> <li>● <b>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.</b><br/>If safety facilities are not provided, it can cause personal injury due to falling from the installation place.</li> <li>● <b>Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics</b><br/>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.</li> <li>● <b>Do not install the outdoor unit in a location where insects and small animals can inhabit.</b><br/>Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.</li> </ul> | <ul style="list-style-type: none"> <li>● <b>Do not use the base frame for outdoor unit which is corroded or damaged due to long periods of operation.</b><br/>Using an old and damage base frame can cause the unit falling down and cause personal injury.</li> <li>● <b>Do not install the unit in the locations listed below</b><br/>Locations where carbon fiber, metal powder or any powder is floating.<br/>Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.<br/>Vehicles and ships<br/>Locations where cosmetic or special sprays are often used.<br/>Locations with direct exposure of oil mist and steam such as kitchen and machine plant.<br/>Locations where any machines which generate high frequency harmonics are used.<br/>Locations with salty atmospheres such as coastlines<br/>Locations with heavy snow (if installed, be sure to provide base frame and snow hood mentioned in the manual)<br/>Locations where the unit is exposed to chimney smoke<br/>Locations at high altitude (more than 1000m high)<br/>Locations with anomalous atmosphere (e.g. organic fertilizer)<br/>Locations with calcium chloride (e.g. snow melting agent)<br/>Locations where heat radiation from other heat source can affect the unit<br/>Locations without good air circulation<br/>Locations with any obstacles which can prevent inlet and outlet air of the unit<br/>Locations where short-circuit of air can occur (in case of multiple units installation)<br/>Locations where strong air blows against the air outlet of outdoor unit<br/>Locations where something located above the unit could fall.<br/>It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.</li> <li>● <b>Do not install the outdoor unit in the locations listed below.</b><br/>Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.<br/>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.<br/>Locations where vibration can be amplified and transmitted due to insufficient strength of structure.<br/>Locations where vibration and operation sound generated by the outdoor unit can affect seriously, (on the wall or at the place near bed room)<br/>Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)<br/>Locations where drainage cannot run off safely.<br/>It can affect surrounding environment and cause a claim.</li> <li>● <b>Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.</b><br/>It can cause the damage of the items.</li> <li>● <b>Do not touch any buttons with wet hands.</b><br/>It can cause electric shocks.</li> <li>● <b>Do not touch any refrigerant pipes with your hands when the system is in operation.</b><br/>During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.</li> <li>● <b>Do not clean up the unit with water.</b><br/>It can cause electric shocks.</li> <li>● <b>Do not operate the outdoor unit with any article placed on it.</b><br/>You may incur property damage or personal injury from a fall of the article.</li> <li>● <b>Do not step onto the outdoor unit.</b><br/>You may incur injury from a drop or fall.</li> <li>● <b>Do not touch the suction or aluminum fin on the outdoor unit.</b><br/>This may cause injury.</li> </ul> |
|---|--|

### Notabilia as a unit designed for R32

- Do not use any refrigerant other than R32. R32 will rise to pressure about 1.6 times higher than that of a conventional refrigerant (R22 or R407C).  
A cylinder containing R32 has a light blue indication mark on the top.
- A unit designed for R32 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 R32 tools listed in the table on the right before installing or servicing this unit.
- All indoor units must be models designed exclusively for R32. Check connectable indoor unit models in a catalog, etc. (A wrong indoor unit, if connected into the system, will impair proper system operation)

	Dedicated R32 and 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









(2) Model FDC200VSA-W

PSC012D154B

Inverter driven split PAC
FDC200VSA-W, FDC250VSA-W, FDC280VSA-W
Designed for R32 refrigerant

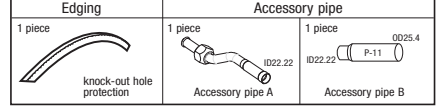
- This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 22.
When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces

SAFETY PRECAUTIONS

- We recommend you to read this "SAFETY PRECAUTIONS" carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.
The precautions described below are divided into [WARNING] and [CAUTION]. The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the [WARNING] and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in [CAUTION]. These are very important precautions for safety. Be sure to observe all of them without fail.
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 supply outdoor unit, EN61000-3-2 is not applicable if consent by the utility company or notification to the utility company is given before usage.
3 phase power supply 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]



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

WARNING

- Installation must be carried out by the qualified installer.
Install the system in full accordance with the instruction manual.
Use the original accessories and the specified components for installation.
When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with ISO146.
Ventilate the working area well in the event of refrigerant leakage during installation.
After completed installation, check that no refrigerant leaks from the system.
Hang up the unit at the specified points with ropes which can support the weight in lifting for portage.
Install the unit in a location with good support.
Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.
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.
Be sure to shut off the power before starting electrical work.
Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.
Use the prescribed cables for electrical connection, lighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.
Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.
Do not perform brazing work in the airtight room.
Use the prescribed pipes, flare nuts and tools for R32.
Tighten the flare nut by using double spanners and torque wrench according to prescribed method.
Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.
Only use prescribed optional parts.
Do not perform any change of protective device itself or its setup condition.
Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.
Be sure to switch off the power supply in the event of installation, inspection or servicing.
Consult the dealer or an expert regarding removal of the unit.
Be sure to wear protective goggles and gloves while at work.
Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.
Do not run the unit with removed panels or protections.
Be sure to fix up the service panels.
Do not perform any repairs or modifications by yourself.
Do not process or splice the power cord, or share the socket with other power plugs.
Do not bundle or wind or process the power cord. Do not deform the power cord by treading it.

CAUTION

- Carry out the electrical work for ground lead with care.
Use the circuit breaker for all pole with correct capacity.
Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.
Take care when carrying the unit by hand.
Dispose of any packing materials correctly.
Pay attention not to damage the drain pan by weld spatter when welding work is done near the indoor unit.
Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.
Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.
Perform installation work properly according to this installation manual.
Earth leakage breaker must be installed.
Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.
Do not install the unit near the location where leakage of combustible gases can occur.
Do not install the unit where corrosive gas (such as sulfuric acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.
Secure a space for installation, inspection and maintenance specified in the manual.
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.
Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.
Do not install the outdoor unit in a location where insects and small animals can inhabit.
Do not use the base frame for outdoor unit which is corroded or damaged due to long periods of operation.

Notabilia as a unit designed for R32

- Do not use any refrigerant other than R32. R32 will rise to pressure about 1.6 times higher than that of a conventional refrigerant.
A cylinder containing R32 has a light blue indication mark on the top.
A unit designed for R32 has adopted a different size indoor unit operation valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake.
R32 tools listed in the table on the right before installing or servicing this unit.
All indoor units must be models designed exclusively for R32. Check connectable indoor unit models in a catalog, etc. (A wrong indoor unit, if connected into the system, will impair proper system operation)

Table with 2 columns: Item, Description. Contains R32 tools: Gauge manifold, Charge hose, Electronic scale for refrigerant charging, Torque wrench, Flare tool, Protusion control copper pipe gauge, Vacuum pump adapter, Gas leak detector.







## 2.8.4 Method for connecting the accessory pipe

Model FDC200VSA-W

PSC012D028H 

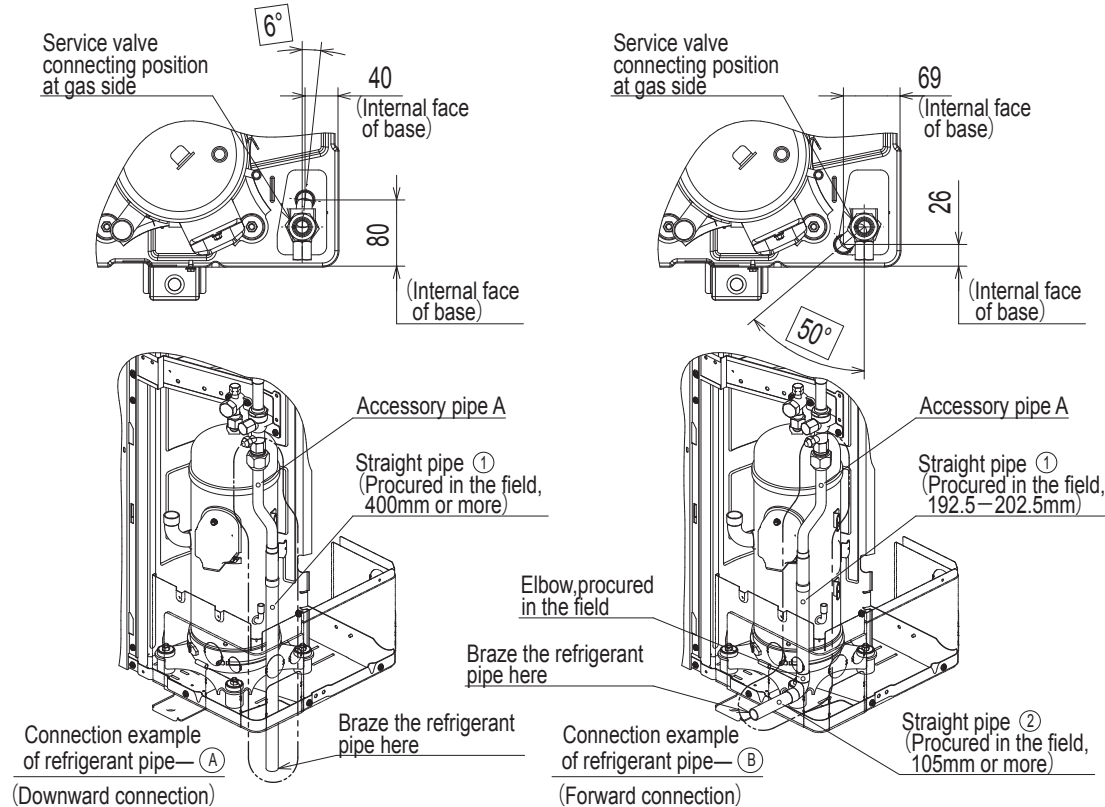
- Be sure to use the accessory pipe to connect the service valve on the gas side with the field pipe.
- Be sure to use the straight pipe (Procured at the field) shown in the table 1 applicable to the model of outdoor unit.
- When tightening the flare, connect the pipe securely by pressing the flared 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 (A) — (D) 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 (A) — (D).)
  - 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	
$\phi 19.05$	100—130N·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.)

### 【Connection example (A) — (D) 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.





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)	
Single type	200V	≤35(m)	φ 22.22 x t1.0
	250V	≤70(m)	φ 25.4 x t1.0 or φ 28.58 x t1.0
	280V	≤35(m)	φ 22.22 x t1.0
		≤60(m)	φ 25.4 x t1.0 or φ 28.58 x t1.0

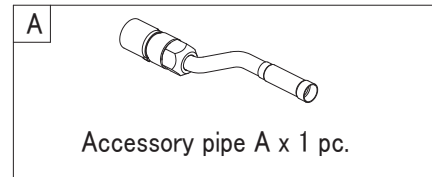
- Be sure to use pipes of 1/2H material, and wall thickness above 1mm. (Pressure resistance of O-type pipe is not enough.)

Table 2 Parts used for the connecting pipe assembly

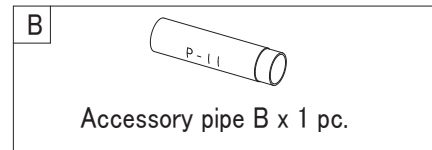
No.	Name	Quantity	Remark
1	Accessory pipe A	1	Accessory
2	Straight pipe ①	1	Procured at the field
3	Straight pipe ②	1 or 0	Procured at the field (Not required for downward direction)
4	Elbow	1 or 0	Procured at the field (Not required for downward direction)

Table 3 Length and specification of straight pipe (Procured in the field)

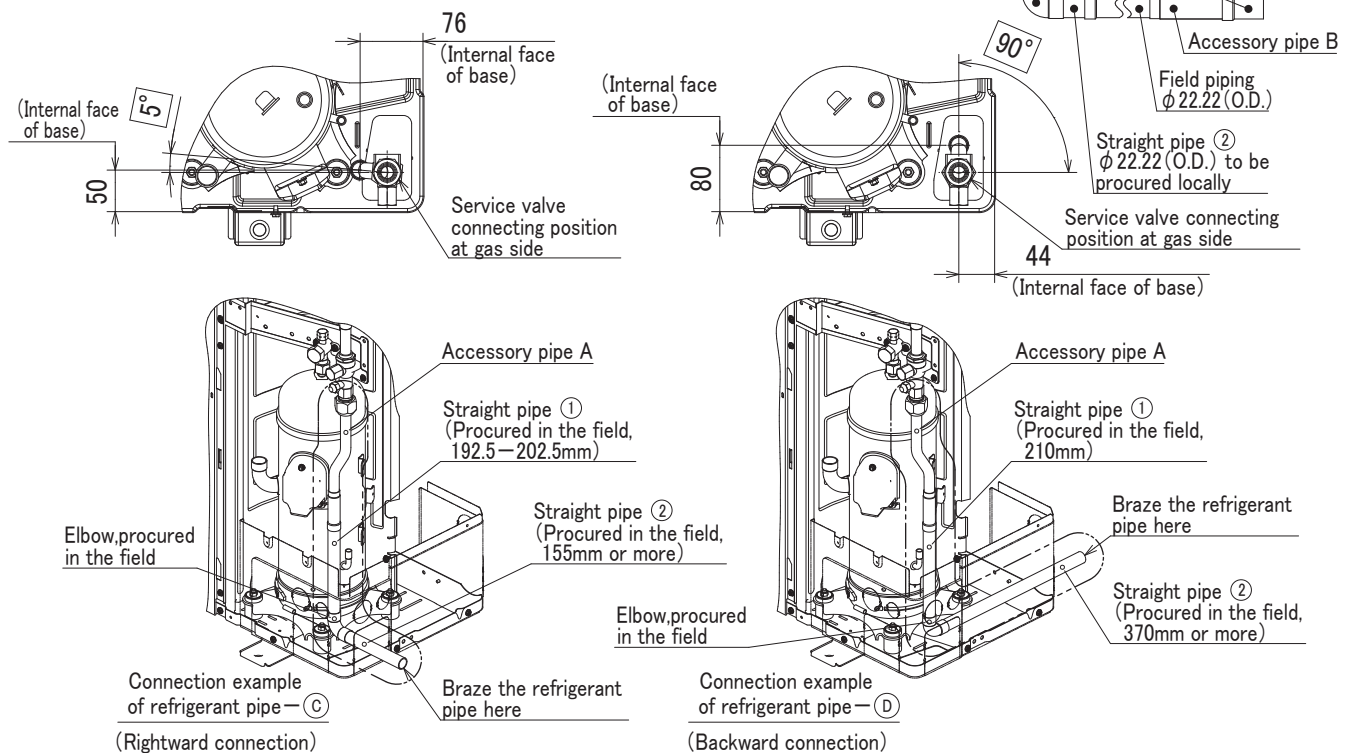
	A Downward	B Forward	C Rightward	D Backward
Straight pipe ①	400mm or more	192.5—202.5mm	192.5—202.5mm	210mm
Straight pipe ②	-	105mm or more	155mm or more	370mm or more



Heat insulating material is attached to the accessory pipe with band. When installing the heat insulating material, cut the band and retrieve it.



- Branching pipe set can be used by using the accessory pipe B. When φ 22.22 (O.D.) size of the indoor unit gas pipe is used, the accessory pipe B is unnecessary.



## 2.8.5 Instructions for branching pipe set (DIS-WA1G, WB1G, TA1G, TB1G)

PSB012Z865 

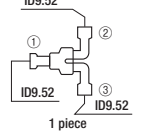
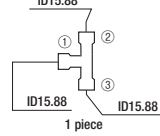

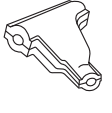
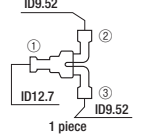
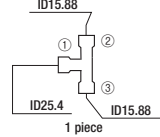


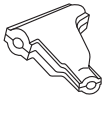
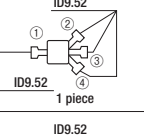
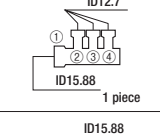


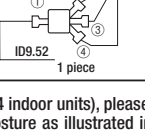
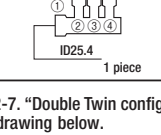





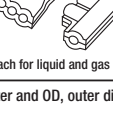
### WARNING / CAUTION

- This set is for R410A and R32 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

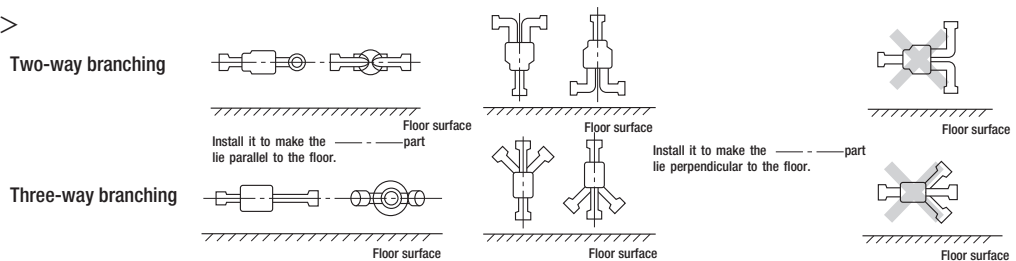
- (1) Please make sure that you have chosen the right branching pipe set and the specifications of the parts contained in it by checking with the table below.
- (2) Connect pipes as illustrated in the table below. The pipe from an outdoor unit must be brazed to the pipe connection port "①" and the pipes 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-WA1G (Two-way branching set)	3HP	1.5HP + 1.5HP			Joint A  2 pieces Flare joint (for indoor unit side connection)	
	4HP	2HP + 2HP				
		1.5HP + 2.5HP				
	5HP	2.5HP + 2.5HP				
6HP	2HP + 3HP					
	3HP + 3HP					
DIS-WB1G (Two-way branching set)	8HP	4HP + 4HP			Joint C  1 piece OD12.7  ID9.52	
		3HP + 5HP				
DIS-TA1G (Three-way branching set)	6HP	5HP + 5HP			Joint A  3 pieces Flare joint (for indoor unit side connection)	
		6HP + 6HP				
DIS-TB1G (Three-way branching set)	8HP	3HP + 3HP + 3HP			Joint A  2 pieces Flare joint (for indoor unit side connection) Joint B  1 piece ID12.7  ID12.7 Joint D  1 piece OD9.52  ID12.7	

- (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 >



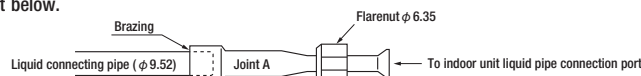
### 2. Pipe connecting procedure

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  $\phi 9.52$  liquid pipe to connect to the branching pipe (branching pipe - indoor unit).  
 In connecting to an indoor unit (liquid pipe side:  $\phi 6.35$ ), use the different diameter pipe joint A supplied with the set and follow the procedure set out below.



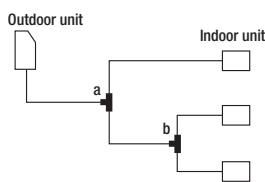
2-1 DIS-WA1G

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

2-5. 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 3m and shorter than 10m



Outdoor unit model	Indoor unit model	Branching pipe	Branching pipe set type	Liquid branching pipe	Gas branching pipe
6HP	2HP + 2HP + 2HP	a	DIS-WA1G		
8HP	3HP + 3HP + 3HP	a	DIS-WB1G		

2-2 DIS-WB1G

Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
8HP	3HP + 5HP		
	4HP + 4HP		
10HP 12HP	5HP + 5HP		
	6HP + 6HP		

2-3 DIS-TA1G

Applicable to the difference in length of pipes after the branch being less than 3m  
\* Connection is not allowed when the difference in length of pipes is larger than 3m.

Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
6HP	2HP + 2HP + 2HP		

2-4 DIS-TB1G

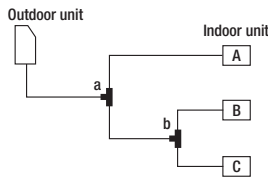
Applicable to the difference in length of pipes after the branch being less than 3m  
\* Connection is not allowed when the difference in length of pipes is larger than 3m.

Supported combinations		Liquid branching pipe	Gas branching pipe
Outdoor unit model	Indoor unit model		
8HP	3HP + 3HP + 3HP		

**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 3m

\* Connection is not allowed when the difference in length of pipes is larger than 3m.



**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
12HP	3HP+3HP+6HP	6HP	3HP	3HP

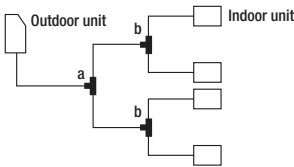
Outdoor unit model	Indoor unit model	Branching pipe	Branching pipe set type	Liquid branching pipe	Gas branching pipe
10HP 12HP	2.5HP+2.5HP+5HP 3HP+3HP+6HP	a	DIS-WB1G		
		b	DIS-WA1G		
10HP	3HP+3HP+4HP	a	DIS-WB1G		
		b	DIS-WA1G		

**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
12HP	3HP × 4 units

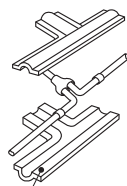


Branching pipe	Branching pipe set type	Outdoor unit model	Liquid branching pipe	Gas branching pipe
a	DIS-WB1G	8HP		
		10HP 12HP		
b	DIS-WA1G	8HP		
		10HP 12HP		

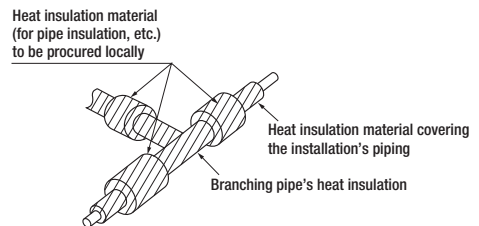
**Note** When connect the indoor unit of an old model that is shown in the model list, use the joint supplied with the branch piping set like ※ A.

**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.



## 2.8.6 Safety precautions in handling air-conditioners with flammable refrigerant


- (1) Models FDC100VNA-W,100VSA-W ..... See page 42.  
 (2) Model FDC200VSA-W


### R32 REFRIGERANT USED

PSA012B839G 

	This equipment uses flammable refrigerants. If the refrigerant is leaked, together with an external ignition source, there is a possibility of ignition.		There is information included in the user's manual and/or installation manual.
	The user's manual should be read carefully.		A service personnel should be handling this equipment with reference to the installation manual.

- This safety precaution sheet is for R32 refrigerant. If you want to know the type of refrigerant in the unit, check the label attached to the outdoor unit.
- 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.

#### **WARNING**

- Strict compliance of the domestic laws must be observed when disposing the appliance.
- Do not use means to accelerate the defrost operation process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- The ducts connected to an appliance shall not contain a potential ignition source.

#### **CAUTION**

- |  |  |  |
|--|--|--|
| <p><b>1. General</b></p> <ul style="list-style-type: none"> <li>The installation of pipe-work shall be kept to a minimum.</li> <li>Pipe-work shall be protected from physical damage.</li> <li>Compliance with national gas regulations shall be observed.</li> <li>Mechanical connections shall be accessible for maintenance purposes.</li> <li>Keep any required ventilation openings clear of obstruction.</li> <li>Servicing shall be performed only as recommended by the manufacturer.</li> <li>Equipment piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.</li> <li>Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.</li> <li>Protection devices, piping and fitting shall be protected as far as possible against adverse effects for example, the danger of water collection and freezing in relief pipes or the accumulation of dirt and debris.</li> <li>Provision shall be made for expansion and contraction of long runs of piping.</li> <li>Piping in refrigerating systems shall be designed and installed to minimize the likelihood hydraulic shock damaging the system.</li> <li>The indoor equipment and pipes shall be securely mounted and guarded to avoid accidental rupture of equipment from moving furniture or reconstruction activities.</li> <li>Instructions for wiring to external zoning dampers and/or mechanical ventilation, to ensure that upon detection of a leak, the zoning dampers are driven fully open and additional mechanical ventilation is activated.</li> <li>For appliances using A2L refrigerants, connected via an air duct system to one or more rooms, the supply and return air shall be directly ducted to the space. Open areas such as false ceilings shall not be used as a return air duct.</li> <li>The following information requirements apply for enhanced tightness refrigerating systems using A2L refrigerants.</li> <li>Where safety shut off valves are specified, the minimum room area may be determined based on the maximum amount of refrigerant that can be leaked as determined in GG.12.2. (IEC 60335-2-40:2018)</li> <li>Where safety shut off valves are specified, the location of the valve in the refrigerating system relative to the occupied spaces shall be as described in GG.12.1.(IEC 60335-2-40:2018)</li> </ul> | <p><b>2. Unventilated areas</b></p> <ul style="list-style-type: none"> <li>The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.</li> <li>If the refrigerant charge amount in the system is <math>\geq 1.84</math> kg, an unventilated area where the appliance is installed shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard.</li> </ul> <p><b>3. Qualification of workers</b></p> <ul style="list-style-type: none"> <li>The staff in servicing operations must hold the national qualification or other relevant qualifications.</li> </ul> <p><b>4. Information on servicing</b></p> <p><b>4.1 Checks to the area</b></p> <ul style="list-style-type: none"> <li>Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised.</li> <li>For repair to the refrigerating system, 4.2 to 4.6 shall be completed prior to conducting work on the system.</li> </ul> <p><b>4.2 Work procedure</b></p> <ul style="list-style-type: none"> <li>Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.</li> </ul> <p><b>4.3 General work area</b></p> <ul style="list-style-type: none"> <li>All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out.</li> <li>Work in confined spaces shall be avoided.</li> </ul> <p><b>4.4 Checking for presence of refrigerant</b></p> <ul style="list-style-type: none"> <li>The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres.</li> <li>Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.</li> </ul> <p><b>4.5 Presence of fire extinguisher</b></p> <ul style="list-style-type: none"> <li>If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO<sub>2</sub> fire extinguisher adjacent to the charging area.</li> </ul> | <p><b>4.6 No ignition sources</b></p> <ul style="list-style-type: none"> <li>No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition such a manner that it may lead to the risk of fire or explosion.</li> <li>All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.</li> <li>Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks.</li> <li>"No Smoking" signs shall be displayed.</li> </ul> <p><b>4.7 Ventilated area</b></p> <ul style="list-style-type: none"> <li>Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.</li> <li>A degree of ventilation shall continue during the period that the work is carried out.</li> <li>The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.</li> </ul> <p><b>4.8 Checks to the refrigerating equipment</b></p> <ul style="list-style-type: none"> <li>Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.</li> <li>At all times the manufacturer's maintenance and service guidelines shall be followed.</li> <li>If in doubt consult the manufacturer's technical department for assistance.</li> </ul> <ul style="list-style-type: none"> <li>The following checks shall be applied to installations using flammable refrigerants:                         <ul style="list-style-type: none"> <li>the actual refrigerant charge size is in accordance with the room size within which the refrigerant containing parts are installed.</li> <li>the ventilation machinery and outlets are operating adequately and are not obstructed;</li> <li>if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant,</li> <li>marking to the equipment continues to the visible and legible. Markings and signs that are illegible shall be corrected,</li> <li>refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.</li> </ul> </li> </ul> |
|--|--|--|

## ⚠ CAUTION

### 4.9 Checks to electrical devices

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.
- This shall be reported to the owner of the equipment so all parties are advised.
- Initial safety checks shall include:
  - that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
  - that no live electrical components and wiring are exposed while changing, recovering or purging the system.
  - that there is continuity of earth bonding.

### 5. Repairs to sealed components

- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.
- If it is absolutely necessary to have an electrical supply to equipment during servicing then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that the apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- Replacement parts shall be in accordance with the manufacturer's specifications.

### 6. Repair to intrinsically safe components

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere.
- The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer.
- Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

#### NOTE

The use of silicone sealant can inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be insulated prior to working on them.

### 7. Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

### 8. Detection of flammable refrigerants

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.
- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

Examples of leak detection fluids are

- bubble method
- fluorescent method agents

- If a leak is suspected, all naked flames shall be removed/extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.
- Removal of refrigerant shall be according to Item.9.

### 9. Removal and evacuation

- When breaking into the refrigerant circuit to make repairs - or for any other purpose - conventional procedures shall be used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration.
- The following procedure shall be adhered to:
  - remove refrigerant;
  - purge the circuit with inert gas; (Option for A2L)
  - evacuate;(Option for A2L)
  - purge with inert gas ;(Option for A2L)
  - open the circuit by cutting or brazing.
- The refrigerant charge shall be recovered into the correct recovery cylinders.
- For appliances containing flammable refrigerants, other than A2L refrigerants, the system shall be "flushed" with OFN to render the unit safe for flammable refrigerants.
- This process may need to be repeated several times.
- Compressed air or oxygen shall not be used for purging refrigerant systems.
- For appliances containing flammable refrigerants, other than A2L refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.
- This process shall be repeated until no refrigerant is within the system.
- When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- This operation is absolutely vital if brazing operations on the pipe-work are to take place.
- Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation is available.

### 10. Charging procedures

- In addition to conventional charging procedures, the following requirements shall be followed.
  - Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses of lines shall be as short as possible to minimise the amount of refrigerant contained in them.
  - Cylinders shall be kept in an appropriate according to the instructions.
  - Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete (if not already).
  - Extreme care shall be taken not to overfill the refrigerating system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
- The system shall be leak-tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.

### 11. Decommissioning

- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.
- It is recommended good practice that all refrigerants are recovered safely.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant.
- It is essential that electrical power is available before the task is commenced.
  - Become familiar with the equipment and its operation.
  - Isolate system electrically.
  - Before attempting the procedure ensure that
    - mechanical handling equipment is available, if required, for handling refrigerant cylinders,
    - all personal protective equipment is available and being used correctly,
    - the recovery process is supervised at all times by a competent person,
    - recovery equipment and cylinders conform to the appropriate standards.
  - Pump down refrigerant system, if possible.
  - If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
  - Make sure that cylinder is situated on the scales before recovery takes place.
  - Start the recovery machine and operate in accordance with instructions.
  - Do not overfill cylinders. (No more than 80 % volume liquid charge).
  - Do not exceed the maximum working pressure of the cylinder, even temporarily .
  - When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
  - Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

### 12. Labelling

- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed.
- For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

**⚠ CAUTION**

**13. Recovery**

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
  - When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
  - Ensure that the correct number of cylinders for holding the total system charge is available.
  - All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
  - Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.
  - Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
  - The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants.
  - In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
  - Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
  - The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
  - If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant dose not remain within the lubricant.
  - The evacuation process shall be carried out prior to returning the compressor to the suppliers.
  - Only electric heating to the compressor body shall be employed to accelerate this process.
  - When oil is drained from a system, it shall be carried out safely.

**14. Other safety precautions**

- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts.
- Flammable refrigerant used, refrigerant tubing protected or enclosed to avoid mechanical damage (IEC/EN 60335-2-40/A1).
- Tubing protected to extent that it will not be handled or used for carrying during moving of product (IEC/EN 60335-2-40/A1).
- Flammable refrigerant used, low temperature solder alloys, such as lead/tin alloys, not acceptable for pipe connections (IEC/EN 60335-2-40/A1).
- Do not use flare nut indoor which is locally procured.

### Selection of installation location for the indoor unit

- Minimum installation area for indoor unit

#### ⚠ CAUTION

The indoor unit shall be installed in a room with minimum installation area or more according to the refrigerant charge amount (factory refrigerant charge +additional refrigerant charge).  
 For factory refrigerant charge, refer to the outdoor unit label model name or installation sheet.  
 For additional refrigerant charge, refer to the outdoor unit installation sheet.

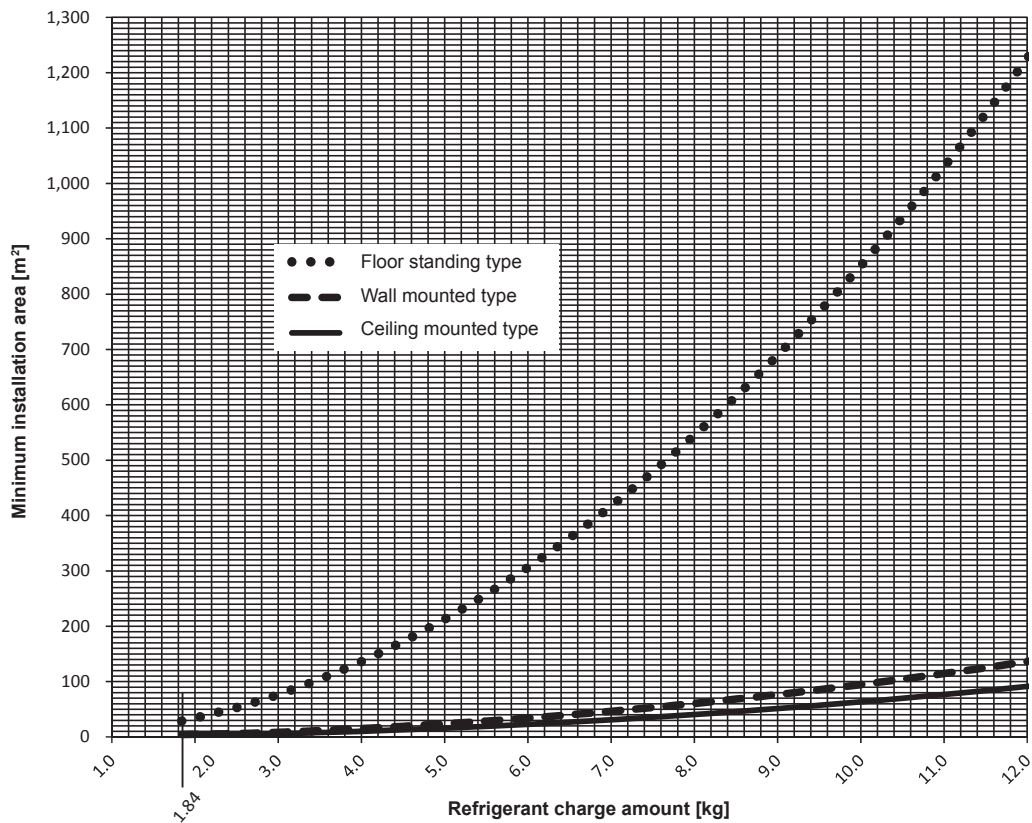
- If the refrigerant charge amount in the system is < 1.84 kg, there are no additional minimum floor area requirements.
- If the refrigerant charge amount in the system is ≥ 1.84 kg, you need to comply with additional minimum floor area requirements as described in the following table.
- For further details regarding the installation location of indoor unit, refer to technical manual.

Refrigerant charge amount [kg]		1.00	1.50	1.84	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	
Minimum installation area [m <sup>2</sup> ]	Ceiling mounted type H=2.2m	No requirements			3.7	4.0	4.5	5.0	5.5	6.0	6.7	7.8	9.0	10.2	11.5	12.9
	Wall mounted type H=1.8m	No requirements			3.7	4.0	4.5	5.0	7.2	8.6	10.0	11.6	13.3	15.2	17.1	19.2
	Floor standing type H=0.6m*	No requirements			29	34	43	53	64	77	90	104	120	136	154	172

Refrigerant charge amount [kg]		5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	12.0
Minimum installation area [m <sup>2</sup> ]	Ceiling mounted type H=2.2m	16	19	23	27	31	36	41	46	51	57	63	70	77	91
	Wall mounted type H=1.8m	24	29	34	40	46	53	61	68	77	85	95	104	115	136
	Floor standing type H=0.6m*	213	258	306	360	417	479	545	615	689	768	851	938	1030	1226

\*For floor standing units, the value of installation height (H) is considered 0.6 m to comply to IEC 60335-2-40:2018 Clause GG.2.



- Ceiling opening area

#### ⚠ CAUTION

In case of installing the indoor unit in an enclosed ceiling space, ensure there is a sufficient ventilation opening around the unit.  
 In the event of refrigerant leakage, this countermeasure would prevent an increased concentration of refrigerant.



## 2.9 TECHNICAL INFORMATION

### Model SRK100VNAWZRF

Information to identify the model(s) to which the information relates to:				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'.			
Indoor unit model name		SRK100ZR-WF		Average(mandatory)		Yes	
Outdoor unit model name		FDC100VNA-W		Warmer(if designated)		No	
Function(indicate if present)				Colder(if designated)			
cooling		Yes		Colder(if designated)		No	
heating		Yes					
Item	symbol	value	unit	Item	symbol	value	class
Design load				Seasonal efficiency and energy efficiency class			
cooling	Pdesignc	10.0	kW	cooling	SEER	6.13	A++
heating / Average	Pdesignh	8.50	kW	heating / Average	SCOP/A	4.33	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			
heating / Average (-10°C)	Pdh	8.50	kW	heating / Average (-10°C)	elbu	0	kW
heating / Warmer (2°C)	Pdh	-	kW	heating / Warmer (2°C)	elbu	-	kW
heating / Colder (-22°C)	Pdh	-	kW	heating / Colder (-22°C)	elbu	-	kW
Declared capacity for cooling, at indoor temperature 27(19)°C and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)°C and outdoor temperature Tj			
Tj=35°C	Pdc	10.00	kW	Tj=35°C	EERd	3.10	-
Tj=30°C	Pdc	7.37	kW	Tj=30°C	EERd	4.95	-
Tj=25°C	Pdc	4.74	kW	Tj=25°C	EERd	7.75	-
Tj=20°C	Pdc	3.00	kW	Tj=20°C	EERd	10.05	-
Declared capacity for heating / Average season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C	Pdh	7.36	kW	Tj=-7°C	COPd	2.75	-
Tj=2°C	Pdh	4.47	kW	Tj=2°C	COPd	4.18	-
Tj=7°C	Pdh	2.88	kW	Tj=7°C	COPd	5.74	-
Tj=12°C	Pdh	2.95	kW	Tj=12°C	COPd	7.46	-
Tj=bivalent temperature	Pdh	8.50	kW	Tj=bivalent temperature	COPd	2.77	-
Tj=operating limit	Pdh	6.30	kW	Tj=operating limit	COPd	2.10	-
Declared capacity for heating / Warmer season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=2°C	Pdh	-	kW	Tj=2°C	COPd	-	-
Tj=7°C	Pdh	-	kW	Tj=7°C	COPd	-	-
Tj=12°C	Pdh	-	kW	Tj=12°C	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°C and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C	Pdh	-	kW	Tj=-7°C	COPd	-	-
Tj=2°C	Pdh	-	kW	Tj=2°C	COPd	-	-
Tj=7°C	Pdh	-	kW	Tj=7°C	COPd	-	-
Tj=12°C	Pdh	-	kW	Tj=12°C	COPd	-	-
Tj=bivalent temperature	Pdh	-	kW	Tj=bivalent temperature	COPd	-	-
Tj=operating limit	Pdh	-	kW	Tj=operating limit	COPd	-	-
Tj=-15°C	Pdh	-	kW	Tj=-15°C	COPd	-	-
Bivalent temperature				Operating limit temperature			
heating / Average	Tbiv	-10	°C	heating / Average	Tol	-20	°C
heating / Warmer	Tbiv	-	°C	heating / Warmer	Tol	-	°C
heating / Colder	Tbiv	-	°C	heating / Colder	Tol	-	°C
Cycling interval capacity				Cycling interval efficiency			
for cooling	Pcycc	-	kW	for cooling	EERcyc	-	-
for heating	Pcyhc	-	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	7	W	cooling	Qce	571	kWh/a
standby mode	Psb	7	W	heating / Average	Qhe	2746	kWh/a
thermostat-off mode	Pto(cooling)	30	W	heating / Warmer	Qhe	-	kWh/a
	Pto(heating)	30	W	heating / colder	Qhe	-	kWh/a
crankcase heater mode	Pck	5	W				
Capacity control(indicate one of three options)				Other items			
fixed		No		Sound power level(indoor)	Lwa	63	dB(A)
staged		No		Sound power level(outdoor)	Lwa	69	dB(A)
variable		Yes		Global warming potential	GWP	675	kgCO <sub>2</sub> eq.
				Rated air flow(indoor)	-	1470	m <sup>3</sup> /h
				Rated air flow(outdoor)	-	4500	m <sup>3</sup> /h
Contact details for obtaining more information				Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 5 The Square, Stockley Park, Uxbridge, Middlesex, UB11 1ET, United kingdom MHIAE SERVICES B.V. Herikerbergweg 238, Luna Arena, 1101 CM Amsterdam, Netherlands P.O.Box 23393 1100 DW Amsterdam, Netherlands			

## Model SRK100VSAWZRF

Information to identify the model(s) to which the information relates to:				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'.			
Indoor unit model name		SRK100ZR-WF		Average(mandatory)		Yes	
Outdoor unit model name		FDC100VSA-W		Warmer(if designated)		No	
Function(indicate if present)				Colder(if designated)			
cooling		Yes					
heating		Yes					
Item				Item			
		symbol value unit				symbol value class	
Design load				Seasonal efficiency and energy efficiency class			
cooling		Pdesignc 10.0 kW		cooling		SEER 6.13 A++	
heating / Average		Pdesignh 8.50 kW		heating / Average		SCOP/A 4.33 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			
heating / Average (-10°C)		Pdh 8.50 kW		heating / Average (-10°C)		elbu 0 kW	
heating / Warmer (2°C)		Pdh - kW		heating / Warmer (2°C)		elbu - kW	
heating / Colder (-22°C)		Pdh - kW		heating / Colder (-22°C)		elbu - kW	
Declared capacity for cooling, at indoor temperature 27(19)°C and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)°C and outdoor temperature Tj			
Tj=35°C		Pdc 10.00 kW		Tj=35°C		EERd 3.10 -	
Tj=30°C		Pdc 7.37 kW		Tj=30°C		EERd 4.95 -	
Tj=25°C		Pdc 4.74 kW		Tj=25°C		EERd 7.75 -	
Tj=20°C		Pdc 3.00 kW		Tj=20°C		EERd 10.05 -	
Declared capacity for heating / Average season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C		Pdh 7.36 kW		Tj=-7°C		COPd 2.75 -	
Tj=2°C		Pdh 4.47 kW		Tj=2°C		COPd 4.18 -	
Tj=7°C		Pdh 2.88 kW		Tj=7°C		COPd 5.74 -	
Tj=12°C		Pdh 2.95 kW		Tj=12°C		COPd 7.46 -	
Tj=bivalent temperature		Pdh 8.50 kW		Tj=bivalent temperature		COPd 2.77 -	
Tj=operating limit		Pdh 6.30 kW		Tj=operating limit		COPd 2.10 -	
Declared capacity for heating / Warmer season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=2°C		Pdh - kW		Tj=2°C		COPd - -	
Tj=7°C		Pdh - kW		Tj=7°C		COPd - -	
Tj=12°C		Pdh - kW		Tj=12°C		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°C and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C		Pdh - kW		Tj=-7°C		COPd - -	
Tj=2°C		Pdh - kW		Tj=2°C		COPd - -	
Tj=7°C		Pdh - kW		Tj=7°C		COPd - -	
Tj=12°C		Pdh - kW		Tj=12°C		COPd - -	
Tj=bivalent temperature		Pdh - kW		Tj=bivalent temperature		COPd - -	
Tj=operating limit		Pdh - kW		Tj=operating limit		COPd - -	
Tj=-15°C		Pdh - kW		Tj=-15°C		COPd - -	
Bivalent temperature				Operating limit temperature			
heating / Average		Tbiv -10 °C		heating / Average		Tol -20 °C	
heating / Warmer		Tbiv - °C		heating / Warmer		Tol - °C	
heating / Colder		Tbiv - °C		heating / Colder		Tol - °C	
Cycling interval capacity				Cycling interval efficiency			
for cooling		Pcycc - kW		for cooling		EERcyc - -	
for heating		Pcyhc - 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 7 W		cooling		Qce 571 kWh/a	
standby mode		Psb 7 W		heating / Average		Qhe 2746 kWh/a	
thermostat-off mode		Pto(cooling) 30 W		heating / Warmer		Qhe - kWh/a	
crankcase heater mode		Pto(heating) 30 W		heating / colder		Qhe - kWh/a	
		Pck 5 W					
Capacity control(indicate one of three options)				Other items			
fixed		No		Sound power level(indoor)		Lwa 63 dB(A)	
staged		No		Sound power level(outdoor)		Lwa 69 dB(A)	
variable		Yes		Global warming potential		GWP 675 kgCO <sub>2</sub> .eq.	
				Rated air flow(indoor)		- 1470 m <sup>3</sup> /h	
				Rated air flow(outdoor)		- 4500 m <sup>3</sup> /h	
Contact details for obtaining more information				Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 5 The Square, Stockley Park, Uxbridge, Middlesex, UB11 1ET, United kingdom MHIAE SERVICES B.V. Herikerbergweg 238, Luna Arena, 1101 CM Amsterdam, Netherlands P.O.Box 23393 1100 DW Amsterdam, Netherlands			

**Model SRK200VSAWPZR**

Model(s) : FDC200VSA-W / SRK100ZR-WF(x2 units)			
Outdoor side heat exchanger of air conditioner : air			
Indoor side heat exchanger of air conditioner : air			
Type : vapour compression			
if applicable : electric motor			
Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	20.0	kW
Declared cooling capacity for part load at given outdoor temperatures Tj and indoor 27°C/19°C(dry/wet bulb)			
Tj=+35°C	Pdc	20.0	kW
Tj=+30°C	Pdc	14.7	kW
Tj=+25°C	Pdc	9.5	kW
Tj=+20°C	Pdc	7.2	kW
Degradation coefficient for air conditioners**	Cdc	0.25	-
Power consumption in other than 'active mode'			
Off mode	P <sub>OFF</sub>	0.008	kW
Thermostat-off mode	P <sub>TO</sub>	0.024	kW
Other items			
Capacity control		variable	
Sound power level, outdoor	L <sub>WA</sub>	72.0	dB
If engine driven: Emissions of nitrogen oxides	NOx ***	-	mg/kWh fuel input GCV
GWP of the refrigerant		675	kgCO <sub>2</sub> eq (100years)
Seasonal space cooling energy efficiency			
		229.7	%
Declared energy efficiency ratio or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
Tj=+35°C	EERd or GUEc,bin / AEFc,bin	272.0	%
Tj=+30°C	EERd or GUEc,bin / AEFc,bin	481.0	%
Tj=+25°C	EERd or GUEc,bin / AEFc,bin	727.0	%
Tj=+20°C	EERd or GUEc,bin / AEFc,bin	850.0	%
Crankcase heater mode			
		0.012	kW
Standby mode			
		0.008	kW
For air-to-air air conditioner: air flow-rate,outdoor measured			
		8880	m <sup>3</sup> /h
Contact details Mitsubishi heavy industries thermal systems,LTD.			
** If Cdc is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.			
*** from 26 September 2018			
Where information relates to multi-split air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.			

Information to identify the model(s) to which the information relates : FDC200VSA-W / SRK100ZR-WF(x2 units)							
Outdoor side heat exchanger of heat pump :				air			
Indoor side heat exchanger of heat pump :				air			
Indication if the heater is equipped with a supplementary heater :				No			
if applicable :				electric motor			
Parameters shall be declared for the average heating season , parameters for the warmer and colder heating seasons are optional.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heating capacity	Prated,h	22.4	kW	Seasonal space heating energy efficiency	$\eta$ s,h	171.5	%
Declared heating capacity for part load at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
Tj=-7°C	Pdh	11.1	kW	Tj=-7°C	COPd or GUEh,bin / AEFh,bin	271.0	%
Tj=+2°C	Pdh	6.8	kW	Tj=+2°C	COPd or GUEh,bin / AEFh,bin	477.0	%
Tj=+7°C	Pdh	6.6	kW	Tj=+7°C	COPd or GUEh,bin / AEFh,bin	530.0	%
Tj=+12°C	Pdh	8.0	kW	Tj=+12°C	COPd or GUEh,bin / AEFh,bin	643.0	%
T <sub>biv</sub> =bivalent temperature	Pdh	12.5	kW	T <sub>biv</sub> =bivalent temperature	COPd or GUEh,bin / AEFh,bin	256.0	%
T <sub>OL</sub> =operation limit	Pdh	12.5	kW	T <sub>OL</sub> =operation limit	COPd or GUEh,bin / AEFh,bin	256.0	%
For air-to-water heat pumps : Tj=-15°C (if T <sub>OL</sub> <-20°C)	Pdh	-	kW	For air-to-water heat pumps:Tj=-15°C (if T <sub>OL</sub> <-20°C)	COPd or GUEh,bin / AEFh,bin	-	%
Bivalent temperature	T <sub>biv</sub>	-10.0	°C	For water-to-air heat pumps:Operation limit T <sub>ol</sub> temperature		-	°C
Degradation coefficient heat pumps**	C <sub>dh</sub>	0.25	-				
Power consumption in modes other than 'active mode'				Supplementary heater back-up heating capacity			
Off mode	P <sub>OFF</sub>	0.008	kW		elbu	-	kW
Thermostat-off mode	P <sub>TO</sub>	0.030	kW	Type of energy input Standby mode	P <sub>SB</sub>	0.008	kW
Crankcase heater mode	P <sub>CK</sub>	0.012	kW				
Other items				For air-to-air heat pumps: air flow-rate,outdoor measured			
Capacity control		variable				8040	m <sup>3</sup> /h
Sound power level, outdoor measured	L <sub>WA</sub>	74.0	dB	For water-/brine-to-air heat pumps : Rated brine or water flow-rate, outdoor side heat exchanger		-	m <sup>3</sup> /h
Emissions of nitrogen oxides(if applicable)	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		675	kgCO <sub>2</sub> eq (100years)				
Contact details		Mitsubishi heavy industries thermal systems,LTD.					
** If C <sub>dh</sub> is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.							
*** from 26 September 2018							
Where information relates to multi-split air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.							

**Model SRK100ZR-WF**

Model(s) : SRK100ZR-WF							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Cooling capacity (sensible)	$P_{rated,c}$	7.4	kW	Total electric power input	$P_{elec}$	0.060	kW
Cooling capacity (latent)	$P_{rated,c}$	2.6	kW	Sound power level (per speed setting,if applicable)	$L_{WA}$	63.0	dB
Heating capacity	$P_{rated,h}$	11.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD.						

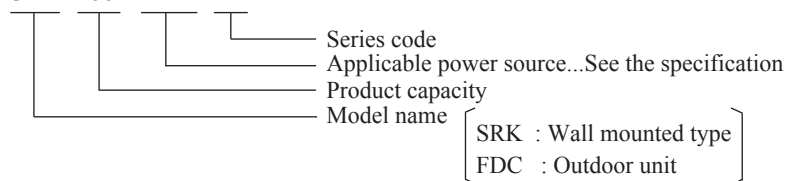
### 3. STANDARD INVERTER PACKAGED AIR-CONDITIONERS

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#### ■ How to read the model name

Example: SRK 100 VNPW ZRF



### 3.1 SPECIFICATIONS

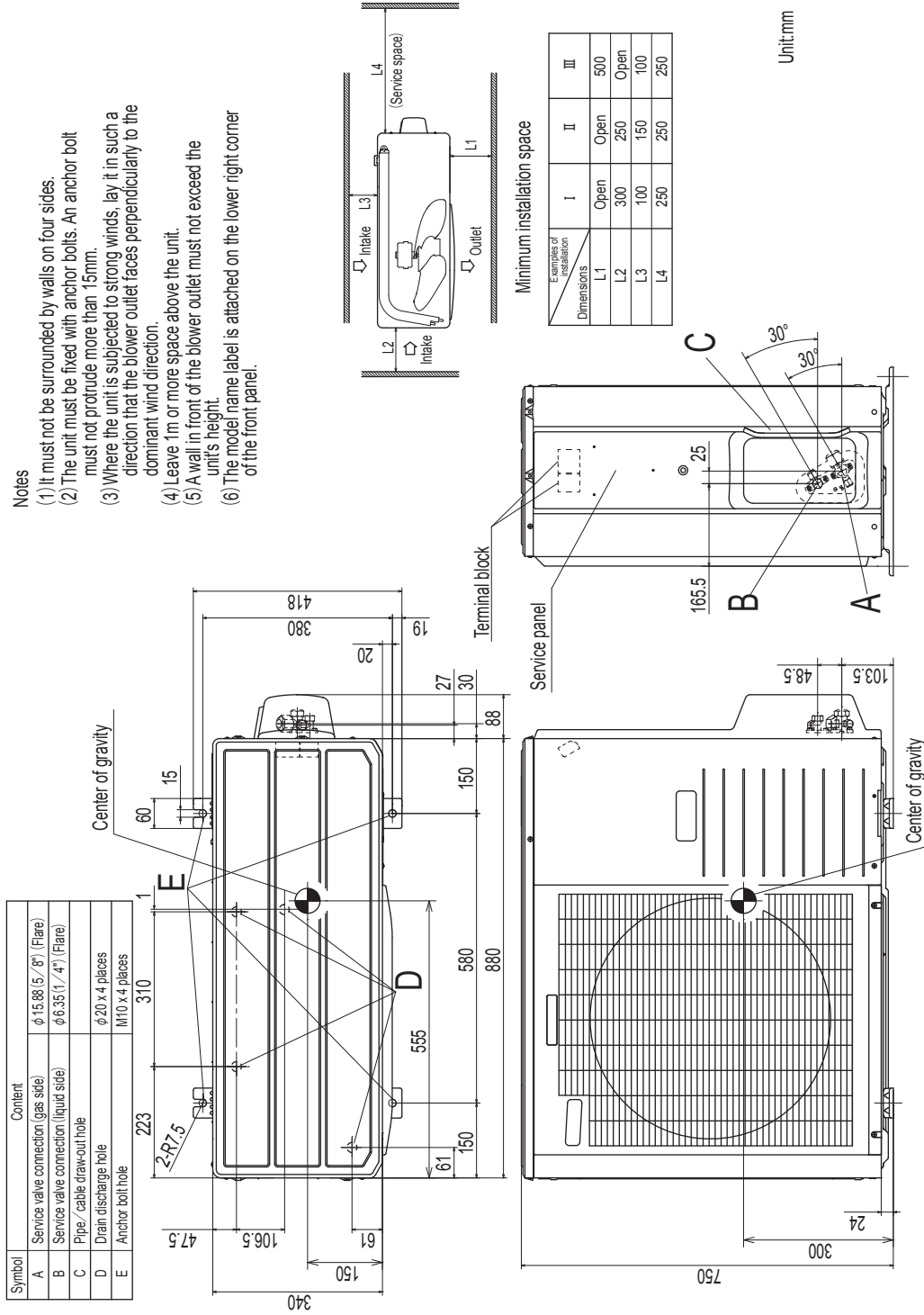
Item		Model		SRK100VNPWZRF		
		Indoor unit SRK100ZR-WF		Outdoor unit FDC100VNP-W		
Power source		1 Phase 220-240V 50Hz / 220V 60Hz				
Operation data	Nominal cooling capacity (range)	kW		9.6 [ 2.1(Min.) - 9.6(Max.)]		
	Nominal heating capacity (range)	kW		10.0 [ 1.7(Min.) - 10.4(Max.)]		
	Power consumption	Cooling	kW		3.10	
		Heating	kW		2.80	
	Max power consumption	kW		4.46		
	Running current	Cooling	A		13.2 / 13.8	
		Heating	A		11.9 / 12.5	
	Inrush current, max current	A		5 , 19		
	Power factor	Cooling	%		98/98	
		Heating	%		98/98	
	EER	Cooling			3.10	
	COP	Heating			3.57	
	Sound power level	Cooling	dB(A)		63	
		Heating	dB(A)		68	
Sound pressure level	Cooling	dB(A)		Hi : 48 Me : 45 Lo : 40 ULo : 27		
	Heating	dB(A)		Hi : 48 Me : 43 Lo : 38 ULo : 30		
Silent mode sound pressure level	Cooling	dB(A)		—		
	Heating	dB(A)		52		
Exterior dimensions (Height x Width x Depth)	mm		339 × 1197 × 262		750 × 880(+88) × 340	
Exterior appearance (Munsell color) (RAL color)			Fine snow (8.0Y9.3/0.1) near equivalent (RAL 9003) near equivalent		Stucco white (4.2Y7.5/1.1) near equivalent (RAL 7044) near equivalent	
Net weight	kg		16.5		57	
Compressor type & Q'ty			—		RMT5118SWP1 (Twin Rotary type)×1	
Compressor motor (Starting method)	kW		—		Direct line start	
Refrigerant oil (Amount, type)	L		—		0.675 (DIAMOND FREEZE MB75)	
Refrigerant (Type, amount, pre-charge length)	kg		R32 1.7 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			Electronic expansion valve			
Fan type & Q'ty			Tangential fan x 1		Propeller fan x1	
Fan motor (Starting method)	W		56 x 1 <Direct line start>		86 <Direct line start>	
Air flow	Cooling	m <sup>3</sup> /min		Hi : 24.5 Me : 21.3 Lo : 17.6 ULo : 10.4		
	Heating	m <sup>3</sup> /min		Hi : 27.5 Me : 23.2 Lo : 19.1 ULo : 13.6		
Available external static pressure	Pa		0			
Outside air intake			Not possible			
Air filter, Quality / Quantity			Polypropylene net (Washable) x 2			
Shock & vibration absorber			Rubber sleeve(for fan motor)		Rubber sleeve (for fan motor & compressor)	
Electric heater	W		—			
Operation control	Remote control		(Option) Wired : RC-EX3A, RC-E5, RCH-E3 Interface kit : SC-BIKN2-E			
	Room temperature control		Wireless LAN connecting (Cannot be used at the same time interface kit)			
	Operation display		Thermostat by electronics RUN : Green , TIMER : Yellow , HI POWER : Green , 3D AUTO : Green			
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.)	Liquid line	mm		I/U φ 9.52 (3/8") Pipe φ 6.35(1/4")x0.8 O/U φ 6.35 (1/4")	
		Gas line	mm		φ 15.88 (5/8") φ 15.88(5/8")x1.0 φ 15.88 (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.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 VP16		Hole size φ 20 x 4 pcs.	
Drain pump, max lift height	mm		—			
Recommended breaker size	A		—			
L.R.A. (Locked rotor ampere)	A		5			
Interconnecting wires   Size x Core number			1.5mm <sup>2</sup> x 4 cores (Including earth cable) / Terminal block (Screw fixing type)			
IP number			IPX0		IPX4	
Standard accessories			Mounting kit, Clean filter		Drain elbow, Drain hole grommet	
Option parts			—			
Notes (1) The data are measured at the following conditions.		The pipe length is 7.5m.				
	Item	Indoor air temperature		Outdoor air temperature		Standards
	Operation	DB	WB	DB	WB	
	Cooling	27°C	19°C	35°C	24°C	
	Heating	20°C	—	7°C	6°C	
<p>(2) This air-conditioner is manufactured and tested in conformity with the ISO.</p> <p>(3) Sound level indicates the value in an anechoic chamber. During operation these values are somewhat higher due to ambient conditions.</p> <p>(4) Select the breaker size according to the own national standard.</p> <p>(5) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.</p>						

### 3.2 EXTERIOR DIMENSIONS

- (1) Indoor unit ..... See page 5.  
 (2) Outdoor unit ..... See page 5.  
**Model FDC100VNP-W**

**Notes**

- (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.



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- (3) Remote control ..... See page 7.

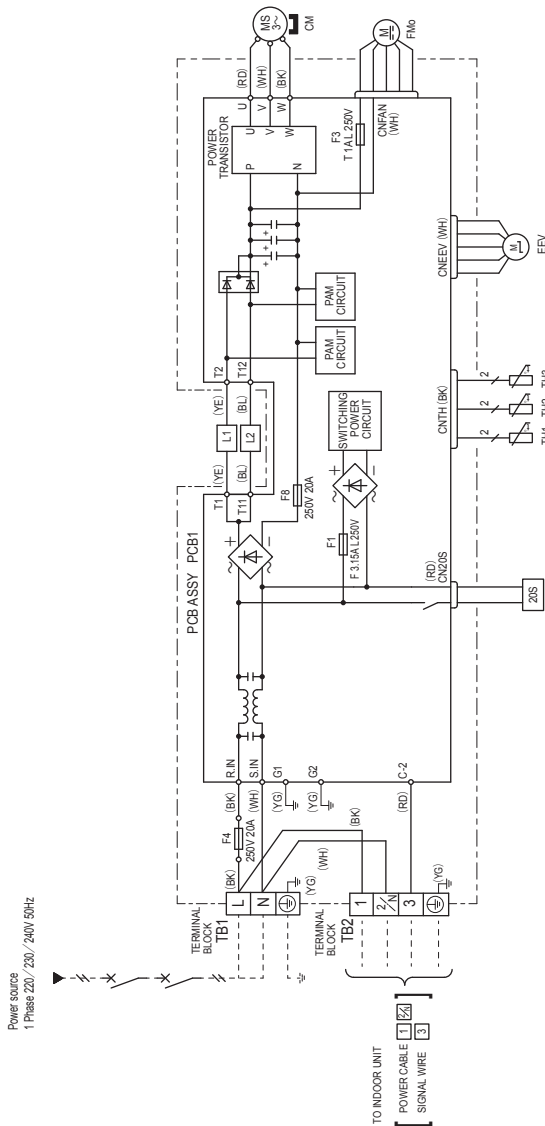


### 3.3 ELECTRICAL WIRING

- (1) Indoor unit ..... See page 10.  
 (2) Outdoor unit  
 Model FDC100VNP-W

Meaning of marks	Item	Description
CM	Compressor motor	
CN20S	Connector	
CNTH	CNTH	
CNEEV	CNEEV	
CNFAN	CNFAN	
EEV	Electric expansion valve (coil)	
FMo	Fan motor	
L1,2	Reactor	
TB1,2	Terminal block	
TH1	Heat exchanger temperature sensor (outdoor unit)	
TH2	Outdoor air temperature sensor	
TH3	Discharge pipe temperature sensor	
Z0S	Solenoid coil for 4-way valve	

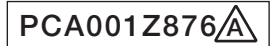
Color marks	Color
BK	Black
BL	Blue
RD	Red
WH	White
YE	Yellow
YG	Yellow Green



Power cable, indoor-outdoor connecting wires

Model	MAX running current (A)	Power cable size (mm <sup>2</sup> )	Power cable length (m)	Indoor-outdoor wire size X number	Earth wire size (mm <sup>2</sup> )
100	19	2.5	14	1.5mm <sup>2</sup> × 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.



### 3.4 NOISE LEVEL

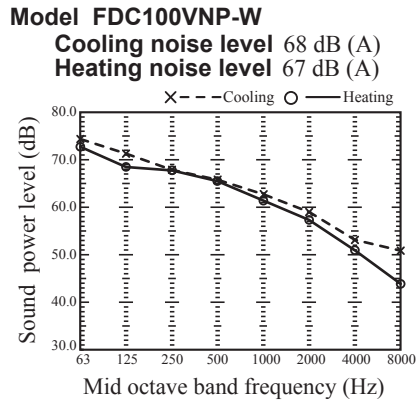
- Notes(1) The data are based on the following conditions.  
 Ambient air temperature: Indoor unit 27°CWB, Outdoor unit 35°CDB.  
 (2) The data in the chart are measured in an anechoic room.  
 (3) The noise levels measured in the field are usually higher than the data because of reflection.

(1) Indoor unit ..... See page 13.

(2) Outdoor unit

(a) Sound power level

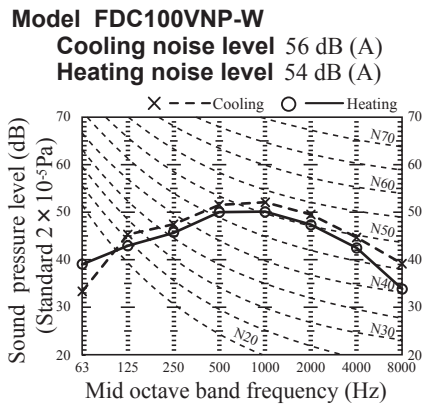
(i) Rated capacity value



(b) Sound pressure level

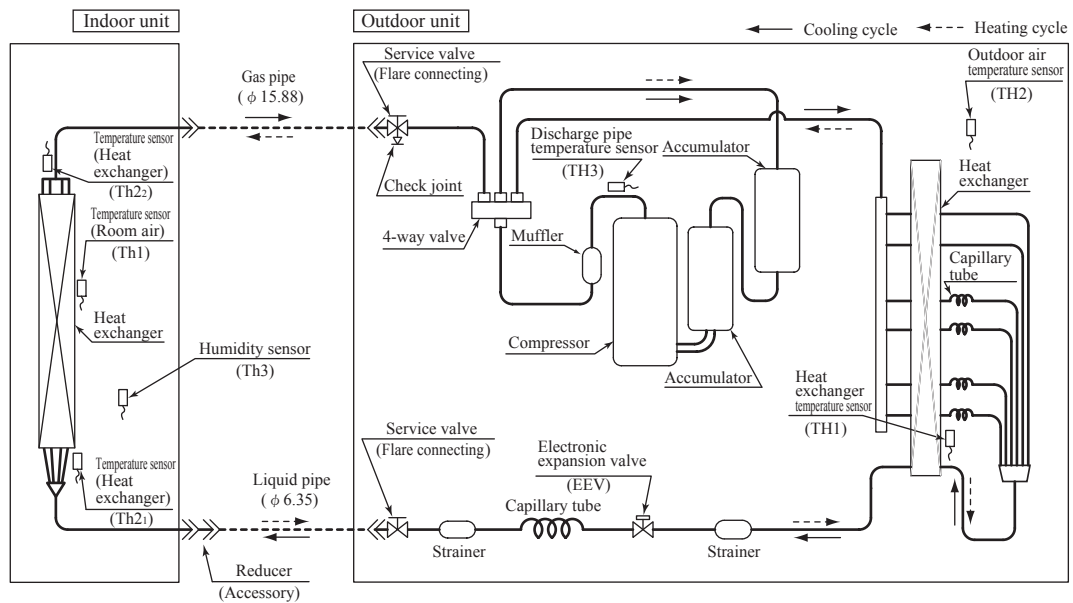
Measured based on JIS B 8616  
 Mike position: at highest noise level in position as mentioned below  
 Distance from front side 1m  
 Height 1m

(i) Rated capacity value



## 3.5 PIPING SYSTEM

### Model 100



#### Preset point of the protective devices

Parts name	Mark	Equipped unit	100 model
Temperature sensor (for protection overloading in heating)	Thi-R1 or Thi-R2	Indoor unit	Active 63°C , Inactive 56°C
Temperature sensor (for frost prevention)			Active 1.0°C , Inactive 10°C
Temperature sensor (for protection high pressure in cooling)	TH1	Outdoor unit	Active 60°C , Inactive 50°C
Temperature sensor (for detecting discharge pipe temperature)	TH3		Active 115°C , Inactive 95°C

### 3.6 RANGE OF USAGE & LIMITATIONS

Operating temperature range		See next page.
		When used below -5°C, install a snow hood (prepared on site).
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 (Note 2)		Dew point temperature : 23°C or less, relative humidity : 80% or less
Limitations on unit and piping installation		See page 101.
Compressor ON-OFF cycling	Cycle Time	13 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 unbalance	3% or less

Note 1. Do not install the unit in places which :

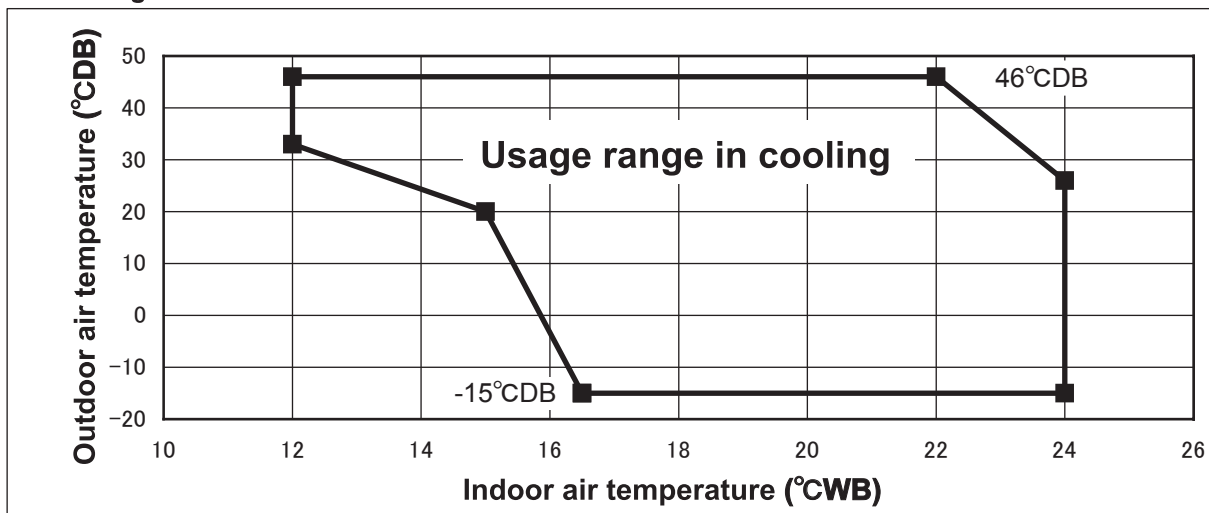
- 1) Flammable gas may leak.
- 2) Carbon fiber, metal particles, powder, etc. are floating.
- 3) Cosmetic or special sprays are used frequently.
- 4) Exposed to oil splashes or steam (e.g. kitchen and machine plant).
- 5) Exposed to sea breeze (e.g. coastal area) or calcium chloride (e.g. snow melting 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).

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.

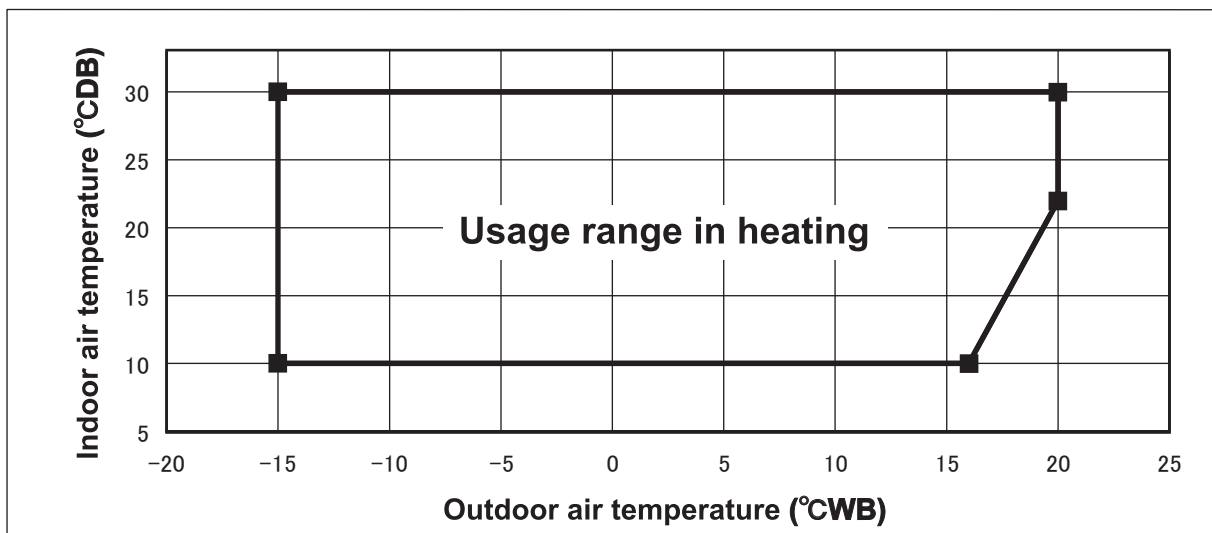
Note 3. Both gas and liquid pipes need to be covered with 20mm or thicker heat insulation materials at the place where humidity exceeds 70%.

## 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 air flow rate.

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#### “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]

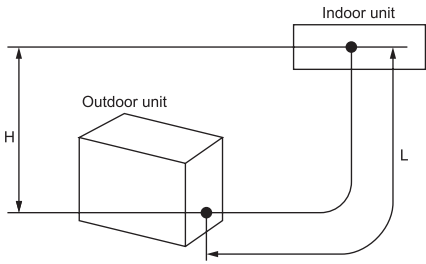
In case of severely low temperature condition


- 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  $-5^{\circ}\text{C}$  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				
Descriptions		Model for outdoor unit	Dimensional limitations	Marks appearing in the drawing
One-way pipe length		FDC100VNP-W	$\leq 30\text{m}$	L
Elevation difference between indoor and outdoor unit	When the outdoor unit is positioned higher		$\leq 20\text{m}$	H
	When the outdoor unit is positioned lower		$\leq 20\text{m}$	
<p>Note FDC100VNP-W can be used for only single type.</p> 				

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## 3.7 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 (3.7.1) × Correction factors shown in the table (3.7.2) (3.7.3) (3.7.4)**

**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.

### 3.7.1 Capacity tables

Model **SRK100VNPWZR** Indoor unit **SRK100ZR-WF** Outdoor unit **FDC100VNP-W**

Cooling mode

(kW)

Heating mode:HC

(kW)

Outdoor air temperature	Indoor air temperature																Outdoor air temperature		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	°CWB	16	18	20	22	24								
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC					
-14.5	-15	5.46	5.40	5.33	5.26	5.18	-13.5	-14	5.68	5.61	5.54	5.47	5.39	-11.5	-12	6.10	6.03	5.96	5.88	5.81			
-9.5	-10	6.52	6.45	6.38	6.30	6.22	-7.5	-8	6.95	6.87	6.79	6.71	6.63	-5.5	-6	7.39	7.32	7.25	7.16	7.07			
-3.0	-4	7.84	7.77	7.70	7.61	7.51	-1.0	-2	8.29	8.22	8.15	8.05	7.95	1.0	0	8.74	8.67	8.60	8.50	8.39			
2.0	1	8.96	8.90	8.83	8.72	8.61	3.0	2	9.18	9.12	9.06	8.96	8.86	5.0	4	9.60	9.57	9.53	9.44	9.35			
7.0	6	10.03	10.01	10.00	9.92	9.85	9.0	8	10.51	10.51	10.51	10.46	10.41	11.5	10	10.99	11.00	11.02	10.99	10.97			
13.5	12	11.24	11.28	11.31	11.29	11.27	15.5	14	11.50	11.55	11.60	11.58	11.56	16.5	16	11.75	11.82	11.89	11.87	11.85			

Notes (1) These data show average status.

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)

In the heating mode in which the outside air temperature is 0°CDB or less, the compressor operates at maximum frequency.

(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)

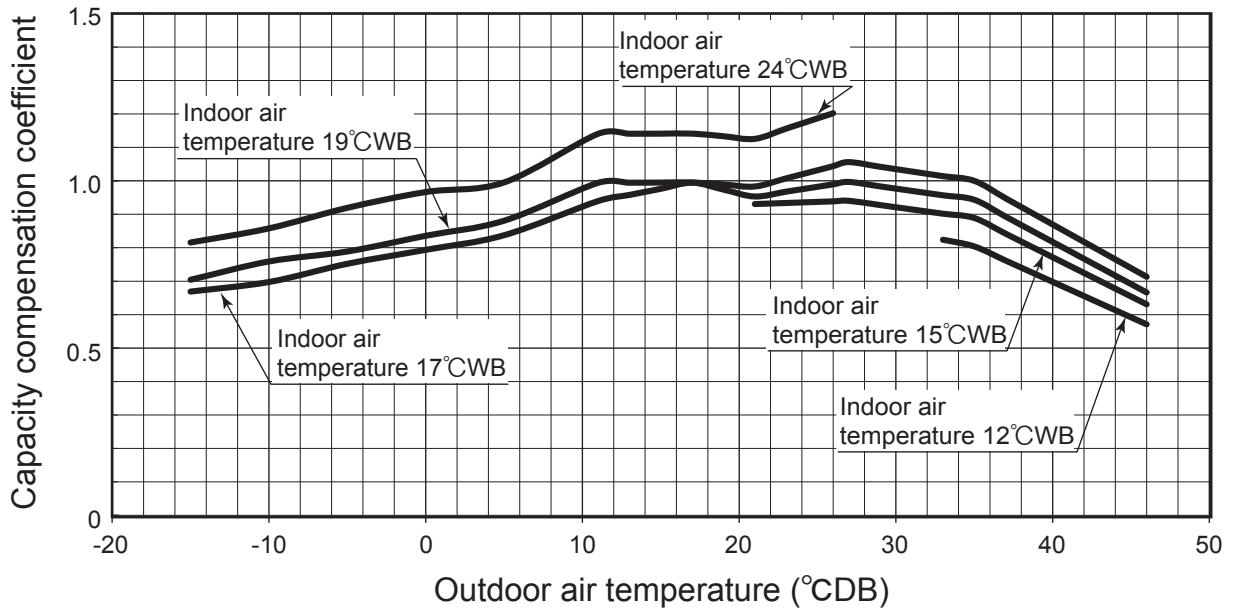
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**[References data]**

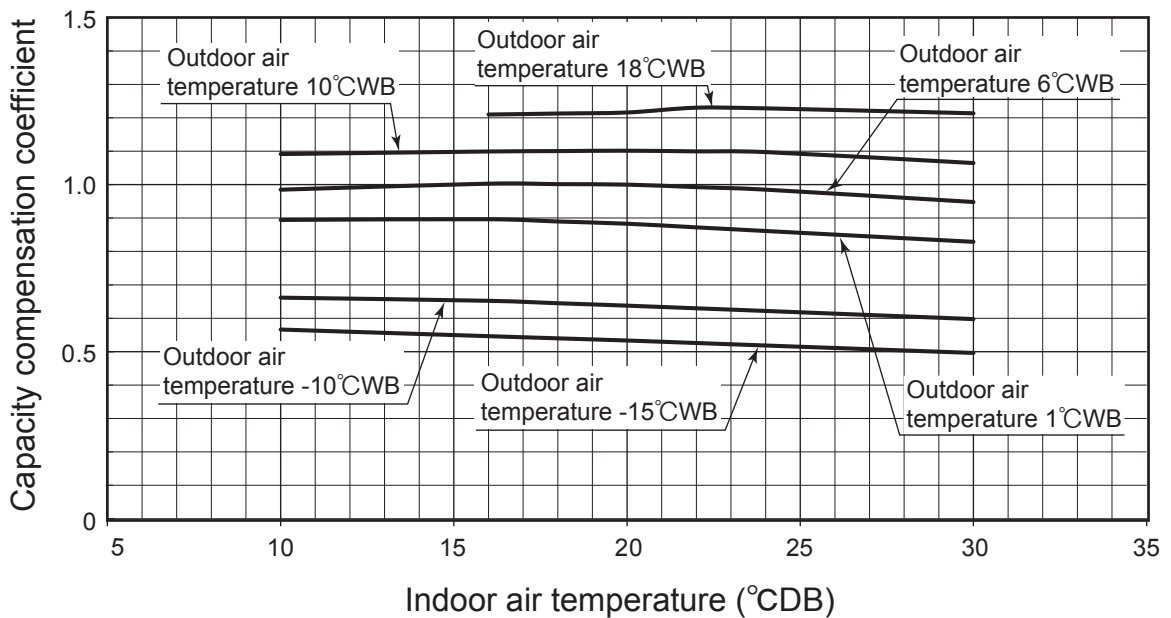
The following figures show capacity variation against outdoor and indoor temperature. Capacity compensation coefficient shows the ratio of maximum capacity at any temperature to nominal capacity.

**Model FDC100VNP-W**

① Cooling



② Heating





### 3.7.2 Correction of cooling and heating capacity in relation to air flow rate control (Fan speed)

Fan speed		Hi	Me	Lo
Coefficient	Cooling	0.95	0.93	0.90
	Heating	0.97	0.96	0.94

### 3.7.3 Correction of cooling and heating capacity in relation to one way length of refrigerant piping

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

Equivalent piping length (m)	7.5	10	15	20	25	30
Cooling	1	0.99	0.97	0.96	0.94	0.92
Heating	1	1	1	1	1	1

### 3.7.4 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
Adjustment coefficient	0.99	0.98	0.97	0.96

#### Piping length limitations

Item	Model	All models
Max. one way piping length		30m
Max. vertical height difference		Outdoor unit is higher 20m Outdoor unit is lower 20m

Note 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 SRK100VNPWZRF with the air flow "Hi", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0°C and outdoor dry-bulb temperature 35°C is

$$\text{Net cooling capacity} = \frac{9.6}{\text{Net cooling total capacity of SRK100VNPWZRF (Outdoor temp. : 35°CDB Indoor temp. : 19°CWB) shown in table 3.7.1}} \times \frac{0.95}{\text{Air flow : Hi shown in table 3.7.2}} \times \frac{0.97}{\text{Piping length : 15m (Gas pipe size is } \phi 15.88 \text{) shown in table 3.7.3}} \times \frac{0.99}{\text{Height difference : 5m (Outdoor unit : below) shown in table 3.7.4}} \approx 8.8 \text{ kW}$$

## 3.8 APPLICATION DATA

3.8.1 Installation of indoor unit

3.8.2 Installation of wired remote control (Option parts)

3.8.3 Installation of outdoor unit

Model FDC100VNP-W

See page 22.

See page 26.

PSC012D137△
Inverter driven split PAC
90, 100VNP
Designed for R32 refrigerant

• This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 22.  
 • 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, gloves, etc., and then perform the installation works.  
 • Please pay attention not to fall down the tools, etc. when installing the unit at the high position.  
 • If unusual noise can be heard during operation, consult the dealer.  
 • The meanings of "Marks" used here are shown as follows:

⊘ Never do it under any circumstances.    ⚠ Always do it according to the instruction.

### △ WARNING

<p><b>⚠</b></p> <ul style="list-style-type: none"> <li><b>Installation must be carried out by the qualified installer.</b> 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.</li> <li><b>Install the system in full accordance with the installation manual.</b> Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.</li> <li><b>Be sure to use only for household and residences.</b> If this appliance is installed in interior environment such as machine shop and etc., it can cause malfunction.</li> <li><b>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).</b> 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.</li> <li><b>Use the original accessories and the specified components for installation.</b> If parts other than those prescribed by us are used, it may cause water leaks, electric shocks, fire and personal injury.</li> <li><b>Install the unit in a location with good support.</b> Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.</li> <li><b>Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.</b> Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.</li> <li><b>Ventilate the working area well in the event of refrigerant leakage during installation.</b> If the refrigerant comes into contact with naked flames, poisonous gas is produced.</li> <li><b>Use the prescribed pipes, flare nuts and tools for R32.</b> Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.</li> <li><b>Tighten the flare nut by torque wrench with specified method.</b> If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.</li> </ul>	<p><b>⊘</b></p> <ul style="list-style-type: none"> <li><b>Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.</b> If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.</li> <li><b>Do not processing, splice the power cord, or share a socket with other power plugs.</b> This may cause fire or electric shock due to deflecting contact, deflecting insulation and over-current etc.</li> </ul>
<ul style="list-style-type: none"> <li><b>Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.</b> 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.</li> <li><b>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.</b> Power source with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.</li> <li><b>Be sure to shut off the power before starting electrical work.</b> Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.</li> <li><b>Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.</b> Unconformable cables can cause electric leak, anomalous heat production or fire.</li> <li><b>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.</b></li> <li><b>Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.</b> Incorrect installation may result in overheating and fire.</li> <li><b>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.</b> Loose connections or cable mountings can cause anomalous heat production or fire.</li> <li><b>Be sure to fix up the service panels.</b> Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.</li> <li><b>Be sure to switch off the power source in the event of installation, inspection or servicing.</b> 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.</li> <li><b>Stop the compressor before removing the pipe after shutting the service valve on pump down work.</b> 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.</li> </ul>	<ul style="list-style-type: none"> <li><b>Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to treat it.</b> This may cause fire or heating.</li> <li><b>Do not run the unit with removed panels or protections.</b> Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.</li> </ul>
<ul style="list-style-type: none"> <li><b>Do not use prescribed option parts. The installation must be carried out by the qualified installer.</b> If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.</li> <li><b>Be sure to wear protective goggles and gloves while at work.</b></li> <li><b>Earth leakage breaker must be installed.</b> If the earth leakage breaker is not installed, it can cause electric shocks.</li> <li><b>After completed installation, check that no refrigerant leaks from the system.</b> If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.</li> <li><b>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.</b> An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit.</li> <li><b>Consult the dealer or an expert regarding removal of the unit.</b> Incorrect installation can cause water leaks, electric shocks or fire.</li> <li><b>Do not perform brazing work in the airtight room.</b> It can cause lack of oxygen.</li> <li><b>This unit is designed specifically for R32.</b> Using any other refrigerant can cause unit failure and personal injury.</li> </ul>	<ul style="list-style-type: none"> <li><b>Do not perform any change of protective device itself or its setup condition.</b> The forced operation by short-circuiting protective device of pressure switch and temperature control or the use of non specified component can cause fire or burst.</li> <li><b>Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair.</b> If you repair or modify the unit, it can cause water leaks, electric shocks or fire.</li> </ul>

**CAUTION**

	<p>• <b>Carry out the electrical work for ground lead with care.</b> 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.</p>
	<p>• <b>Take care when carrying the unit by hand.</b> If the unit weighs 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 aluminium fins.</p> <p>• <b>Dispose of any packing materials correctly.</b> Any remaining packing materials can cause personal injury. To avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.</p> <p>• <b>Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.</b> Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.</p>
	<p>• <b>Do not install the outdoor unit in the locations listed below.</b> Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.</p> <p>• 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.</p> <p>• Locations where vibration can be amplified and transmitted due to insufficient strength of structure.</p> <p>• Locations where vibration and operation sound generated by the outdoor unit can affect seriously (on the wall or at the place near bed room).</p> <p>• Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 5m).</p> <p>• Locations where drainage cannot run off safely. It can affect surrounding environment and cause a claim.</p> <p>• <b>Do not install the unit near the location where leakage of combustible gases can occur.</b> If leaked gases accumulate around the unit, it can cause fire.</p> <p>• <b>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.</b> Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.</p> <p>• <b>Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.</b> 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.</p> <p>• <b>Secure a space for installation, inspection and maintenance specified in the manual.</b> Insufficient space can result in accident such as personal injury due to falling from the installation place.</p>
	<p>• <b>Earth leakage breaker must be installed</b> If the earth leakage breaker is not installed, it can cause fire or electric shocks.</p> <p>• <b>Do not install the unit in the locations listed below.</b></p> <ul style="list-style-type: none"> <li>Locations where carbon fiber, metal powder or any powder is floating.</li> <li>Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.</li> <li>Vehicles and ships.</li> <li>Locations where cosmetic or special sprays are often used.</li> <li>Locations with direct exposure of oil mist and steam such as kitchen and machine plant.</li> <li>Locations where any machines which generate high frequency harmonics are used.</li> <li>Locations with salty atmospheres such as coastlines.</li> <li>Locations with heavy snow (if installed, be sure to provide base frame and snow hood mentioned in the manual).</li> <li>Locations where the unit is exposed to chimney smoke.</li> <li>Locations at high altitude (more than 1000m high).</li> <li>Locations with ammoniac atmospheres. (e.g. organic fertilizer)</li> <li>Locations with calcium chloride (e.g. snow melting agent).</li> <li>Locations where heat radiation from other heat source can affect the unit.</li> <li>Locations without good air circulation.</li> <li>Locations with any obstacles which can prevent inlet and outlet air of the unit.</li> <li>Locations where short-circuit of air can occur (in case of multiple units installation).</li> <li>Locations where strong air blows against the air outlet of outdoor unit.</li> <li>Locations where something located above the unit could fall.</li> </ul> <p>It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.</p>

**Notabilia as a unit designed for R32**

- Do not use any refrigerant other than R32. R32 will rise to pressure about 1.6 times higher than that of a conventional refrigerant (R22 or R407C).
- A cylinder containing R32 has a lightblue indication mark on the top.
- A unit designed for R32 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.
- All indoor units must be models designed exclusively for R32. Check connectable indoor unit models in a catalog, etc. (A wrong in door 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		Qty
①	Grommet (Heat pump type only)	2
②	Drain elbow (Heat pump type only)	1
③	Reducer set. φ 9.52 → φ 6.35	1

Dedicated R32 tools	
a)	Gauge manifold
b)	Charge hose
c)	Electronic scale for refrigerant charging
d)	Torque wrench
e)	Flare tool
f)	Protusion control copper pipe gauge
g)	Vacuum pump adapter
h)	Gas leak detector

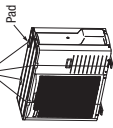
# 1. HAULAGE AND INSTALLATION (Take particular care in carrying in or moving the unit, and always perform such an operation with two or more persons.)

## 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.

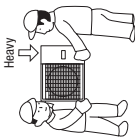
### 1) Delivery

- Deliver the unit as close as possible to the installation site before removing it from the packaging.
- When 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

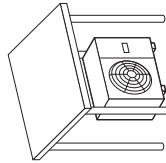
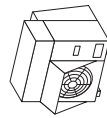
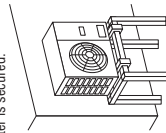
Be sure to select a suitable installation place in consideration of following conditions.

- 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 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°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.

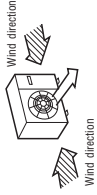


Since drain water generated by defrost control may freeze, following measures are required.

- 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 treatment 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.

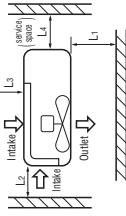
1. Install the outlet air blow side of the unit to face a wall or building, or provide a fence or a windbreak screen.
2. Install the outlet air blow side of the unit in a position perpendicular to the direction of wind.
3. The unit should be installed on the stable and level foundation. If the foundation 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 controls, 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.

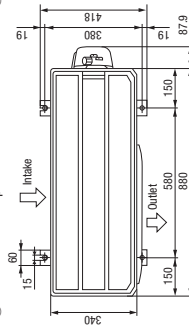
The height of a wall is 1200mm or less.



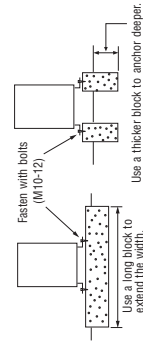
Size	I	II	III
Example installation	Open	Open	Open
L1	300	250	500
L2	300	250	Open
L3	100	150	100
L4	250	250	250

### 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 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.

### 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, FDE, FDU, FDUM, SRK	Main pipe length	L
	Elevation difference between indoor and outdoor units	30m or less 20m or less 20m or less	H H H

- 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.

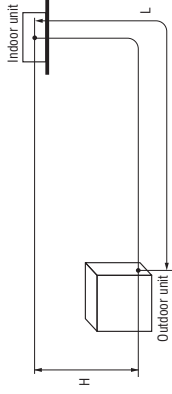
### ⚠ CAUTION

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	φ15.88 Flare	φ6.35 Flare
Refrigerant piping (branch pipe/L)	φ15.88	φ6.35
Indoor unit connected	φ15.88	φ9.52



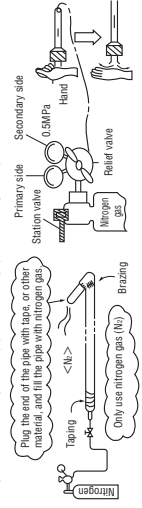
### When pipe is brazing.

#### 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

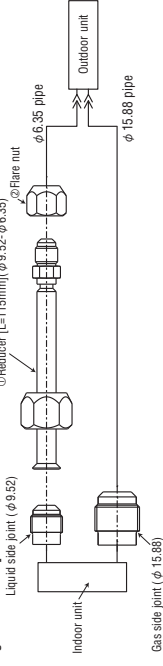
- Select refrigerant pipes of the table shown on the right wall thickness and material as specified for each pipe size.

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

Pipe diameter (mm)	φ 6.35	φ 15.88
Minimum pipe wall thickness (mm)	0.8	1.0
Pipe material*	O-type pipe	O-type pipe

\*Phosphorus deoxidized seamless copper pipe ICS 23.040.15, ICS 77.150.30

#### [Usage of reducer set]



### 4) On-site piping work

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.

### ⚠ IMPORTANT

- Regarding the change in the size of liquid pipe:

Use the reducer at indoor unit side. Reducer set is available in the outdoor unit as accessory.

#### 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 brazed, 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 R32 are different from those for conventional R22 and R407C.

Although we recommend the use of flaring tools designed specifically for R32, 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.

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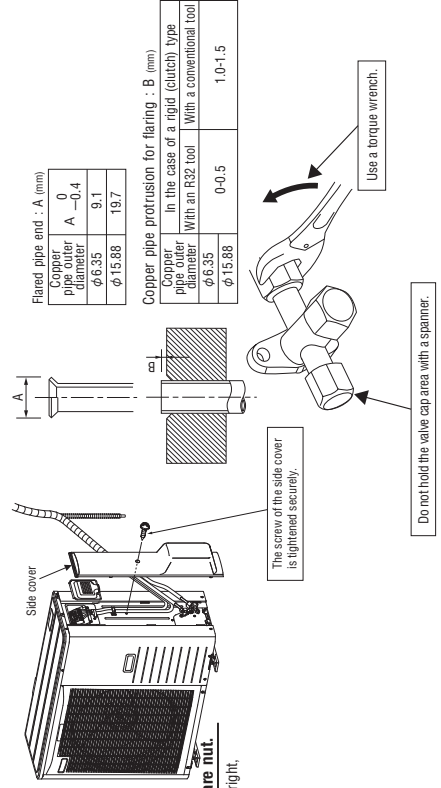
● The pipe should be anchored every 1.5m or less to isolate the vibration.

### ⚠ CAUTION

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

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

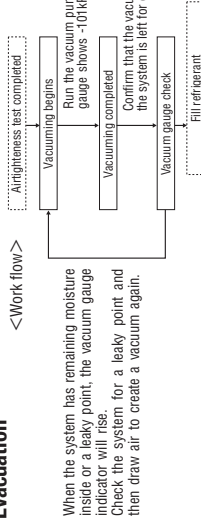
Service valve size (mm)	Tightening torque (N·m)
φ6.35	14-18
φ9.52	34-42
φ12.7	49-61
φ15.88	68-82



### 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) If no pressure drop is observed with an installation pressurized to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
  - d) 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.

### Pay attention to the following points in addition to the above for the R32 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.

Indoor unit	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe φ6.35)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
FDT, FDE	0.020	1.7	15
FDU, FDUM, SRK			

- 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 vary depending on the liquid pipe size.
- For further information, please see "5. UTILIZATION OF EXISTING PIPING."
- 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.

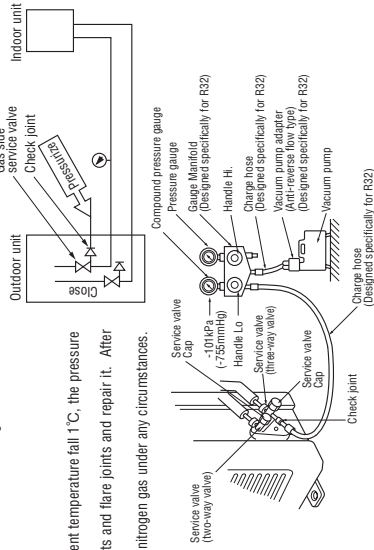
Formula to calculate the volume of additional refrigerant required

$$\text{Additional charge volume (kg)} = l \text{ (Main length (m))} - \text{Factory charged volume} \times 0.020 \text{ (kg/m)}$$

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

### 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/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%.



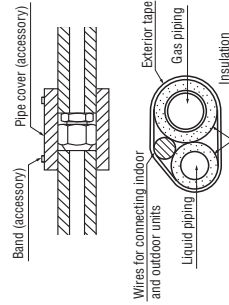
Securely tighten the service valve cap and the check joint blind nut after adjustment.

Service valve size (mm)	Operation valve cap tightening torque (N·m)	Check joint blind nut tightening torque (N·m)
φ6.35 (1/4")	20-30	10-12
φ15.88 (5/8")	30-40	

### (2) Charging refrigerant

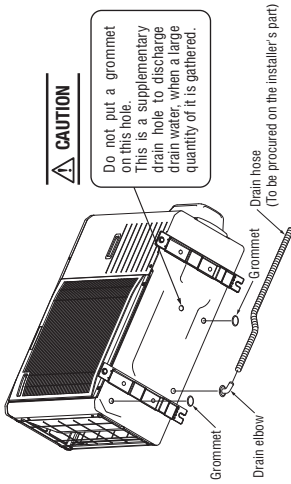
- Since R32 refrigerant must be charged in the liquid phase, you should charge it, keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
- When you find it difficult to charge a required amount, fully open the outdoor unit valves on both liquid and gas 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 easily 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.



### 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.)



#### CAUTION

- When condensed water needs to be led to a drain, etc., install the unit on a flat base 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 in the country.
  - ordinary rough rubber sheathed cord (code designation 60245 IEC 53)
  - flat twin tinsel cord (code designation 60227 IEC 41)
- Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire.
- If improper grounded, an electric shock or malfunction may result.
- A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
- The installation of an impulse withstanding type earth leakage breaker is necessary. A failure to install an earth leakage breaker can result in an accident such as an electric shock or a fire.
- Do not turn on the power until the electrical work is completed.
- Do not use a condensive capacitor for power factor improvement under any circumstances. (It does not improve power factor, while it can cause an abnormal overheat accident.)
- For power source cables, use conductors.
- 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.

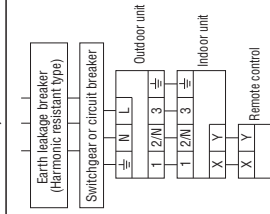
Use cables for interconnection wiring to avoid loosening of the wires.

- GENELEC code for cables Required field cables.
- H05FMR461.5 (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
  - 40x5 Number of conductors
  - G One conductor of the cable is the earth conductor (yellow/green)
  - 1.5 Section of copper wire (mm<sup>2</sup>)

Main fuse specification

Specification	Part No.
250V 20A	SSA564A136A

#### Power cable, indoor-outdoor connecting wires



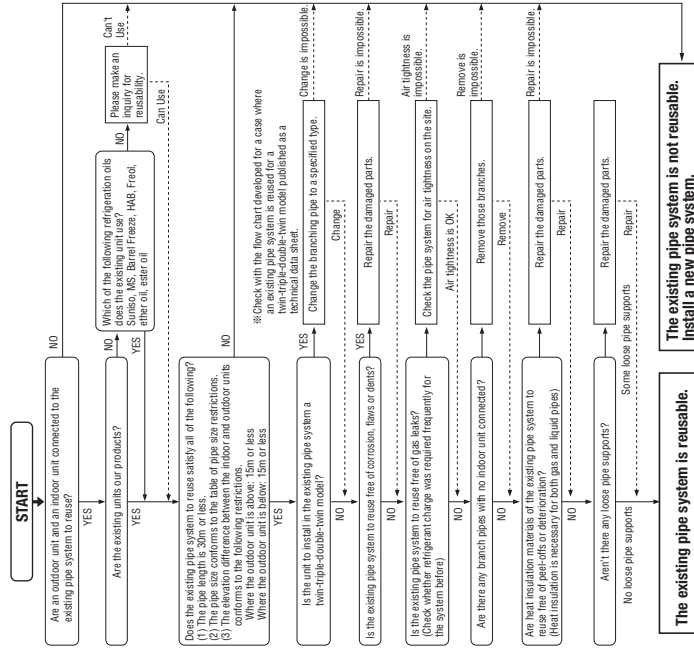
- Always perform grounding system installation work with the power cord unplugged.
  - Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire.
  - In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.
  - Grounding terminals are provided in the control box.
- CAUTION**
- Always use an earth leakage circuit breaker designed for inverter circuits to prevent a faulty operation.
- Power source terminal block**
- Cable clamp
    - It holds cables in place and protect the terminal connection from external force.
    - This clamp is for the cable in the outside diameter φ=15mm.
    - Please adjust it when not suitable.
  - Cable clamp
    - It holds cables in place and protect the terminal connection from external force.
  - Grounding terminal
    - Please be sure to carry out D-type (type III) grounding work.

Phase	Earth leakage breaker	Switchgear or circuit breaker	Switchgear or circuit breaker		Interconnecting and grounding wires (minimum)
			Over current protector rated capacity	Power source (minimum)	
Single-phase	20A 30mA, 0.1 sec or less	30A	20A	2.5mm <sup>2</sup>	1.5mm <sup>2</sup> ×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

Indoor unit	Additional charge volume per meter of pipe		0.065kg/m		0.06kg/m	
	Pipe size	Liquid pipe	Gas pipe	φ9.52	φ9.52	φ15.88
FDT, PDE FDU, FDUH, SRK	Usability	◎	◎	△	△	△
	Maximum one-way pipe length Length covered without additional charge	30	12	12	6	6

● 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 φ9.52, gas φ12.7), the quantity of refrigerant to charge additionally should be (10m-6m) × 0.06kg/m = 0.24kg.

### WARNING

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

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

- Run the unit for 30 minutes for a cooling operation.
- Stop the indoor fan and run the unit for 3 minutes for a cooling operation (returning liquid)
- Close the liquid side service valve of the outdoor unit and pump down (refrigerant recovery)
- 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 R32.

<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.

The existing pipe system is reusable.

The existing pipe system is not reusable. Install a new pipe system.



## 3.9 TECHNICAL INFORMATION

### Model SRK100VNPWZRF

Information to identify the model(s) to which the information relates to:				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'.			
Indoor unit model name		SRK100ZR-WF		Average(mandatory)		Yes	
Outdoor unit model name		FDC100VNP-W		Warmer(if designated)		No	
Function(indicate if present)				Colder(if designated)			
cooling		Yes					
heating		Yes					
Item				Item			
		symbol value unit				symbol value class	
Design load				Seasonal efficiency and energy efficiency class			
cooling		Pdesignc 9.60 kW		cooling		SEER 6.11 A++	
heating / Average		Pdesignh 6.00 kW		heating / Average		SCOP/A 4.14 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°C)		Pdh 6.00 kW		heating / Average (-10°C)		elbu 0 kW	
heating / Warmer (2°C)		Pdh - kW		heating / Warmer (2°C)		elbu - kW	
heating / Colder (-22°C)		Pdh - kW		heating / Colder (-22°C)		elbu - kW	
Declared capacity for cooling, at indoor temperature 27(19)°C and outdoor temperature Tj				Declared energy efficiency ratio, at indoor temperature 27(19)°C and outdoor temperature Tj			
Tj=35°C		Pdc 9.60 kW		Tj=35°C		EERd 3.10 -	
Tj=30°C		Pdc 7.00 kW		Tj=30°C		EERd 4.35 -	
Tj=25°C		Pdc 4.50 kW		Tj=25°C		EERd 6.77 -	
Tj=20°C		Pdc 2.19 kW		Tj=20°C		EERd 12.30 -	
Declared capacity for heating / Average season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Average season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C		Pdh 5.30 kW		Tj=-7°C		COPd 3.00 -	
Tj=2°C		Pdh 3.20 kW		Tj=2°C		COPd 4.03 -	
Tj=7°C		Pdh 2.00 kW		Tj=7°C		COPd 5.00 -	
Tj=12°C		Pdh 1.46 kW		Tj=12°C		COPd 6.21 -	
Tj=bivalent temperature		Pdh 6.00 kW		Tj=bivalent temperature		COPd 2.63 -	
Tj=operating limit		Pdh 5.30 kW		Tj=operating limit		COPd 2.48 -	
Declared capacity for heating / Warmer season, at indoor temperature 20°C and outdoor temperature Tj				Declared coefficient of performance / Warmer season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=2°C		Pdh - kW		Tj=2°C		COPd - -	
Tj=7°C		Pdh - kW		Tj=7°C		COPd - -	
Tj=12°C		Pdh - kW		Tj=12°C		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°C and outdoor temperature Tj				Declared coefficient of performance / Colder season, at indoor temperature 20°C and outdoor temperature Tj			
Tj=-7°C		Pdh - kW		Tj=-7°C		COPd - -	
Tj=2°C		Pdh - kW		Tj=2°C		COPd - -	
Tj=7°C		Pdh - kW		Tj=7°C		COPd - -	
Tj=12°C		Pdh - kW		Tj=12°C		COPd - -	
Tj=bivalent temperature		Pdh - kW		Tj=bivalent temperature		COPd - -	
Tj=operating limit		Pdh - kW		Tj=operating limit		COPd - -	
Tj=-15°C		Pdh - kW		Tj=-15°C		COPd - -	
Bivalent temperature				Operating limit temperature			
heating / Average		Tbiv -10 °C		heating / Average		Tol -15 °C	
heating / Warmer		Tbiv - °C		heating / Warmer		Tol - °C	
heating / Colder		Tbiv - °C		heating / Colder		Tol - °C	
Cycling interval capacity				Cycling interval efficiency			
for cooling		Pcycc - kW		for cooling		EERcyc - -	
for heating		Pcyh - 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 6 W		cooling		Qce 550 kWh/a	
standby mode		Psb 6 W		heating / Average		Qhe 2028 kWh/a	
thermostat-off mode		Pto(cooling) 14 W		heating / Warmer		Qhe - kWh/a	
		Pto(heating) 16 W		heating / colder		Qhe - kWh/a	
crankcase heater mode		Pck 0 W					
Capacity control(indicate one of three options)				Other items			
fixed		No		Sound power level(indoor)		Lwa 63 dB(A)	
staged		No		Sound power level(outdoor)		Lwa 68 dB(A)	
variable		Yes		Global warming potential		GWP 675 kgCO <sub>2</sub> eq.	
				Rated air flow(indoor)		- 1,470 m <sup>3</sup> /h	
				Rated air flow(outdoor)		- 3,780 m <sup>3</sup> /h	
Contact details for obtaining more information				Mitsubishi Heavy Industries Air-Conditioning Europe, Ltd. 5 The Square, Stockley Park, Uxbridge, Middlesex, UB11 1ET, United kingdom MHIAE SERVICES B.V. Herikerbergweg 238, Luna Arena, 1101 CM Amsterdam, Netherlands P.O.Box 23393 1100 DW Amsterdam, Netherlands			

## 4. OPTION PARTS

### CONTENTS

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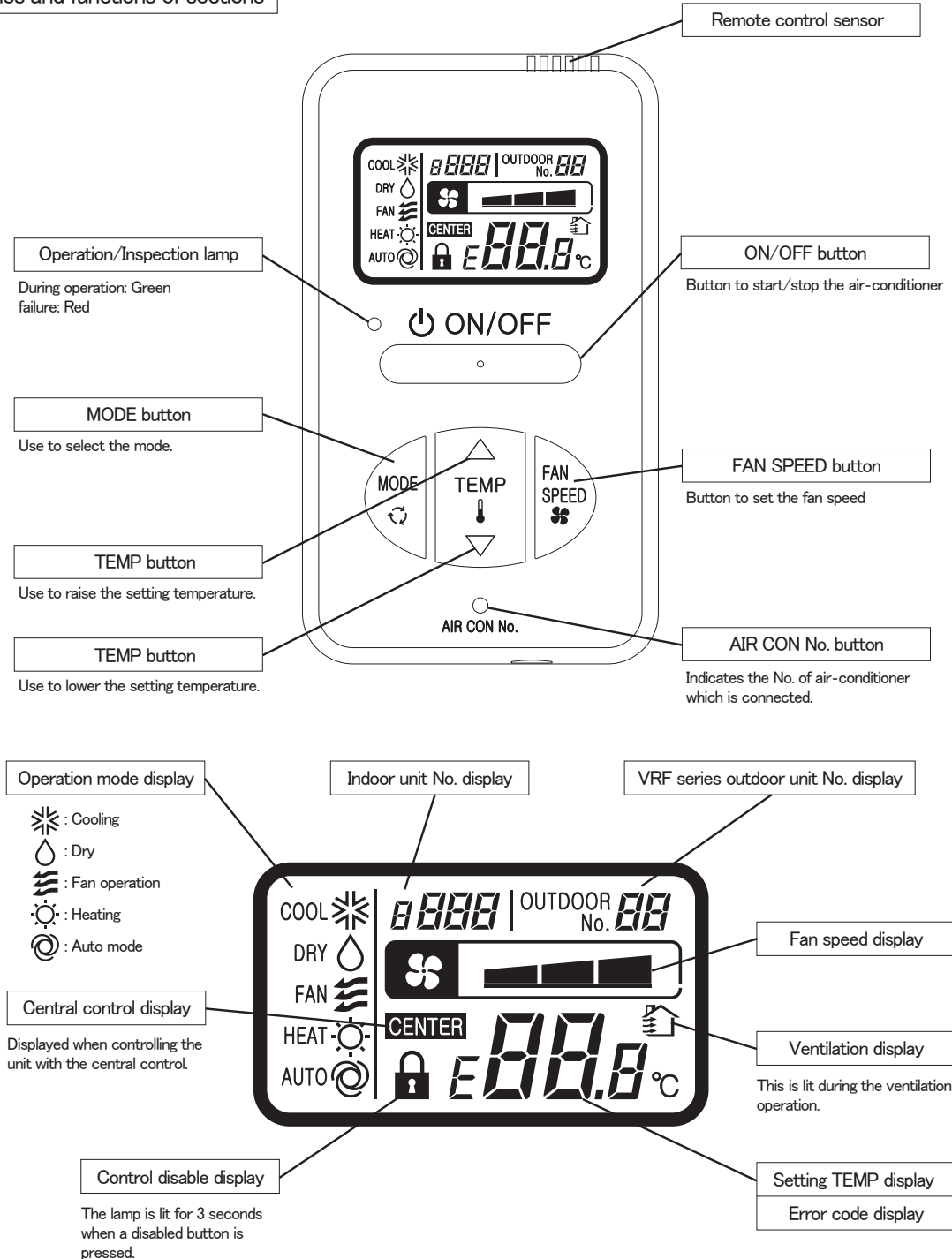
## 4.1 SIMPLE WIRED REMOTE CONTROL (RCH-E3)

**Note:**

Following functions of FDU indoor unit series are not able to be set with this simple wired remote control (RCH-E3).

1. 4-fan speed setting (P-Hi/Hi/Me/Lo) → 3-fan speed setting (Hi/Me/Lo)

### Names and functions of sections



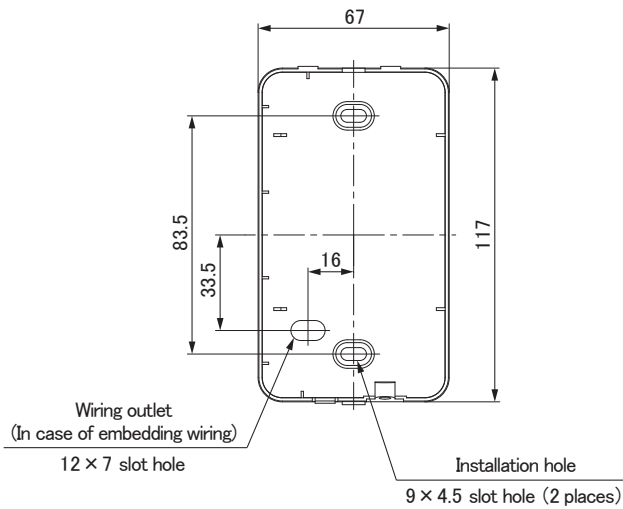
### Installation of remote control

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

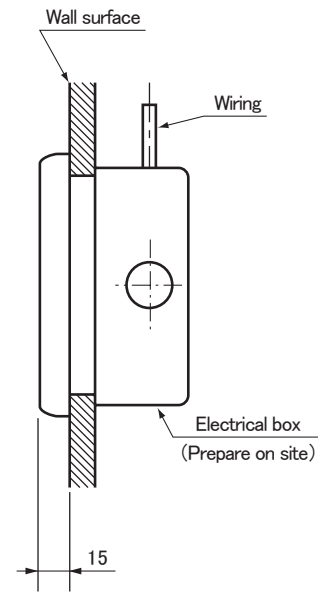
PJZ000Z272

Remote control installation dimensions

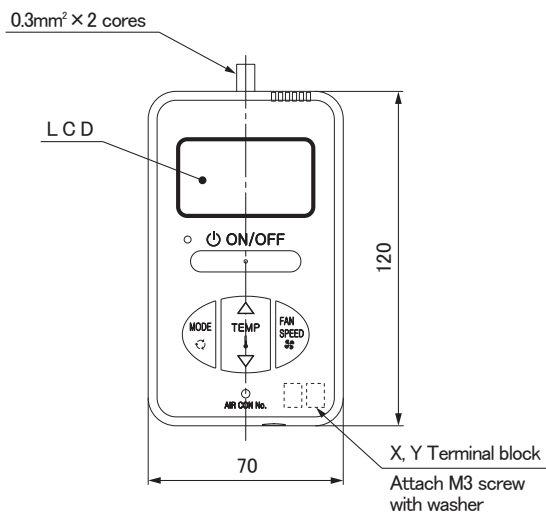


Note: Installation screw for remote control  
M4 screw (2 pieces)

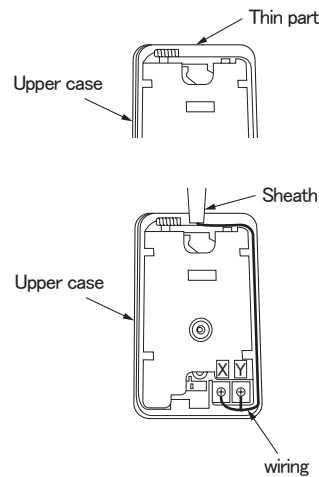
In case of embedding wiring



In case of exposing wiring

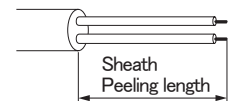


The remote control wiring can be extracted from the upper center. After the thin part in the upper side of the remote control upper case is scraped with a nipper or knife, remove burr with a file.



The peeling length of each wiring is as follows:

X wiring : 160mm  
Y wiring : 150mm



Wiring specifications

- (1) Wiring of remote control should use 0.3mm<sup>2</sup> × 2 cores 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 0.3mm<sup>2</sup> (recommended) to 0.5mm<sup>2</sup>.  
Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.

Unit:mm

Length	Wiring thickness
100 to 200m	0.5mm <sup>2</sup> × 2 cores
Under 300m	0.75mm <sup>2</sup> × 2 cores
Under 400m	1.25mm <sup>2</sup> × 2 cores
Under 600m	2.0mm <sup>2</sup> × 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.

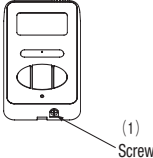
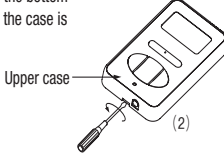
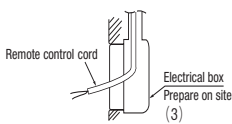
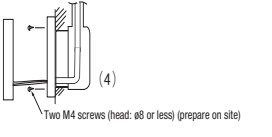
## ⚠ CAUTION

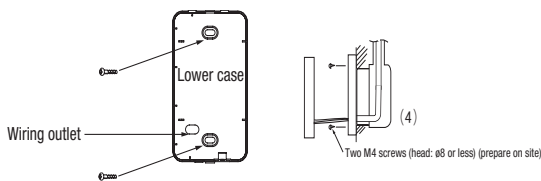
- **Do not install the remote control at the following places in order to avoid malfunction.** 
  - (1) Places exposed to direct sunlight
  - (2) Places near heat devices
  - (3) High humidity places
  - (4) Hot surface or cold surface enough to generate condensation
  - (5) Places exposed to oil mist or steam directly
  - (6) Uneven surface
- **Do not leave the remote control without the upper case.**   
In case the upper case 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 (φ 3.5×16) 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

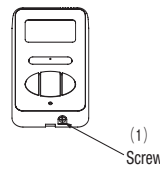
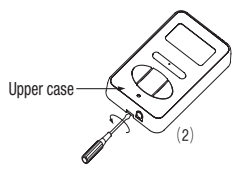
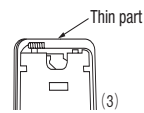
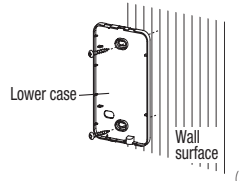
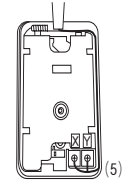
### In case of embedding cord

- (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<sup>2</sup> (recommended) to 0.5 mm<sup>2</sup> 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.

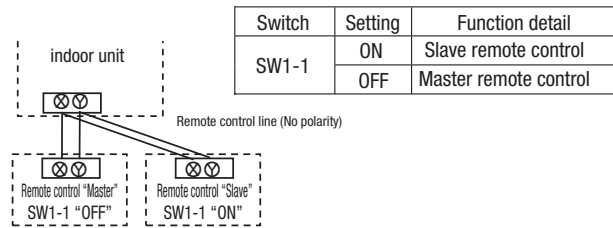
## 2. Installation and wiring of remote control

- (1) Wiring of remote control should use 0.3mm<sup>2</sup> × 2 cores 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<sup>2</sup> (recommended) to 0.5mm<sup>2</sup>. 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<sup>2</sup> × 2 cores  
Under 300m ······ 0.75mm<sup>2</sup> × 2 cores  
Under 400m ······ 1.25mm<sup>2</sup> × 2 cores  
Under 600m ······ 2.0mm<sup>2</sup> × 2 cores

### 3. Master/ slave setting when more than one remote control are used

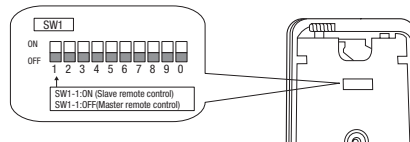
- (1) Up to two remote controls can be connected to one unit (or one group) of indoor unit.



- (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 temperature sensor enabled setting can be set only to the master remote control.

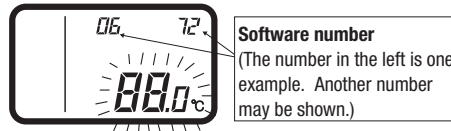
- Install the master remote control at the position to detect room temperature.
- The air-conditioner operation follows the last operation of the remote control in case of the master / slave setting.



### 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.



- (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 is read.)



Then, the return air temperature is displayed.

(Example) return air temperature: "27 °C" (blinking)

(Note) For the return air temperature, in the normal case, the return air temperature of the indoor unit is displayed; however, in the case that the remote control temperature sensor is effective, detected temperature by the remote control temperature sensor is displayed.

- (2) Press **ON/OFF** button.  
End.

[In the case that the remote temperature sensor 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 Δ** or **TEMP ∇** button.  
Select the indoor unit No.

- (3) Press **MODE** button.  
Decider the indoor unit No.

(Example) indoor unit No. indicator: "U 000"

"88" blinks on the temperature setting indicator. (blinking for approximately 2 to 10 seconds while data is read) Then, the return air temperature is displayed. When **AIR CON No.** is pressed, return to the indoor unit selection display (example, "U 000").

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

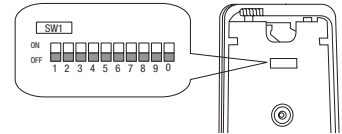
## 6. Function setting

Each function of the remote 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 would like to change the initial setting "○", change the setting for only the item of the function number. **Record the setting contents and stored them.**

### (1) Function setting item by switch on PCB

Switch No.	Setting	Setting detail	Initial setting
SW1-1	ON	Slave remote control	
	OFF	Master remote control	○
SW1-2	ON	Remote control temperature sensor enabled	
	OFF	Remote control temperature sensor 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	OFF	Not used	



- 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, <b>0000 - 0000 - 0000</b> .
			02	Fan speed: two steps (Hi-Lo)	※ Note 1	The fan speed is two steps, <b>0000 - 0000</b> .
			03	Fan speed: two steps (Hi-Me)		The fan speed is two steps, <b>0000 - 0000</b> .
			04	Fan: one step	※ Note 1	The fan speed is fixed to one step.
	03	Remote control thermostat at the time of cooling	01	Remote control temperature sensor: no offset	○	
			02	Remote control temperature sensor: +3.0 °C		At the time of cooling, in the case of remote control temperature sensor enabled, offset temperature at +3.0°C.
			03	Remote control temperature sensor: +2.0 °C		At the time of cooling, in the case of remote control temperature sensor enabled, offset temperature at +2.0°C.
			04	Remote control temperature sensor: +1.0 °C		At the time of cooling, in the case of remote control temperature sensor enabled, offset temperature at +1.0°C.
			05	Remote control temperature sensor: -1.0 °C		At the time of cooling, in the case of remote control temperature sensor enabled, offset temperature at -1.0°C.
			06	Remote control temperature sensor: -2.0 °C		At the time of cooling, in the case of remote control temperature sensor enabled, offset temperature at -2.0°C.
			07	Remote control temperature sensor: -3.0 °C		At the time of cooling, in the case of remote control temperature sensor enabled, offset temperature at -3.0°C.
	04	Remote control thermostat at the time of heating	01	Remote control temperature sensor: no offset	○	
			02	Remote control temperature sensor: +3.0 °C		At the time of heating, in the case of remote control temperature sensor enabled, offset temperature at +3.0°C.
			03	Remote control temperature sensor: +2.0 °C		At the time of heating, in the case of remote control temperature sensor enabled, offset temperature at +2.0°C.
			04	Remote control temperature sensor: +1.0 °C		At the time of heating, in the case of remote control temperature sensor enabled, offset temperature at +1.0°C.
			05	Remote control temperature sensor: -1.0 °C		At the time of heating, in the case of remote control temperature sensor enabled, offset temperature at -1.0°C.
			06	Remote control temperature sensor: -2.0 °C		At the time of heating, in the case of remote control temperature sensor enabled, offset temperature at -2.0°C.
			07	Remote control temperature sensor: -3.0 °C		At the time of heating, in the case of remote control temperature sensor enabled, offset temperature at -3.0°C.
	05	Ventilator setting	01	No ventilator connection	○	
			02	Ventilator links air-conditioner		In case of Single split series, by connecting ventilator 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 ventilator 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	
07	Operation permission/prohibition	01	Disabled	○		
		02	Enabled		Operation permission/prohibition control is enabled.	
08	External input	01	Level input	○		
		02	Pulse input			
09	Fan speed setting	01	Standard	※ Note 2		
		02	High speed 1	※ Note 2		
		03	High speed 2	※ Note 2		
10	Fan remaining operation at the time of cooling	01	No remaining operation	○	After cooling stopped, no fan remaining operation	
		02	0.5 hours		After cooling stopped, fan remaining operation for 0.5 hours	
		03	1 hour		After cooling stopped, fan remaining operation for 1 hour	
		04	6 hours		After cooling stopped, fan remaining operation for 6 hours	
11	Fan remaining operation at the time of heating	01	No remaining operation	○	After heating stopped or after heating thermostat OFF, no fan remaining operation	
		02	0.5 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 0.5 hours	
		03	2 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 2 hours	
		04	6 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 6 hours	
12	Setting temperature offset at the time of heating	01	No offset	○		
		02	Setting temperature offset + 3.0 °C		The setting temperature at the time of heating is offset by +3.0 °C.	
		03	Setting temperature offset + 2.0 °C		The setting temperature at the time of heating is offset by +2.0 °C.	
		04	Setting temperature offset + 1.0 °C		The setting temperature at the time of heating is offset by +1.0 °C.	
13	Heating fan controller	01	Low fan speed	※ Note 1	At the time of heating thermostat OFF, operate with low fan speed.	
		02	Setting fan speed		At the time of heating thermostat OFF, operate with the setting fan speed.	
		03	Intermittent operation	※ Note 1	At the time of heating thermostat OFF, intermittently operate.	
		04	Fan off		At the time of heating thermostat OFF, a fan will be stopped. When the remote control thermostat is enabled, automatically set to "Fan off". Do not set at the time of the indoor unit temperature sensor.	
14	Return air temperature offset	01	No offset	○		
		02	Return air temperature offset +2.0 °C		Offset the return air temperature of the indoor unit by +2.0 °C.	
		03	Return air temperature offset +1.5 °C		Offset the return air temperature of the indoor unit by +1.5 °C.	
		04	Return air temperature offset +1.0 °C		Offset the return air temperature of the indoor unit by +1.0 °C.	
		05	Return air temperature offset -1.0 °C		Offset the return air temperature of the indoor unit by -1.0 °C.	
		06	Return air temperature offset -1.5 °C		Offset the return air temperature of the indoor unit by -1.5 °C.	
		07	Return air temperature offset -2.0 °C		Offset the return air temperature of the indoor unit by -2.0 °C.	

Note 1: The symbol "※" in the initial setting varies depending upon the indoor unit and the outdoor unit to be connected, and this is automatically determined as follows:

Switch No. / Function No.	Function	Setting	Product model
SW1-6	"FAN SPEED" button	"FAN SPEED" button prohibited	Product model whose indoor fan speed is only one step
		"FAN SPEED" button enabled	Product model whose indoor fan speed is two steps or three steps
Remote 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)	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

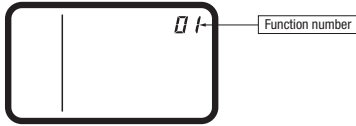
Fan speed setting	Indoor unit fan speed setting		
	0000 - 0000 - 0000	0000 - 0000	0000 - 0000
Standard	Hi - Mid - Lo	Hi - Lo	Hi - Mid
High speed 1 + 2	UHi - Hi - Mid	UHi - Mid	UHi - Hi

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-conditioner, 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.

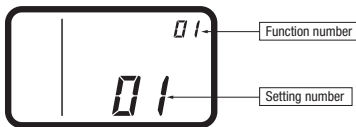


- (2) Press **TEMP▲** or **TEMP▼** button.  
Select the function number.

- (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)

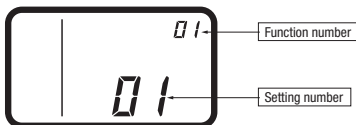


- ② Press **TEMP▲** or **TEMP▼** button.  
Select the setting number.

- ③ Press **MODE** button.  
The setting is completed.

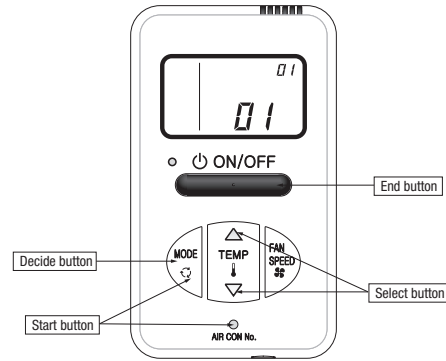
Light is on for approximately 3 to 20 seconds while data of the decided function No. and setting No. is transmitted.

- (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).

- (5) Press **ON/OFF** button.  
The setting is completed.

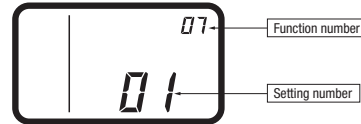


[In the case of selecting the indoor unit function (07-14)]

- ① "88" blinks on the temperature setting indicators.  
(blinking for approximately 2 to 10 seconds while data are read)

After that, the current setting number of the selected function number blinks.  
(Example)

- Function number: "07" (lighting)  
Setting number: "01" (blinking)

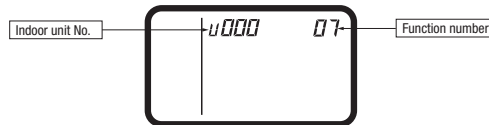


Proceed to ②.

[Note]

- a. In the case of connecting one remote control to plural indoor units, the display will be as follows:

Indoor unit No. display: "U 000" (blinking)  
(Display the lowest number among the connected indoor units.)



- b. Press **TEMP▲** or **TEMP▼** button.

Select the indoor unit No. to be set.  
If "U ALL" is selected, the same setting can be set to all units.

- c. Press **MODE** button.

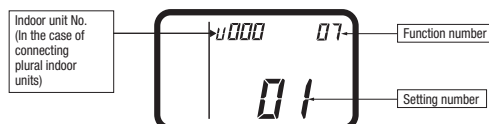
Decide the indoor unit No.  
"88" blinks on the temperature setting indicators. (blinking for 2 to 10 seconds while data is read)  
When **AIR CON No.** button is pressed, go back to the indoor unit selection display (for example, "U 000" blinking).

- ② Press **TEMP▲** or **TEMP▼** button.  
Select the setting number

- ③ Press **MODE** button.

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

- (Example)  
Indoor unit No.: "U 000" (lighting for 3 to 20 seconds)  
Function number: "07" (lighting for 3 to 20 seconds)  
Setting number: "01" (lighting for 3 to 20 seconds)



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

- 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 control, 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.)



## 4.2 BASE HEATER KIT (CW-H-E1)

PCZ012D007 


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.

### AREAS TO BE APPLIED

This kit is to be used in an area where the lowest temperature drops below zero.

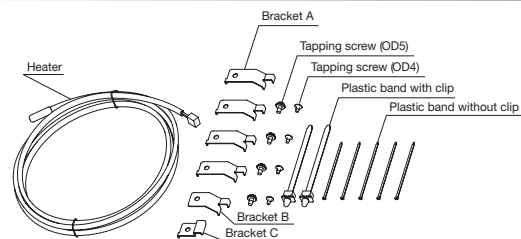
 **Caution:** In case the heater is not applied on the unit which is installed in an area mentioned above, it may be regarded as installation failure and warranty may not be given.

### 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.

### Components

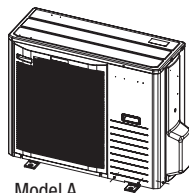
● Heater	: 1 pc.
● Bracket A	: 4 pcs.
● Bracket B	: 1 pcs.
● Bracket C	: 1 pcs.
● Tapping screw (OD5)	: 4 pcs.
● Tapping screw (OD4)	: 4 pcs.
● Plastic band with clip	: 2 pcs.
● Plastic band	: 5 pcs.



### Applicable model

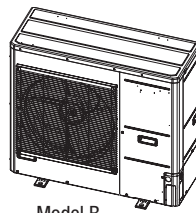
This heater kit is applicable for 3 different models.

<Model A>  
Single fan with plastic fan guard model



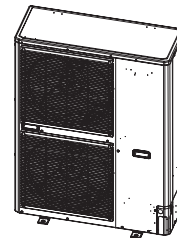
Model A

<Model B>  
Single fan model



Model B

<Model C>  
Double fan model

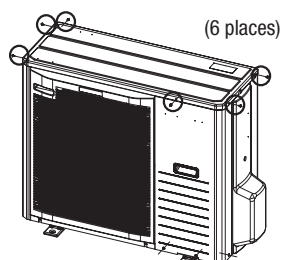


Model C

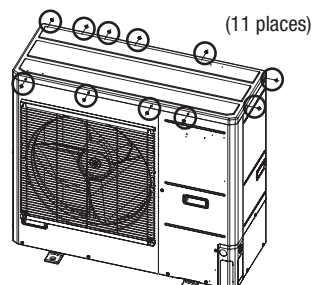
### Installation procedure

#### Step 1

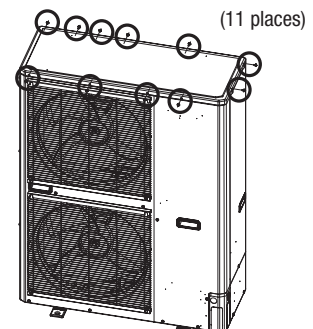
1. Remove the top panel of the outdoor unit.



Model A

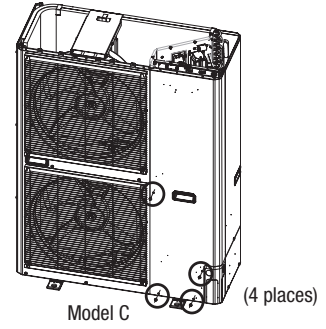
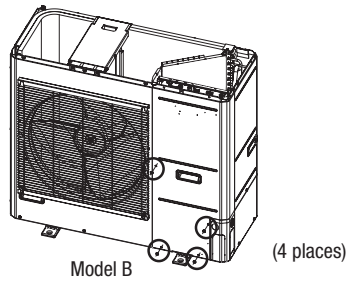
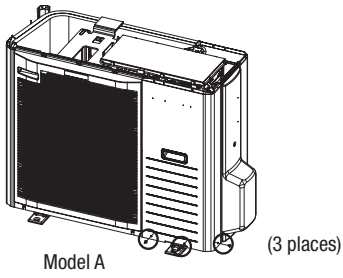


Model B

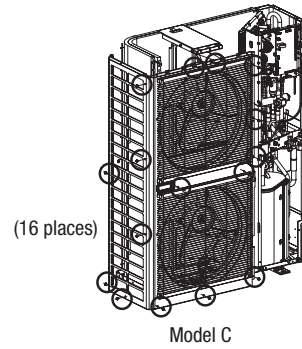
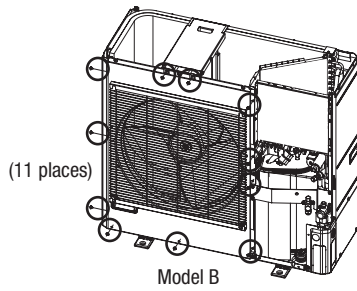
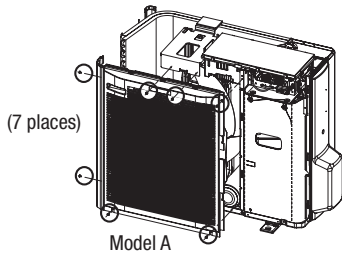


Model C

**Step 2** 2. Remove the service panel.

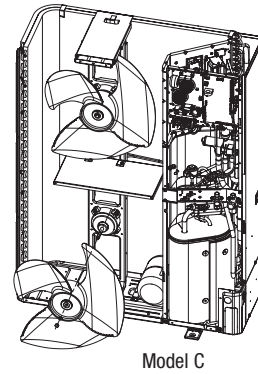
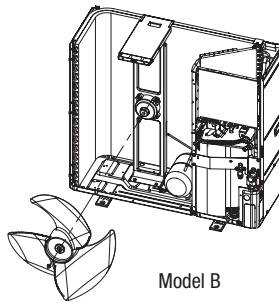
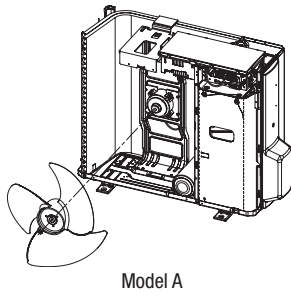


**Step 3** 3. Remove the front panel.  
Pull the panel straightforward so that the panel doesn't touch the fan blade.

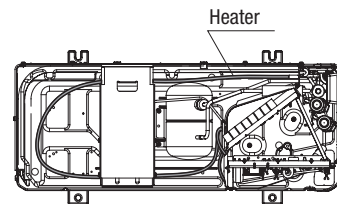
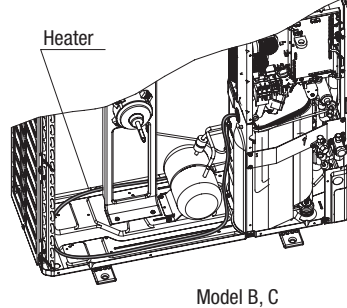
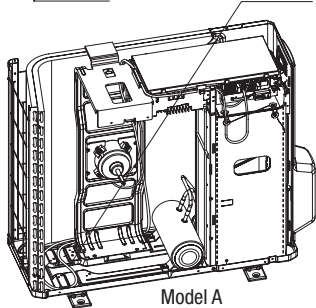
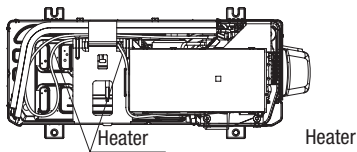


**Step 4** 4. Remove the fan blade if necessary. <Note>

Do not rotate the axis of fan motor when removing the fan blade. It may cause malfunction of the fan motor.

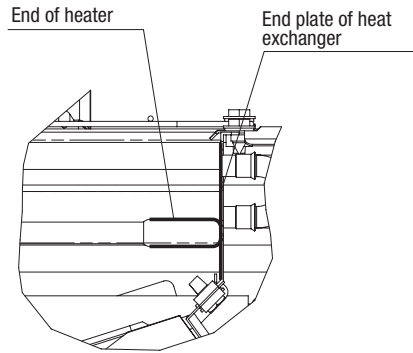


**Step 5** 5. Lay down the drain pan heater on the base.  
For model A, put the cables rear the fan motor bracket.



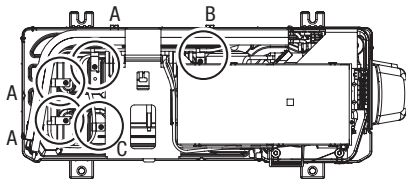
**Step 6**

6. Put the heater underneath the heat exchanger and align the end of heater with the end plate of heat exchanger.

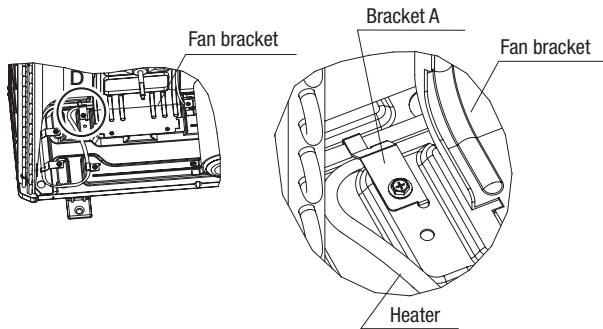


**Step 7**

7. Fix the heater with brackets.

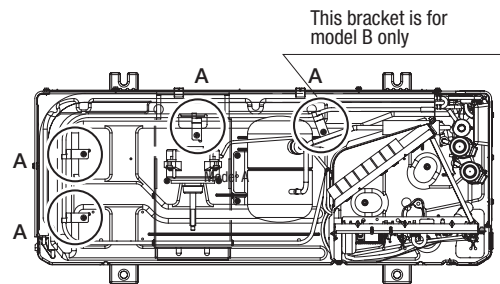


For model A, use 3 pcs of bracket A, 1pc of bracket B and C. Fix bracket A and C with the attached screw (OD4), and fix bracket B with the removed screw which is fastened at the same place.

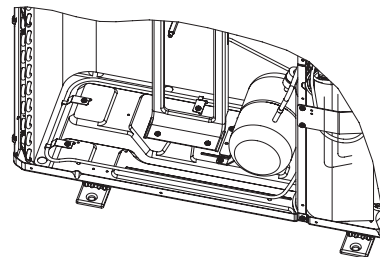


Model A

Detail view D



For model B and C, fix bracket A with the attached screw (OD5).



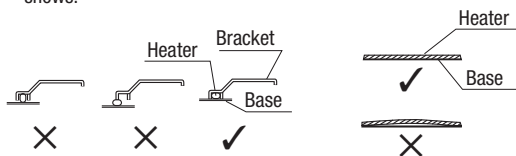
Model B, C

**<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.



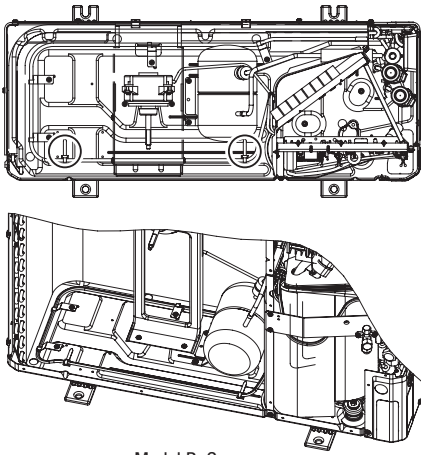
**Step 8**

8. Insert the plastic band with clip on the designated place (2 places), and fix the heater.(Model B,C only)

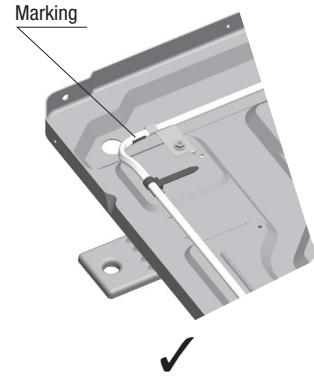
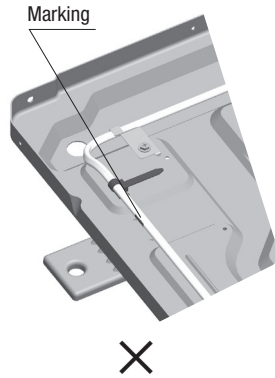
**<Notes>**

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.



Model B, C



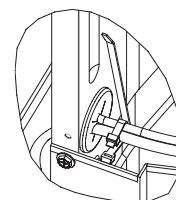
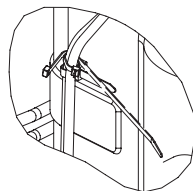
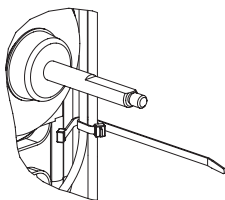
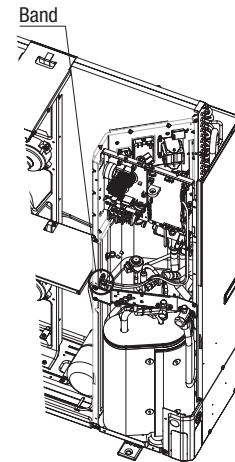
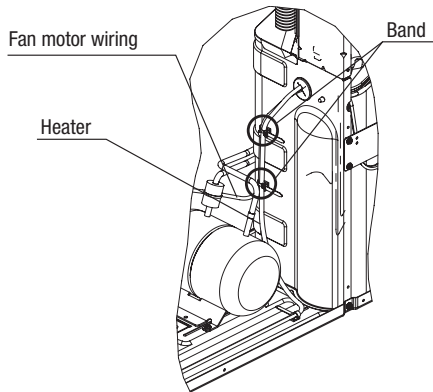
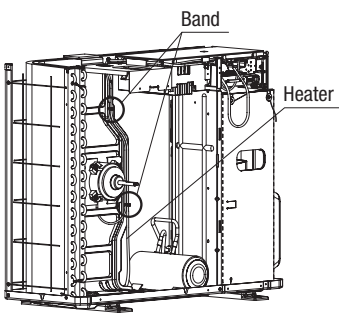
**Step 9**

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>**

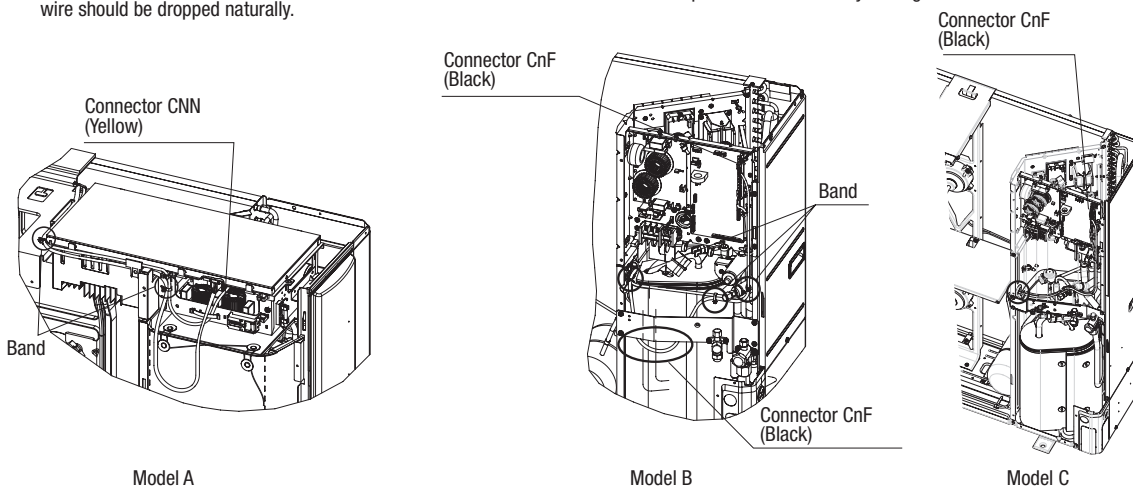
Fan motor wiring is banded on the bracket so that it doesn't loosen.  
Do not loose the band for the motor wiring to band the heater wire together but use the attached plastic band.

**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.

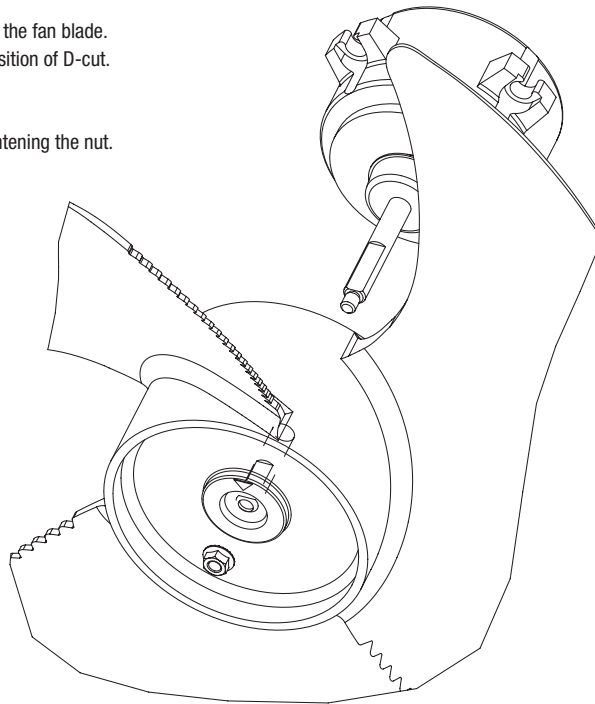
**Step 11**

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.

**<Notes>**

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.

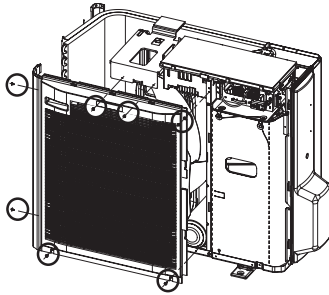
**<Notes>**

- 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.

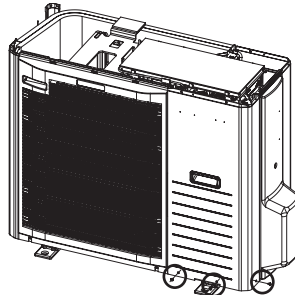
**Step 12**

12. Reassemble the panels.

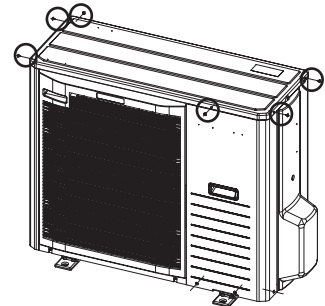
[ Model A ]



Front panel

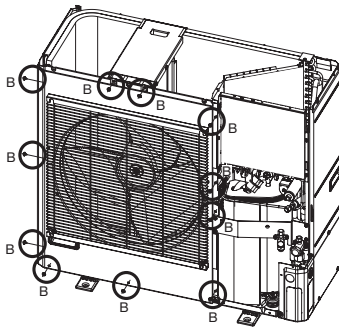


Service panel

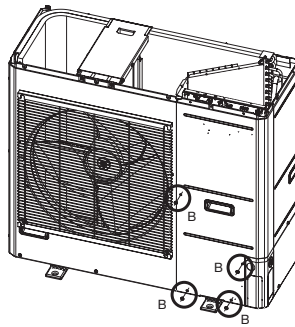


Top panel

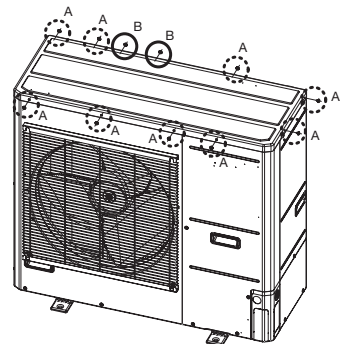
[ Model B ]



Front panel

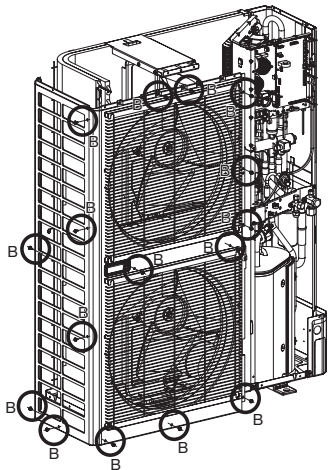


Service panel

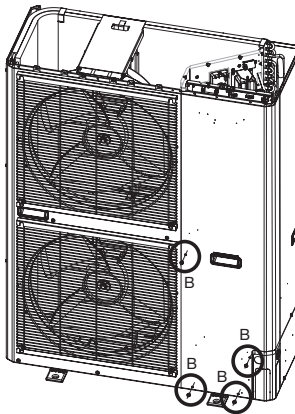


Top panel

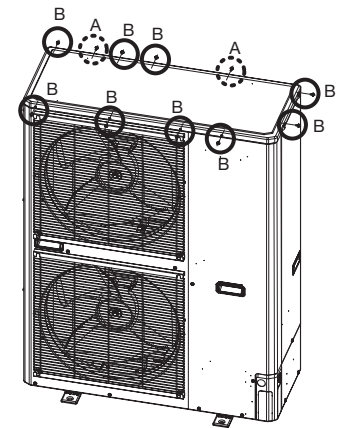
[ Model C ]



Front panel



Service panel



Top panel

**<Notes>**

- 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**

### 4.3 INTERFACE KIT (SC-BIKN2-E)

※ When RC-EX3A is connected, please use SC-BIKN2-E by all means.

RKZ012A099

#### Accessories included in package

Be sure to check all the accessories included in package.

No.	Part name	Quantity
①	Indoor unit's connection cable (cable length: 1.8m)	1
②	Wood screws (for mounting the interface: φ4×25)	2
③	Tapping screws (for the cable clamp and the interface mounting bracket)	3
④	Interface mounting bracket	1
⑤	Cable clamp (for the indoor unit's connection cable)	1
⑥	CnT terminal connection cable (total cable length: 0.5m)	1

#### Safety precautions

Before use, please read these Safety precautions thoroughly before installation.

- All the cautionary items mentioned below are important safety related items to be taken into consideration, so be sure to observe them at all times.



**Warning** Incorrect installation could lead to serious consequences such as death, major injury or environmental destruction.

- Symbols used in these precautions



Always go along these instruction.

- After completed installation, carry out trial operation to confirm no anomaly, and ask the user to keep this installation manual in a good place for future reference.

### Warnings



- **Installation must be carried out by a qualified installer.**

If you install it by yourself, it may cause an electric shock, fire and personal injury, as a result of a system malfunction.

- **Install it in full accordance with the installation manual.**

Incorrect installation may cause an electric shock, fire and personal injury.

- **Electrical work must be carried out by a qualified electrician in accordance with the technical standard for electrical equipment, the indoor wiring standard and this installation manual.**

Incorrect installation may cause an electric shock, fire and personal injury.

- **Use the specific cables for wiring. And connect all the cables to terminals or connectors securely and clamp them with cable clamps in order for external forces not to be transmitted to the terminals directly.**

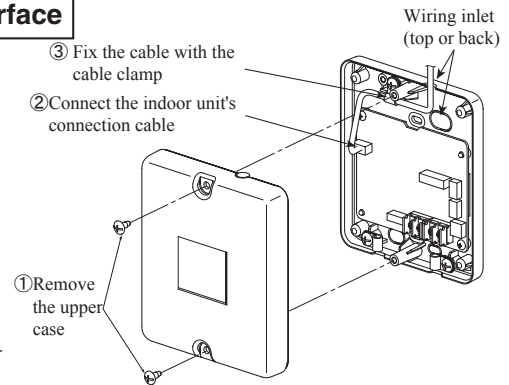
Incomplete connection may cause malfunction, and lead to heat generation and fire.

- **Use the original accessories and specified components for installation.**

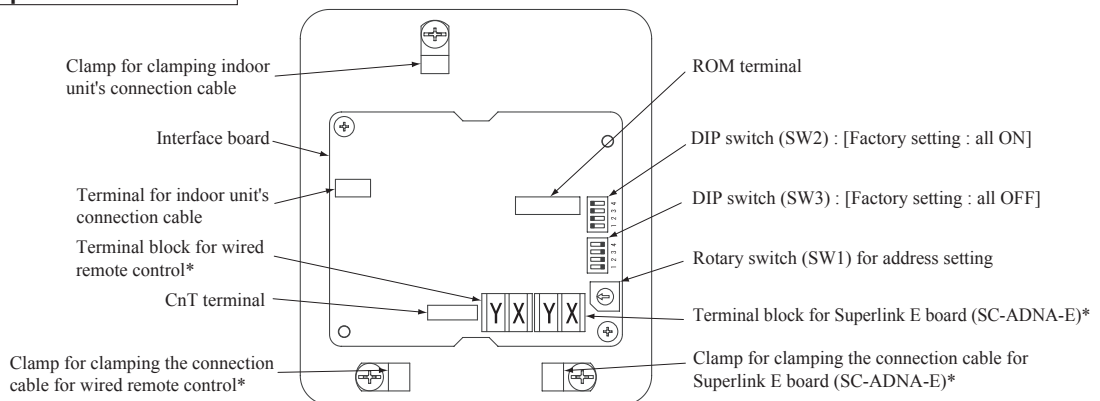
If the parts other than those prescribed by us are used, it may cause an electric shock, fire and personal injury.

#### Connecting the indoor unit's connection cable to the interface

- Remove the upper case of the interface.
  - Remove 2 screws from the interface casing before removal of upper casing.
- Connect the indoor unit's connection cable to the interface.
  - Connect the connector of the indoor unit connection cable to the connector on the interface's circuit board.
- Fix the indoor unit's connection cable with the cable clamp.
  - Cable can be brought in from the top or from the back.
  - Cut out the punch-outs for the connection cables running into the casing with cutter.
- Connect the indoor unit's connection cable to the indoor control PCB.
  - Connect the indoor unit's connection cable to the indoor control PCB securely.
  - Clamp the connection cable to the indoor control box securely with the cable clamp provided as an accessory.
  - Regarding the cable connection to the indoor unit, refer to the installation manual for indoor unit.



#### Name of each part of the interface



\*Either the connection cables of Superlink E board (SC-ADNA-E) or of wired remote control is connectable.

Switch	Setting	Function	Switch	Setting	Function
SW2-1	ON**	CnT level input	SW2-3	ON**	External input (CnT input)
	OFF	CnT pulse input		OFF	Operation permission/prohibition (CnT input)
SW2-2	ON**	Wired remote control : Enable	SW2-4	ON**	Annual cooling : Enable***
	OFF	Wired remote control : Disable		OFF	Annual cooling : Disable***

\*\* Factory setting

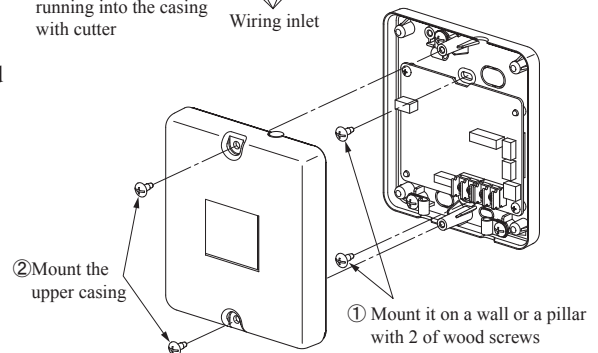
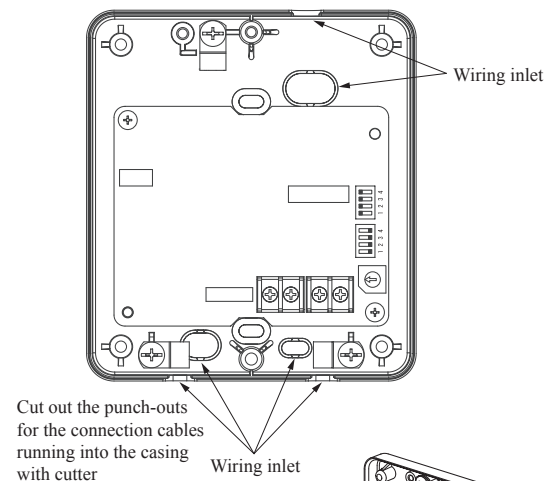
\*\*\* Indoor fan control at low outdoor air temperature in cooling

## Installation of the interface

- Install the interface within the range of the connection cable length (approximately 1.3m) from the indoor unit.
  - Be sure not to extend the connection cable on site. If the connection cable is extended, malfunction may occur.
  - Fix the interface on the wall, pillar or the like.
- Don't install the interface and wired remote control at the following places.
- Places exposed to direct sunlight
  - Places near heating devices
  - High humidity places
  - Surfaces where are enough hot or cold to generate condensation
  - Places exposed to oil mist or steam directly
  - Uneven surface

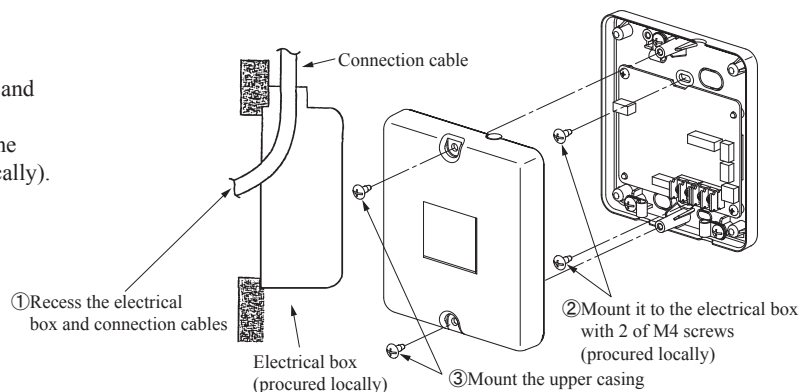
### Mounting the interface directly on a wall

- ① Mount the lower casing of the interface on a flat surface with wood screws provided as standard accessory.
- ② Mount the upper casing.



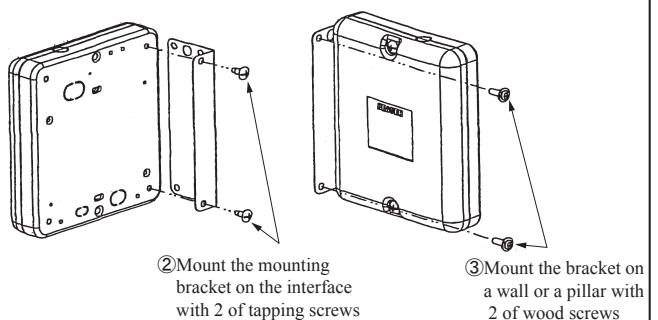
### Recessing the interface in the wall

- ① Recess the electrical box (procured locally) and connection cables in the wall.
- ② Mount the lower casing of the interface to the electrical box with M4 screws (procured locally).
- ③ Mount the upper casing.



### Mounting the interface with the mounting bracket

- ① Mount the upper casing.
- ② Mount the mounting bracket to the interface with tapping screws provided as standard accessory.
- ③ Mount the mounting bracket on wall or the like with wood screws provided as standard accessory.



## Installation check items

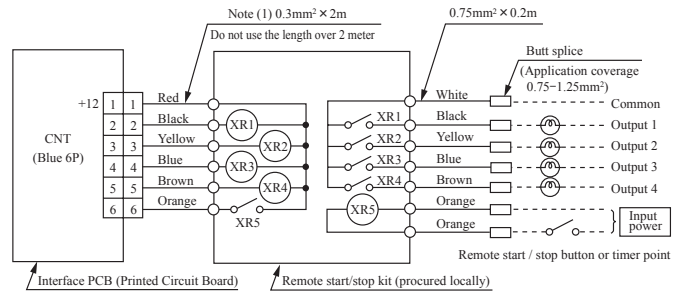
- Are the connection cables connected securely to the terminal blocks and connectors?
- Are the thickness and length of the connection cables conformed with the standard?



### Functions of CnT connector

It is available to operate the air-conditioner and to monitor the operation status with the external control unit (remote display) by sending the input/output signal through CnT connector on the indoor control PCB.

- ① Connect a external remote control unit (procured locally) to CnT terminal.
- ② In case of the pulse input, switch OFF the DIP switch SW2-1 on the interface PCB.
- ③ When setting operation permission/prohibition mode, switch OFF the DIP switch SW2-3 on the interface PCB.



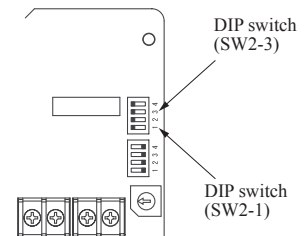
Input/Output	Function	Output signal		Content
		Relay	ON/OFF	
Output 1	Operation output	XR <sub>1</sub>	ON	During air-conditioner operation
Output 2	Heating output	XR <sub>2</sub>	ON	During heating operation
Output 3	Compressor operation output	XR <sub>3</sub>	ON	During compressor running
Output 4	Malfunction output	XR <sub>4</sub>	ON	During anomalous stop

- XR<sub>1-4</sub> are for the DC 12V relay
- XR<sub>5</sub> is a DC 12/24V or AC 220-240V relay
- CnT connector (local) maker, model

Connector	Molex	5264-06
Terminals	Molex	5263T

Input/Output	Function	SW2-1		SW2-3		Air-conditioner	Operation by remote control			
		Setting		Input signal	Content					
Input	External control input	ON*	Level input	ON*		Level	OFF→ON ON→OFF	External input	ON OFF	Allowed
				OFF	Level	OFF→ON ON→OFF	Operation permission Operation prohibition	OFF OFF	Not allowed	
				OFF	Pulse input	ON*	Pulse	OFF→ON		
		OFF	Pulse input	OFF	Level	OFF→ON ON→OFF	Operation permission Operation prohibition	ON OFF	Not allowed	

\* Factory setting



In case of the remote control (RC-EX3 or later model), the external outputs (1 – 4) and the external input can be changed using the function setting of remote control. For the setting method, refer to the installation manual. Also refer to the technical manual to know how it is adapted to the function setting for the external outputs and input, at the indoor unit side.

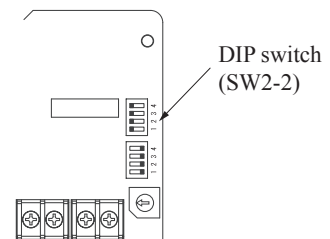
### Connection of Superlink E board

Regarding the connection of Superlink E board, refer to the installation manual of Superlink E board.

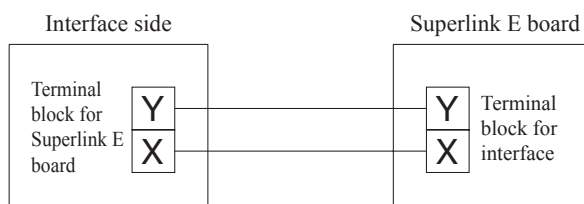
For electrical work, power source for all of units in the Superlink system must be turned OFF.

- ① Switch ON the DIP switch SW2-2 (Factory setting: ON) on the interface PCB.

Caution: Wireless remote control attached to the indoor unit can be used in parallel, after connecting the wired remote control. However, some of functions other than the basic functions such as RUN/STOP, temperature setting, etc. may not work properly and may have a mismatch between the display and the actual behavior.



- ② Wiring connection between the interface and the Superlink E board.



No.	Names of recommended signal wires
1	Shielded wire
2	Vinyl cabtyre round cord
3	Vinyl cabtyre round cable
4	Vinyl insulated wire vinyl sheathed cable for control

Within 200 m 0.5 mm<sup>2</sup> × 2 cores  
 Within 300 m 0.75 mm<sup>2</sup> × 2 cores  
 Within 400 m 1.25 mm<sup>2</sup> × 2 cores  
 Within 600 m 2.0 mm<sup>2</sup> × 2 cores

- ③ Clamp the connection cables with cable clamps.

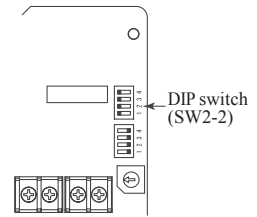
### Connection of wired remote control

Regarding the connection of wired remote control, refer to the installation manual of wired remote control.

- Switch ON the DIP switch SW2-2 (Factory setting : ON) on the interface PCB.

Caution: Wireless remote control attached to the indoor unit can be used in parallel, after connecting the wired remote control. However, some of functions other than the basic functions such as RUN/STOP, temperature setting, etc. may not work properly and may have a mismatch between the display and the actual behavior.

- Wiring connection between the interface and the wired remote control.



#### Installation and wiring of wired remote control

- Install the wired remote control with reference to the attached installation manual of wired remote control.
- 0.3mm<sup>2</sup> × 2 cores cable should be used for the wiring of wired remote control.
- Maximum length of wiring is 600m.

If the length of wiring exceeds 100m, change the size of cable as mentioned below.

100m-200m: 0.5mm<sup>2</sup> × 2 cores, 300m or less: 0.75mm<sup>2</sup> × 2 cores, 400m or less: 1.25mm<sup>2</sup> × 2 cores, 600m or less: 2.0mm<sup>2</sup> × 2 cores

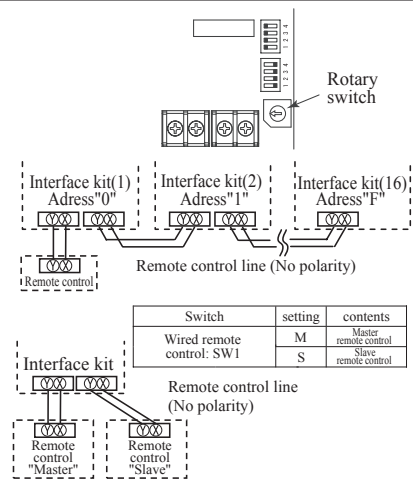
However, cable size connecting to the terminal of wired remote control should not exceed 0.5mm<sup>2</sup>. Accordingly if the size of connection cable exceeds 0.5mm<sup>2</sup>, be sure to downsize it to 0.5mm<sup>2</sup> at the nearest section of the wired remote control and waterproof treatment should be done at the connecting section in order to avoid contact failure.

- Don't use the multi-core cable to avoid malfunction.
  - Keep the wiring of wired remote control away from grounding (Don't touch it to any metal frame of building, etc.).
  - Connect the connection cables to the terminal blocks of the wired remote control and the interface securely (No polarity).
- Clamp the connection cables with cable clamps.

#### Control of multiple units by a single wired remote control

Multiple units (up to 16) can be controlled by a single wired remote control. In this case, all units connected with a single wired remote control will operate under the same mode and same setting temperature.

- Connect all the interface with 2 cores cables of wired remote control line.
- Set the address of indoor unit for remote control communication from "0" to "F" with the rotary switch SW1 on the interface PCB.
- After turning the power ON, the address of indoor unit can be displayed by pressing [AIR CON No.] button on the wired remote control. Make sure all indoor units connected are displayed in order by pressing [▲] or [▼] button.



#### Master/Slave setting wired when 2 of wired remote control are used

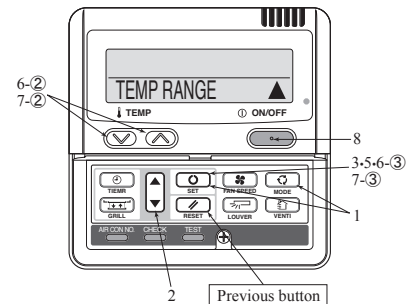
Maximum two wired remote control can be connected to one indoor unit (or one group of indoor units)

- Set the DIP switch SW1 on the wired remote control to "Slave" for the slave remote control. (Factory setting : Master)  
 ○ Caution : Remote control sensor of the slave remote control is invalid.

- When using the wireless remote control in parallel with the wired remote control; Since temperature setting range of wired remote control is different from that of wireless remote control, please adjust the setting range of wired remote control to be the same setting range of wireless remote control by following procedure. (The set temperature may not be displayed correctly on the wireless remote control, unless change of temperature setting range is done.) Changing procedure of temperature setting range is as follows.

#### How to set upper and lower limit of temperature setting range

- Stop the air-conditioner, and press [○] (SET) and [◀] (MODE) button at the same time for 3 seconds or more.  
The indication changes to "FUNCTION SET ▼"
- Press [▼] button once, and change to the "TEMP RANGE ▲" indication.
- Press [○] (SET) button, and enter the temperature range setting mode.
- Confirm that the "Upper limit ▼" is shown on the display.
- Press [○] (SET) button to fix.
- Indication: "UPPER 28°C ▼ ▲"
  - Select the upper limit value 30°C with temperature setting button [▲]. "UPPER 30°C ▼" (blinking)
  - Press [○] (SET) button to fix. "UPPER 30°C" (Displayed for two seconds)  
After the fixed upper limit value displayed for two seconds, the indication will return to "UPPER LIMIT ▼".
- Press [▼] button once, "LOWER LIMIT ▲" is selected, press [○] (SET) button to fix.
  - Indication: "LOWER 20°C ▼ ▲"
  - Select the lower limit value 18°C with temperature setting button [▼]. "LOWER 18°C ▲" (blinking)
  - Press [○] (SET) button to fix. "LOWER 18°C" (Displayed for two seconds)  
After the fixed lower limit value displayed for two seconds, the indication will return to "LOWER LIMIT ▼"
- Press [ON/OFF] button to finish.  
Temperature setting range

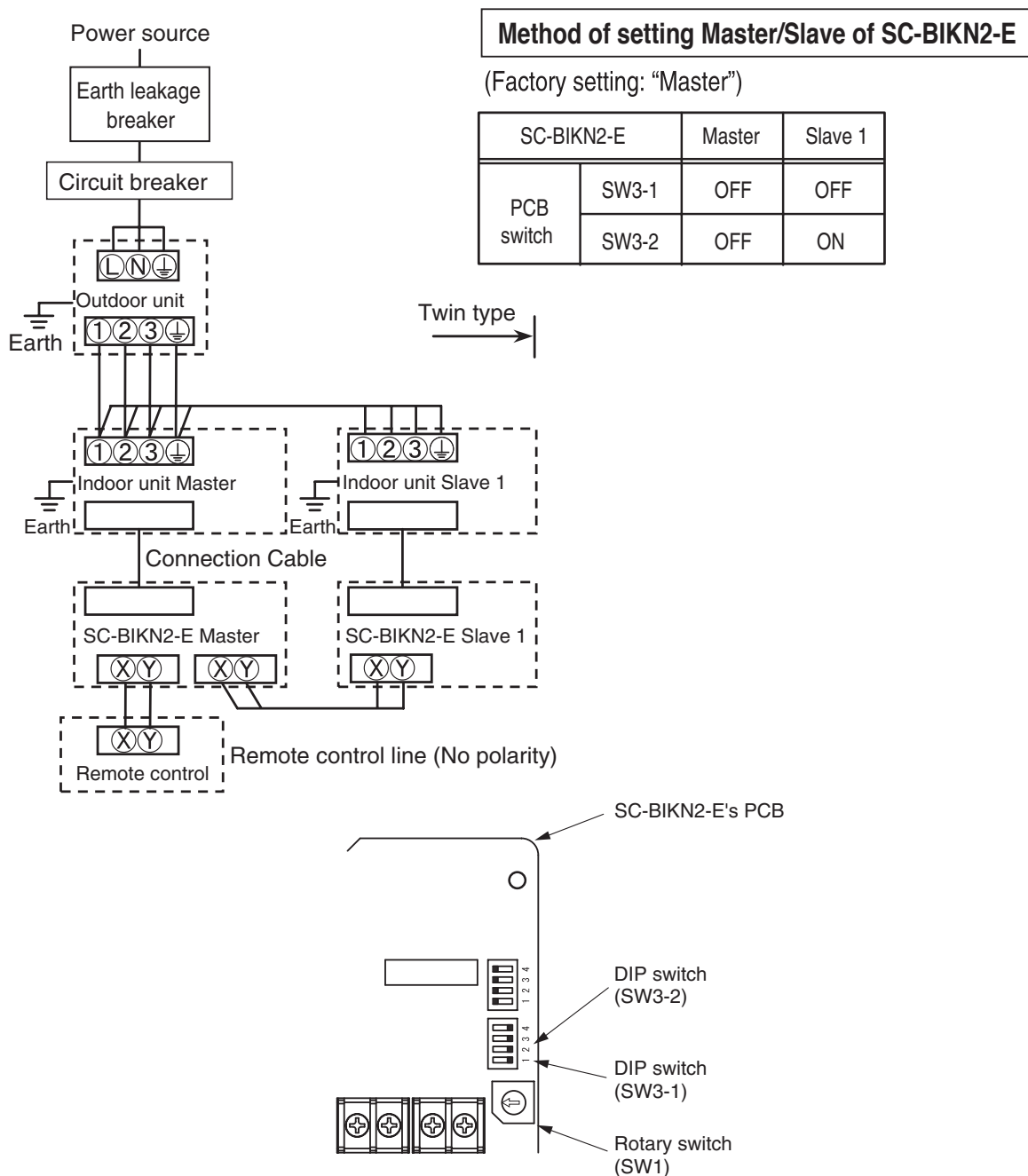


- It is possible to quit in the middle by pressing [ON/OFF] button, but the change of setting is incompleated.
- During setting, if pressing [RESET] button, it returns to the previous screen.

Mode	Temperature setting range
Cooling, Heating, Dry, Auto	18-30°C


### 4.3.1 Cable connection for SRK twin installation

- ① Connect the same pairs number of terminal block "①,②,and ③" and "ⓧ and Ⓨ" between master and slave indoor units.
- ② Do the same address setting of all inside units belong to same refrigerant system by rotary switch SW1 on SC-BIKN2-E's PCB (Printed circuit board).
- ③ Set slave indoor unit as "slave 1" by address switch SW3-1, 3-2 on SC-BIKN2-E's PCB.
- ④ When 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.



RKZ012A092

# 4.4 SUPERLINK E BOARD (SC-ADNA-E)

PJZ012D029K 

- Read and understand the instructions completely before starting installation.
- Refer to the instructions for both indoor and outdoor units.

## Safety precautions

- Carefully read “Safety precautions” first. Follow the instructions for installation.
- Precautions are grouped into “Warning⚠” and “Caution⚠”. The “Warning⚠” group includes items that may lead to serious injury or death if not observed. The items included in the “Caution⚠” group also may lead to serious results under certain conditions. Both groups are crucial for safety installation. Read and understand them carefully.
- After installation, conduct the test operation of the device to check for any abnormalities. Describe how to operate the device to the customer following the installation instruction manual. Instruct the customer to keep this installation instruction for future reference.

**⚠ Warning**

- This device should be installed by the dealer where you purchase the device or a licensed professional shop. If the device is incorrectly installed by the customer, it may result in electric shock or fire.
- Install the device carefully following the installation instruction. If the device is incorrectly installed, it may result in electric shock or fire.
- Use the accessory parts and specified parts for installation. If any parts that do not match the specifications are used, it may result in electric shock or fire.
- A person with the electrical service certification should conduct the service based on the “Technical standards for electrical facilities”, “Electrical Wiring Code”, and the installation instruction. If the work is done incorrectly, it may result in electric shock or fire.
- Wiring should be securely connected using the specified types of wire. No external force on the wire should be applied to any terminals. If a secure connection is not achieved, it may result in electric shock or fire.

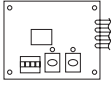
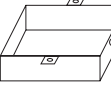
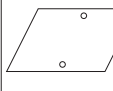
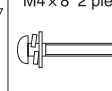
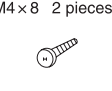

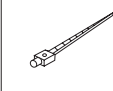

**⚠ Caution**

- Provide ground connection.  
The ground line should never be connected to the gas supply piping, the water supply piping, the lightning conductor rod, nor the telephone ground. If the grounding is improper, it may result in electric shock.
- Do not install the device in the following locations.
  1. Where there is mist/spray of oil or steam such as kitchens.
  2. Where there is corrosive gases such as sulfurous acid gas.
  3. Where there is a device generating electromagnetic waves.  
These may interfere with the control system resulting in the device becoming uncontrollable.
  4. Where flammable volatile materials such as paint thinner and gasoline may exist or where they are handled. This may cause a fire.

### 1 Application

Indoor-to-outdoor three core communication specification type 3 (since October 2007)

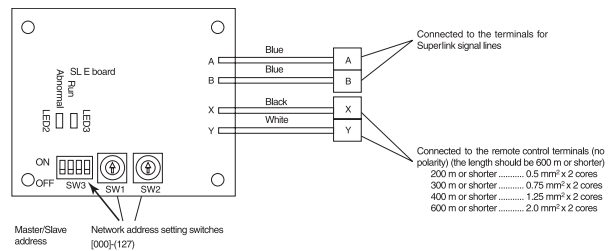
### 2 Accessories

SL E board 	Metal box 	Metal cover 	Screw for ground M4 x 8 2 pieces 
Pan head screws M4 x 8 2 pieces 	Locking supports To secure the print board and the metal box Made of nylon 4 pieces 	Binding band 	Grommet 

### 5 Connection outline

Note for setting the address

- Set the address between 00 and 47 for the previous Superlink connection and between 000 and 127 for the new Superlink connection. (\*1)
- Do not set the address overlapping with those of the other devices in the network. (The default is 000)



(\*1) Whether the actual link is either the new Superlink or the previous Superlink depends on the models of the connected outdoor and indoor units. Consult the agent or the dealer.

### 3 Function

Allowing the central control SL1N-E, SL2NA-E, and SL4-AE/BE to control and monitor the commercial air-conditioner unit.

### 4 Control switching

Settings can be changed by the DIP switch SW3 on the SL E board as in the following.

Switch	Symbol	Switch	Remarks
SW3	1	ON	Master
		OFF (default)	Slave
	2	ON	Fixed previous protocol
		OFF (default)	Automatic adjustment of Superlink protocol
	3	ON	Indicates the forced operation stop when abnormality has occurred.
		OFF (default)	Indicates the status of running/stop as it is, when abnormality has occurred.
	4	ON	The hundredth address activated “1”
		OFF (default)	The hundredth address activated “0”

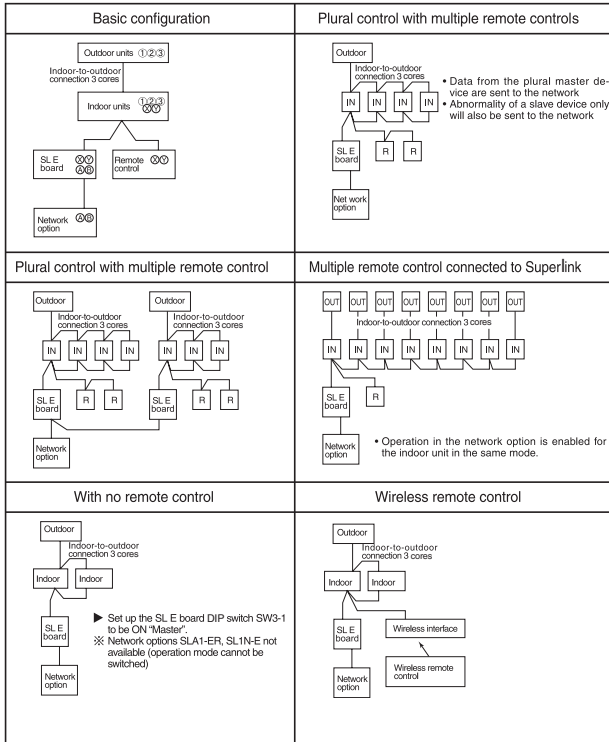
#### Signal line specification

Communication method	Previous Superlink	New Superlink
Line type	MVVS	MVVS
Line diameter	0.75 - 1.25mm <sup>2</sup>	0.75/1.25mm <sup>2</sup>
Signal line (total length)	up to 1000m	up to 1500/1000m (*2)
Signal line (maximum length)	up to 1000m	up to 1000m

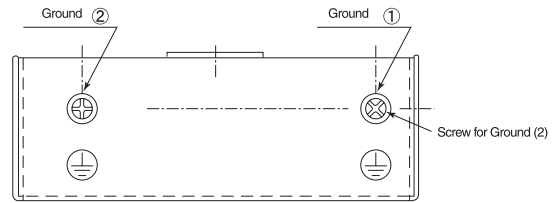
(\*2) Up to 1500 m for 0.75 mm<sup>2</sup>, and up to 1000 m for 1.25 mm<sup>2</sup>. Do not use 2.0 mm<sup>2</sup>. It may cause an error.

(\*3) Connect grounding on both ends of the shielding wire. For the grounding method, refer to the section “[6](#) Installation”.

- (1) Set the Superlink network address with SW1 (tens place), SW2 (ones place), and SW3 (hundreds place).
- (2) Set the SL E board SW3-1 to be ON (Master) when using this without any remote control (no wired remote controller nor wireless remote control).
- (3) Set up the plural master/slave device using the DIP switches on the indoor unit board.
- (4) Set up the remote control master/slave device using the slide switch on the remote control board.
- (5) Set up "0" to "F" using the address rotary switch on the indoor unit board when controlling the indoor unit with the multiple remote control.

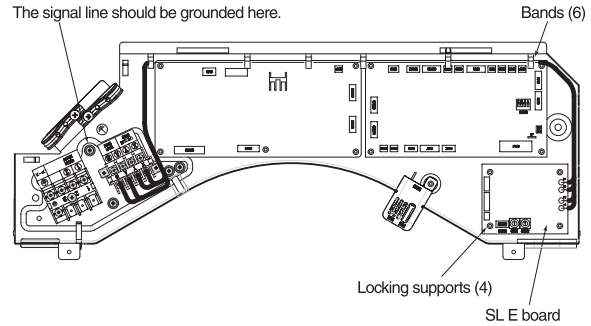


Connect grounding. Connect grounding for the power line to Ground ①, and grounding for the signal line to Ground ② or to the Ground on the indoor unit control box.



2. When connecting to the indoor unit control box (ceiling-concealed type and FDT type only):

- (1) Mount the SL E board in the control box using the locking supports.
- (2) Remove 6 bands from the box and put the wiring through the bands to be secured.



Electrical shock hazard make sure to turn the power off for servicing. Be cautious so that no abnormal force should be applied to the wiring. Do not let the SL E board hung by the wiring. Do not damage the board with a screwdriver. The board is sensitive to static electricity. Release the static electricity of your body before servicing. (You can do this by touching the control board which is grounded).

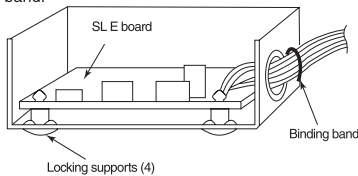
**Location of installation**

Install the device at the location where there are no electromagnetic waves nor where there is water and dust. The specified temperature range of the device is 0 to 40°C. Install the device at the location where the ambient temperature stays within the range. If it exceeds the specification, make sure to provide solution such as installing a cooling fan. When used outside of the range, it may cause abnormal operation.

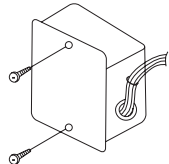
**6 Installation**

1. When using the metal box (mounted on the indoor unit / mounted on the back of the remote control):

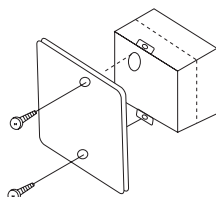
- (1) Mount the SL E board in the metal box using the locking supports.
- (2) Wiring should go through the provided grommet since then through the wiring to the hole on the Metal box. Secure the grommet after inserting the grommet into the Metal box as shown in below figure, then tie the wiring at the outlet of the unit using a binding band.



▲ When installed outside the indoor unit, put the metal cover on.



▲ When installed on the back of the remote control, mount it directly on the remote control bottom case.



**7 Indicator display**

Check the LED 3 (green) and LED 2 (red) on the SL E board for flashing.

SL E board LEDs		Inspection mode	Display on the integrated network control device
Red	Green		
Off	Flashing	Normal communication	
Off	Off	<ul style="list-style-type: none"> <li>Disconnection in the remote control communication line (X or Y)</li> <li>Short-circuit in the remote control communication line (between X and Y)</li> <li>Faulty indoor unit remote control power</li> <li>Faulty remote control communication circuit</li> <li>Faulty CPU on SL E board</li> </ul>	No corresponding unit number
One flash	Flashing	<ul style="list-style-type: none"> <li>Disconnection in the Superlink signal line (A or B)</li> <li>Short-circuit in the Superlink signal line (between A and B)</li> <li>Faulty Superlink signal circuit</li> </ul>	
Two flashes	Flashing	<ul style="list-style-type: none"> <li>Faulty address setting for the SL E board (Set up the address for previous SL E board : more than 48 new SL E board : more than 128)</li> </ul>	
Three flashes	Flashing	<ul style="list-style-type: none"> <li>SL E board parent not set up when used without a remote control</li> <li>Faulty remote control communication circuit</li> </ul>	E1
Four flashes	Flashing	<ul style="list-style-type: none"> <li>Address overlapping for the SL E board and the Superlink network connected indoor unit</li> </ul>	E2
Off	Flashing	<ul style="list-style-type: none"> <li>Number of connected devices exceeds the specification for the multiple indoor unit control</li> </ul>	E10

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# **INVERTER PACKAGED AIR-CONDITIONERS**

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