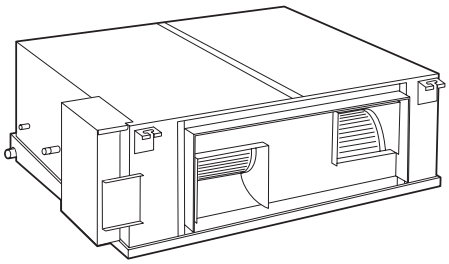
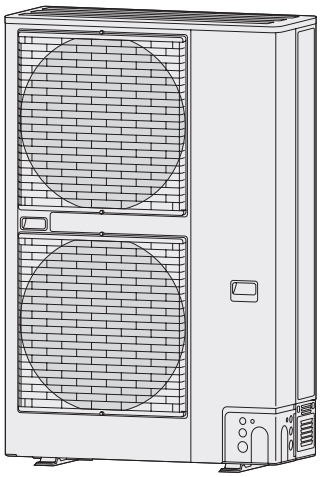
Panasonic

Order No. SBPAC1607004CE

TECHNICAL DATA & SERVICE MANUAL

R410A

DC Inverter

Indoor Unit	Outdoor Unit
	
Type E2 S-200PE2E5, S-250PE2E5	U-200PE2E8A, U-250PE2E8A

85464849352000

REFERENCE NO. SM830252-00

IMPORTANT!
Please Read Before Starting

This air conditioner must be installed by the sales dealer or installer.
This information is provided for use only by authorized persons.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- This air conditioner shall be installed in accordance with National Wiring Regulations.
- Pay close attention to all warning and caution notices given in this manual.

⚠ **WARNING** This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

⚠ **CAUTION** This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help
These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation
The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

⚠ WARNING When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system.
  Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death.**
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Provide a power outlet to be used exclusively for each unit.
- Provide a power outlet exclusively for each unit, and full disconnection means having a contact separation in all poles must be incorporated in the fixed wiring in accordance with the wiring rules.
- To prevent possible hazards from insulation failure, the unit must be grounded.
- This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD). Otherwise, it may cause electrical shock and fire in case of equipment breakdown or insulation breakdown.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing…

Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.

…In a Room
Properly insulate any tubing run inside a room to prevent “sweating” that can cause dripping and water damage to walls and floors.

⚠ **CAUTION** Keep the fire alarm and the air outlet at least 1.5 m away from the unit.

…In Moist or Uneven Locations
Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

…In an Area with High Winds
Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

…In a Snowy Area (for Heat Pump-type Systems)
Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

…At least 2.5 m
Indoor unit of this air conditioner shall be installed in a height of at least 2.5 m.

…In laundry rooms
Do not install in laundry rooms. Indoor unit is not drip proof.

When Connecting Refrigerant Tubing

⚠WARNING

- When performing piping work do not mix air except for specified refrigerant (R410A) in refrigeration cycle. It causes capacity down, and risk of explosion and injury due to high tension inside the refrigerant cycle.
- Refrigerant gas leakage may cause fire.
- Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury, etc.

- Ventilate the room well, in the event that is refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of poisonous gas.
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.
- Do not leak refrigerant while piping work for an installation or re-installation, and while repairing refrigeration parts. Handle liquid refrigerant carefully as it may cause frostbite.

When Servicing

- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.

- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

⚠WARNING

- This product must not be modified or disassembled under any circumstances. Modified or disassembled unit may cause fire, electric shock or injury.
- Do not clean inside the indoor and outdoor units by users. Engage authorized dealer or specialist for cleaning.
- In case of malfunction of this appliance, do not repair by yourself. Contact the sales dealer or service dealer for repair.

⚠CAUTION

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.

- Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.
- Confirm after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of poisonous gas.

Others

⚠CAUTION

- Do not sit or step on the unit, you may fall down accidentally.

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.

- Do not stick any object into the FAN CASE.
  You may be injured and the unit may be damaged.

Check of Density Limit

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its density will not exceed a set limit.

The refrigerant (R410A), which is used in the air conditioner, is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws imposed to protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its density should rise excessively. Suffocation from leakage of refrigerant is almost non-existent. With the recent increase in the number of high density buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, and energy conservation by curtailing heat and carrying power, etc.
Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared to conventional individual air conditioners. If a single unit of the multi air conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its density does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).
In a room where the density may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device. The density is as given below.

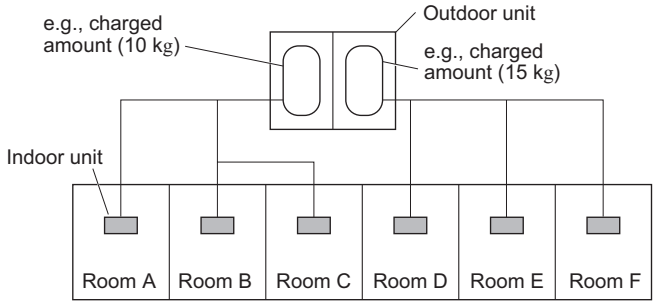
$$\frac{\text{Total amount of refrigerant (kg)}}{\text{Min. volume of the indoor unit installed room (m}^3\text{)}} \leq \text{Density limit (kg/m}^3\text{)}$$

The density limit of refrigerant which is used in multi air conditioners is 0.3 kg/m^3 (ISO 5149).

NOTE

1. If there are 2 or more refrigerating systems in a single refrigerating device, the amount of refrigerant should be as charged in each independent device.

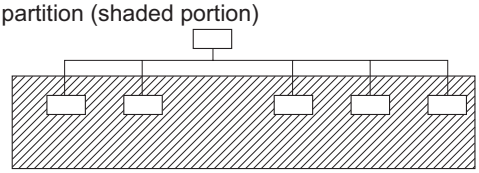
   For the amount of charge in this example:



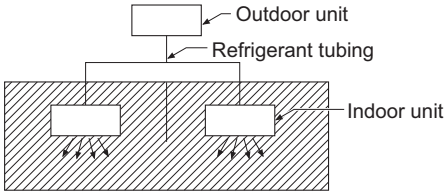
   The possible amount of leaked refrigerant gas in rooms A, B and C is 10 kg.
   The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

2. The standards for minimum room volume are as follows.

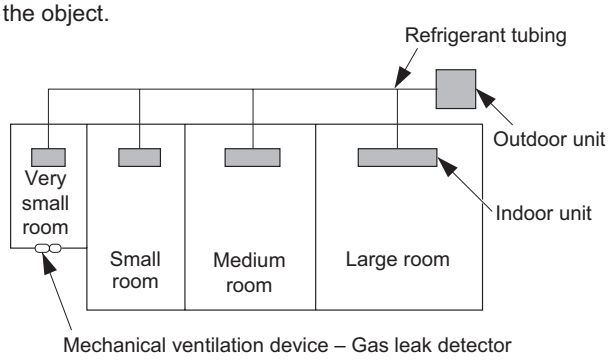
(1) No partition (shaded portion)



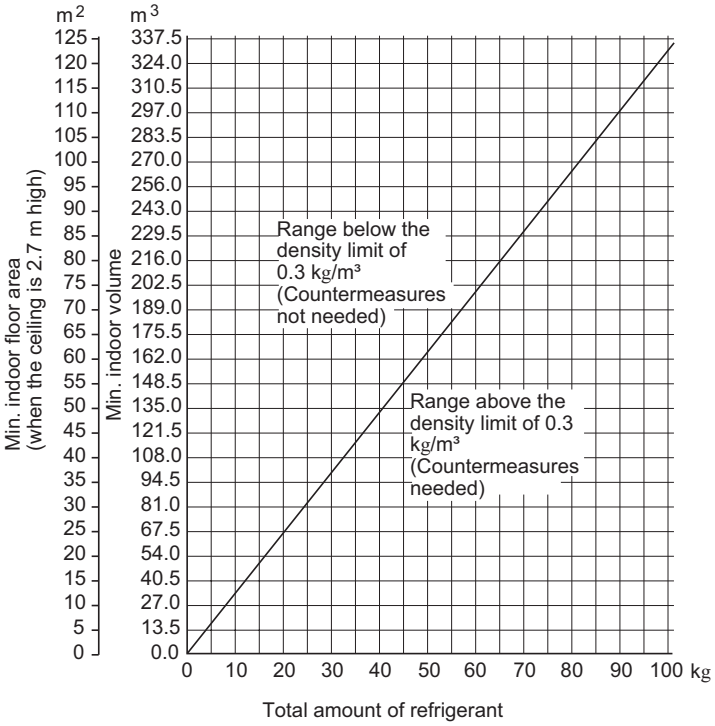
(2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).



(3) If an indoor unit is installed in each partitioned room and the refrigerant tubing is interconnected, the smallest room of course becomes the object. But when mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



3. The minimum indoor floor space compared with the amount of refrigerant is roughly as follows: (When the ceiling is 2.7 m high)



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1. SPECIFICATIONS

Single-Type

1-1. Unit Specifications

High Static Pressure Ducted Type S-200PE2E5 / U-200PE2E8A

INDOOR		MODEL	S-200PE2E5								
PANEL		MODEL	-								
OUTDOOR		MODEL				U-200PE2E8A					
Branch pipe		MODEL	-								
Performance test condition			ISO13253 / EN14511 / EN12102								
Power supply		Ø, Hz	1Ø 50Hz			3Ø 50Hz					
		V	220V	230V	240V	380V	400V	415V	Min	Max	
COOLING	Capacity	kW	19.5	19.5	19.5				5.4	22.4	
		BTU/h	66500	66500	66500				18400	76400	
	Current	A	1.95	1.90	1.85	9.75	9.35	9.00	-	-	
	Input power	W	305	305	305	5.965k	5.965k	5.965k	-	-	
		TOTAL W		-		6.270k	6.270k	6.270k	-	-	
	Annual consumption	TOTAL kWh *4	-	-	-	-	3135	-	-	-	
	EER/EER CLASS	TOTAL (W/W) *5 / ("A"~"G")	-	-	-	3.11	3.11/B	3.11	-	-	
	Erp *6 Pdesign	kW	-	-	-	-	-	-			
	Erp *6 SEER	(W/W)	-	-	-	-	-	-			
	Erp *6 Annual consumption	kWh	-	-	-	-	-	-			
	Erp *6 Class		-	-	-	-	-	-			
	Power factor	%	-	-	-	93	92	92			
	Noise indoor	dB-A (H/M/L)	43/41/38								
		Power Level dB	75/73/70								
	Noise outdoor	dB-A (H/L)				60/-					
		Power Level dB				78/-					
HEATING	Capacity	kW	22.4	22.4	22.4				5.6	25.0	
		BTU/h	76400	76400	76400				19100	85300	
	Current	A	1.95	1.90	1.85	9.85	9.45	9.10	-	-	
	Input power	W	305	305	305	6.015k	6.015k	6.015k	-	-	
		TOTAL W		-		6.320k	6.320k	6.320k	-	-	
	COP/COP CLASS	TOTAL (W/W) *5/ ("A"~"G")	-	-	-	3.54	3.54/B	3.54	-	-	
	Erp *6 Pdesign at -10°C	kW	-	-	-	-	-	-			
	Erp *6 Tbivalent	°C	-	-	-	-	-	-			
	Erp *6 SCOP	(W/W)	-	-	-	-	-	-			
	Erp *6 Annual consumption	kWh	-	-	-	-	-	-			
	Erp *6 Class		-	-	-	-	-	-			
	Power factor	%	-	-	-	93	92	92			
	Noise indoor	dB-A (H/M/L)	43/41/38			-					
		Power Level dB	75/73/70			-					
	Noise outdoor	dB-A (H/L)	-			62/-					
		Power Level dB	-			80/-					
EXTRA LOW TEMP	Total capacity(kW)/Input power(W)/COP		-								
Max Current(A) / Max Input power(W)			6.90/1.27k	6.60/1.27k	6.30/1.27k	20.0/12.2k	20.0/12.8k	20.0/13.2k	/		
Startring current(A) / Comp output(W)			-	-	-	9.85/4.2k	9.45/4.2k	9.10/4.2k	/		
Network Impedance(ΩMAX.)			-			-					
Fan motor output (Indoor/Outdoor) W			560			120 × 2			/		
Moisture removal volume		L/h(Pt/h)	11.1 (23.3)			-					
External static pressure		Pa	60 / (140/270)								
Indoor Air flow	Cooling	m^3/min (m^3/h) (H/M/L)	56/51/44 (3360/3060/2640)								
	Heating	m^3/min (m^3/h) (H/M/L)	56/51/44 (3360/3060/2640)								
Outdoor Air flow	Cooling	m^3/min (m^3/h)				164 (9840)					
	Heating	m^3/min (m^3/h)				164 (9840)					
Refrigerrant type / amount g(oz)						R410A 56.0k (197.5)			/		
Product dimension		Height mm(inch)	479 (18-27/32)			1500 (59-1/16)			/		
		Width mm(inch)	1453 (57-7/32)			980 (38-37/64)			/		
		Depth mm(inch)	1205 (47-7/16)			370 (14-9/16)			/		
Packing dimension		Height mm(inch)	614 (24-3/16)			1642 (64-41/64)			/		
		Width mm(inch)	1536 (60-15/32)			1095 (43-7/64)			/		
		Depth mm(inch)	1339 (52-23/32)			529 (20-53/64)			/		
Weight		(NET) kg(lb)	100 (221)			127 (280)			/		
		(GROSS) kg(lb)	132 (291)			139 (306)			/		
Layers limit (actually)			4 (5)			1 (2)					
Operation condition		Cool (DBT)	18°C ~ 32°C			-15°C ~ 46°C					
		Heat (DBT)	16°C ~ 30°C			-20°C ~ 24°C					
PIPING	Pipe diameter mm (inch)		(Liquid)Ø9.52(3/8) (Gas)Ø25.4(1)			(Liquid)Ø9.52(3/8) (Gas)Ø25.4(1)					
	Connecting method, Standard length m (ft)		(Liquid)&(Gas)brazing connection, 7.5(24.6)			(Liquid)flared type (Gas)brazing connection, 7.5(24.6)					
	Pipe length range m (ft)		5~120m (16.4~393.7)								
	Indoor unit & Outdoor unit height difference m (ft)		30m(Outdoor unit located lower)/30m(Outdoor unit located higher) (98.4/98.4)								
	Add gas amount g/m (oz/ft)		(Liquid)Ø9.52(3/8): 50g (0.54)								
	Pipe length for additional gas m (ft)		30m (98.4)								

*1 In case it is necessary to indicate the air flow volume in (l/s), the value in (m^3/min.) shall be multiplied by 16.7 and rounded down the decimal point.
*2 If the EUROVENT Certified models can be operated under the "extra-low" temperature condition, -7°C dry bulb and -8°C wet-bulb temperatures with rated voltage 230V shall be used.
*3 Network Impedance shall be applicable for EUROPE and CHINA models.
*4 The annual consumption is calculated by multiplying the input power at 230V(400V) by an average of 500 hours per year in cooling mode.
*5 EER and COP classification is at 230V(400V) only in accordance with EU directive 2002/31/EC.
*6 SEER and SCOP classification is at 230V(400V) only in accordance with EN-14825. For heating, SCOP indicates the value of only Average heating season, Other fiche data indicates in an attached sheet.

Single-Type

High Static Pressure Ducted Type S-250PE2E5 / U-250PE2E8A

INDOOR		MODEL	S-250PE2E5								
PANEL		MODEL	-								
OUTDOOR		MODEL				U-250PE2E8A					
Branch pipe		MODEL	-								
Performance test condition			ISO13253 / EN14511 / EN12102								
Power supply		Ø, Hz	1Ø 50Hz			3Ø 50Hz					
		V	220V	230V	240V	380V	400V	415V	Min	Max	
COOLING	Capacity	kW	25.0	25.0	25.0				6.3	28.0	
		BTU/h	85300	85300	85300				21500	95500	
	Current	A	3.30	3.20	3.10	13.0	12.5	12.0	-	-	
	Input power	W	560	560	560	8.040k	8.040k	8.040k	-	-	
		TOTAL W		-		8.600k	8.600k	8.600k	-	-	
	Annual consumption	TOTAL kWh *4	-	-	-	-	4300	-	-	-	
	EER/EER CLASS	TOTAL (W/W) *5 / ("A"~"G")	-	-	-	2.91	2.91/C	2.91	-	-	
	Erp *6 Pdesign	kW	-	-	-	-	-	-			
	Erp *6 SEER	(W/W)	-	-	-	-	-	-			
	Erp *6 Annual consumption	kWh	-	-	-	-	-	-			
	Erp *6 Class		-	-	-	-	-	-			
	Power factor	%	-	-	-	94	93	93			
	Noise indoor	dB-A (H/M/L)	47/45/42								
		Power Level dB	79/77/74								
	Noise outdoor	dB-A (H/L)				61/-					
		Power Level dB				80/-					
HEATING	Capacity	kW	28.0	28.0	28.0				7.1	31.5	
		BTU/h	95500	95500	95500				24200	107500	
	Current	A	3.30	3.20	3.10	11.5	11.1	10.7	-	-	
	Input power	W	560	560	560	7.140k	7.140k	7.140k	-	-	
		TOTAL W		-		7.700k	7.700k	7.700k	-	-	
	COP/COP CLASS	TOTAL (W/W) *5/ ("A"~"G")	-	-	-	3.64	3.64/A	3.64	-	-	
	Erp *6 Pdesign at -10°C	kW	-	-	-	-	-	-			
	Erp *6 Tbivalent	°C	-	-	-	-	-	-			
	Erp *6 SCOP	(W/W)	-	-	-	-	-	-			
	Erp *6 Annual consumption	kWh	-	-	-	-	-	-			
	Erp *6 Class		-	-	-	-	-	-			
	Power factor	%	-	-	-	94	93	93			
	Noise indoor	dB-A (H/M/L)	47/45/42			-					
		Power Level dB	79/77/74			-					
	Noise outdoor	dB-A (H/L)	-			63/-					
		Power Level dB	-			82/-					
EXTRA LOW TEMP	Total capacity(kW)/Input power(W)/COP		-								
Max Current(A) / Max Input power(W)			7.30/1.66k	7.30/1.74k	7.30/1.81k	20.0/12.4k	20.0/12.9k	20.0/13.4k	/		
Startring current(A) / Comp output(W)			-	-	-	13.0/5.5k	12.5/5.5k	12.0/5.5k	/		
Network Impedance(ΩMAX.)			-			-					
Fan motor output (Indoor/Outdoor) W			750			120 × 2			/		
Moisture removal volume		L/h(Pt/h)	13.9 (29.2)			-					
External static pressure		Pa	72 / (140/270)								
Indoor Air flow	Cooling	m^3/min (m^3/h) (H/M/L)	72/63/53 (4320/3780/3180)								
	Heating	m^3/min (m^3/h) (H/M/L)	72/63/53 (4320/3780/3180)								
Outdoor Air flow	Cooling	m^3/min (m^3/h)				160 (9600)					
	Heating	m^3/min (m^3/h)				160 (9600)					
Refrigerrant type / amount g(oz)						R410A 6.4k (225.8)			/		
Product dimension		Height mm(inch)	479 (18-27/32)			1500 (59-1/16)			/		
		Width mm(inch)	1453 (57-7/32)			980 (38-37/64)			/		
		Depth mm(inch)	1205 (47-7/16)			370 (14-9/16)			/		
Packing dimension		Height mm(inch)	614 (24-3/16)			1642 (64-41/64)			/		
		Width mm(inch)	1536 (60-15/32)			1095 (43-7/64)			/		
		Depth mm(inch)	1339 (52-23/32)			529 (20-53/64)			/		
Weight		(NET) kg(lb)	104 (230)			138 (304)			/		
		(GROSS) kg(lb)	136 (300)			150 (331)			/		
Layers limit (actually)			4 (5)			1 (2)					
Operation condition		Cool (DBT)	18°C ~ 32°C			-15°C ~ 46°C					
		Heat (DBT)	16°C ~ 30°C			-20°C ~ 24°C					
PIPING	Pipe diameter mm (inch)		(Liquid)Ø12.7(1/2) (Gas)Ø25.4(1)			(Liquid)Ø12.7(1/2) (Gas)Ø25.4(1)					
	Connecting method, Standard length m (ft)		(Liquid)flared type (Gas)brazing connection, 7.5(24.6)			(Liquid)flared type (Gas)brazing connection, 7.5(24.6)					
	Pipe length range m (ft)		5~120m (16.4~393.7)								
	Indoor unit & Outdoor unit height difference m (ft)		30m(Outdoor unit located lower)/30m(Outdoor unit located higher) (98.4/98.4)								
	Add gas amount g/m (oz/ft)		(Liquid)Ø12.7(1/2): 80g (0.860)								
	Pipe length for additional gas m (ft)		30m (98.4)								

*1 In case it is necessary to indicate the air flow volume in (l/s), the value in (m^3/min.) shall be multiplied by 16.7 and rounded down the decimal point.
*2 If the EUROVENT Certified models can be operated under the "extra-low" temperature condition, -7°C dry bulb and -8°C wet-bulb temperatures with rated voltage 230V shall be used.
*3 Network Impedance shall be applicable for EUROPE and CHINA models.
*4 The annual consumption is calculated by multiplying the input power at 230V(400V) by an average of 500 hours per year in cooling mode.
*5 EER and COP classification is at 230V(400V) only in accordance with EU directive 2002/31/EC.
*6 SEER and SCOP classification is at 230V(400V) only in accordance with EN-14825. For heating, SCOP indicates the value of only Average heating season, Other fiche data indicates in an attached sheet.

1-2. Major Component Specifications

(A) Indoor Units

High Static Pressure Ducted Type S-200PE2E5

MODEL No.		S-200PE2E5
Source		220 - 230 - 240V, single-phase, 50Hz
Controller P.C.B. Ass'y		CR-280ME2E5
Fan (Number...diameter)	mm	SIROCCO (2...ø250)
Fan motor		
Model...Nominal output	W	DMUB6D1AC...560W DMUB6D2AC...560W
Power source		100 - 391 VDC
No. of pole...r.p.m. (230V, High)	rpm	8P...860
Coil resistance (Ambient temperature 20°C)	Ω	–
Run capacitor	VAC, μF	–
Electronic expansion valve		
Coil		–
Coil resistance (at 20°C)	Ω	–
Valve body		–
Heat exchanger		
Coil		Aluminium plate fin / Copper tube
Rows...fin pitch	mm	3...1.8
Face area	m^2	0.648

(A) Indoor Units

High Static Pressure Ducted Type S-250PE2E5

MODEL No.		**S-250PE2E5**
Source		220 - 230 - 240V, single-phase, 50Hz
Controller P.C.B. Ass'y		CR-280ME2E5
Fan (Number...diameter)	mm	SIROCCO (2...ø250)
Fan motor		
Model...Nominal output	W	DMUB8D1AC...560W DMUB8D2AC...560W
Power source		100 - 391 VDC
No. of pole...r.p.m. (230V, High)	rpm	8P...1020
Coil resistance (Ambient temperature 20°C)	Ω	–
Run capacitor	VAC, μF	–
Electronic expansion valve		
Coil		–
Coil resistance (at 20°C)	Ω	–
Valve body		–
Heat exchanger		
Coil		Aluminium plate fin / Copper tube
Rows...fin pitch	mm	4...1.8
Face area	m^2	0.648

(B) Outdoor Units

U-200PE2E8A

MODEL No.				U-200PE2E8A
Source				380/400/415V 3-Phase 50Hz
Controller P.C.B. Ass'y				ACXA73C07280
Control circuit fuse				30A
Compressor				
Model....number				5JD650XDB22
Source				520V DC MOTOR
Nominal output			W	4,200
Compressor oil			cc	2,050
Coil resistance (Ambient temperature 25°C)			Ω	U-V 0.678 U-W 0.700 V-W 0.691
Safety control				Discharge temperature control
	Overload relay models			–
	Operation temperature	Open °C		–
		Close °C		–
Crank case heater			W	230V-36W
Refrigerant amount at shipment			kg	
High pressure switch				
Set pressure		OFF	MPa	$4.15^{+0}_{-0.2}$
		ON	MPa	3.05±0.2
Fan				
Number...diameter			mm	2...ø540
Air circulation			m^3 / h	164
Fan speeds (Max.)				
Fan motor				
Model No.				NFD-81FW-D8120-1, NFD-81FW-D8120-2
Source				~280V / 1-phase
No. of pole				8
Nominal output			W	120
Safety device				–
	Operating temperature	Open °C		–
		Close °C		–
Run capacitor		VAC, µF		–
Heat exchanger				
Coil				Aluminium plate fin / Copper tube
Rows...fin pitch			mm	2..17FPI
Face area			m^2	1.367

(B) Outdoor Units

U-250PE2E8A

MODEL No.				U-250PE2E8A
Source				380/400/415V 3-Phase 50Hz
Controller P.C.B. Ass'y				ACXA73C07260
Control circuit fuse				30A
Compressor				
Model....number				5JD650XDB22
Source				520V DC MOTOR
Nominal output			W	5,500
Compressor oil			cc	2,050
Coil resistance (Ambient temperature 25°C)			Ω	U-V 0.678 U-W 0.700 V-W 0.691
Safety control				Discharge temperature control
	Overload relay models			–
	Operation temperature	Open °C		–
		Close °C		–
Crank case heater			W	230V-36W
Refrigerant amount at shipment			kg	
High pressure switch				
Set pressure		OFF	MPa	$4.15^{+0}_{-0.2}$
		ON	MPa	3.05±0.2
Fan				
Number...diameter			mm	2...ø540
Air circulation			m^3 / h	160
Fan speeds (Max.)				
Fan motor				
Model No.				NFD-81FW-D8120-1, NFD-81FW-D8120-2
Source				~280V / 1-phase
No. of pole				8
Nominal output			W	120
Safety device				–
	Operating temperature	Open °C		–
		Close °C		–
Run capacitor		VAC, µF		–
Heat exchanger				
Coil				Aluminium plate fin / Copper tube
Rows...fin pitch			mm	3..17FPI
Face area			m^2	1.367

1-3. Other Component Specifications

Outdoor Units U-200PE2E8A

MODEL No.	Outdoor Unit	U-200PE2E8A	
Power Transformer			
Rated		–	
Source	VAC, Hz	–	
Secondary		–	
		–	
Coil resistance	Ω	–	
Thermal cut off temperature		–	
Thermistor (Coil / Air sensor): TH1, TH2, TH3, TH4			
Resistance	kΩ	-20°C： 38.48±2%	20°C： 6.517±2%
		-10°C： 23.67±2%	30°C： 4.448±2%
		0°C： 15.00±2%	40°C： 3.100±2%
		5°C： 12.06±2%	45°C： 2.607±2%
		10°C： 9.765±2%	50°C： 2.203±2%
Thermistor (Discharge gas sensor): TH5			
Resistance	kΩ	60°C： 1.593±2%	85°C： 0.7598±2%
		65°C： 1.363±2%	90°C： 0.6623±2%
		70°C： 1.171±2%	95°C： 0.5793±2%
		75°C： 1.010±2%	100°C： 0.5083±2%
		80°C： 0.8746±2%	105°C： 0.4473±2%
Relay (Comp. Magnetic Contactor)			
Coil rated	VAC	–	
Contact rating	VAC, A	–	
Coil resistance (at 20°C)	Ω	–	
Sol-Control-Valve			
Sol-control-valve		UKV32D322	
Magnetic coil		UKV-A392	
4 way valve			
4 way valve		SHF-20B-46-DC	
Electro magnetic coil		SQ-D23015-002283 DC15.4V(898mA)	

Outdoor Units U-250PE2E8A

MODEL No.	Outdoor Unit	U-250PE2E8A			
Power Transformer					
Rated		–			
Source	VAC, Hz	–			
Secondary		–			
		–			
Coil resistance	Ω	–			
Thermal cut off temperature		–			
Thermistor (Coil / Air sensor): TH1, TH2, TH3, TH4					
Resistance	kΩ	-20°C：	38.48±2%	20°C：	6.517±2%
		-10°C：	23.67±2%	30°C：	4.448±2%
		0°C：	15.00±2%	40°C：	3.100±2%
		5°C：	12.06±2%	45°C：	2.607±2%
		10°C：	9.765±2%	50°C：	2.203±2%
Thermistor (Discharge gas sensor): TH5					
Resistance	kΩ	60°C：	1.593±2%	85°C：	0.7598±2%
		65°C：	1.363±2%	90°C：	0.6623±2%
		70°C：	1.171±2%	95°C：	0.5793±2%
		75°C：	1.010±2%	100°C：	0.5083±2%
		80°C：	0.8746±2%	105°C：	0.4473±2%
Relay (Comp. Magnetic Contactor)					
Coil rated	VAC	–			
Contact rating	VAC, A	–			
Coil resistance (at 20°C)	Ω	–			
Sol-Control-Valve					
Sol-control-valve		UKV32D322			
Magnetic coil		UKV-A392			
4 way valve					
4 way valve		SHF-35B-67-03			
Electro magnetic coil		SQ-A2522G-005129 AC220-240V 50/60Hz			

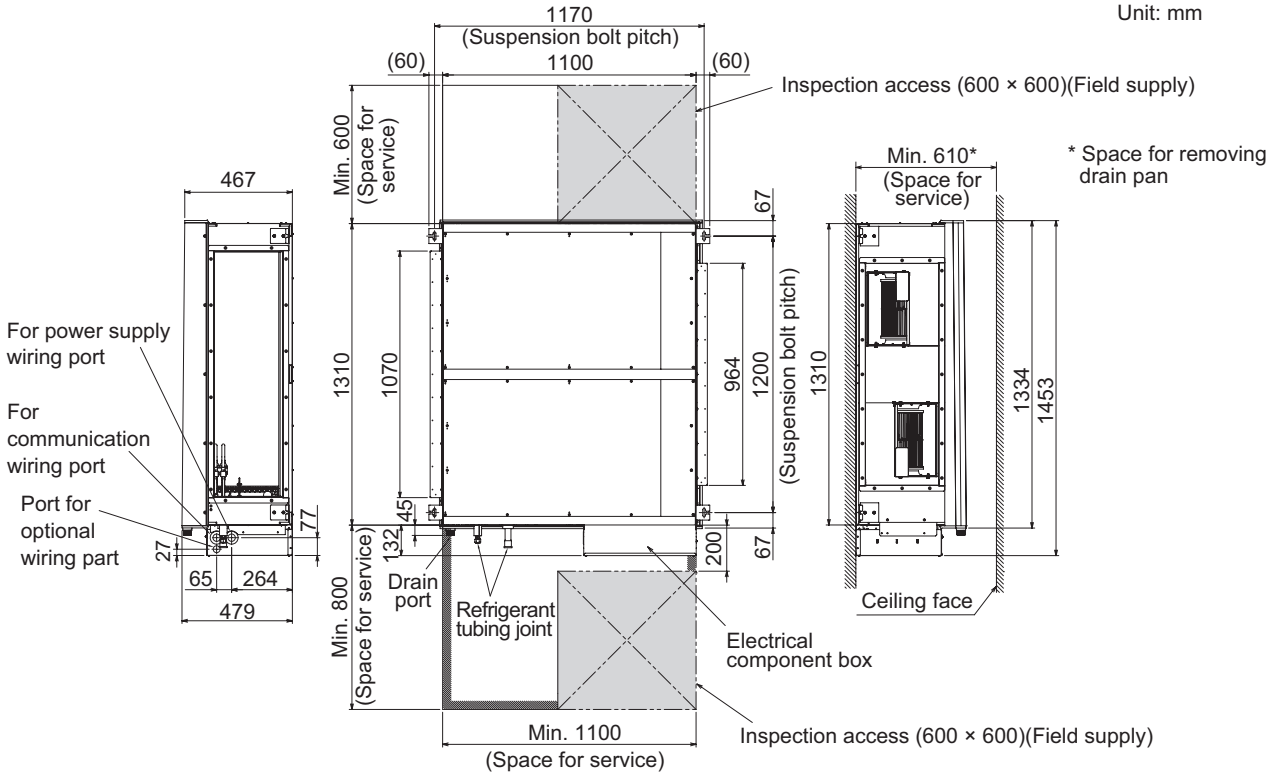
1-4. Dimensional Data

(A) Indoor Units: High Static Pressure Ducted Type

Required Minimum Space for Installation and Service

(1) Dimensions of suspension bolt pitch and unit

Unit: mm

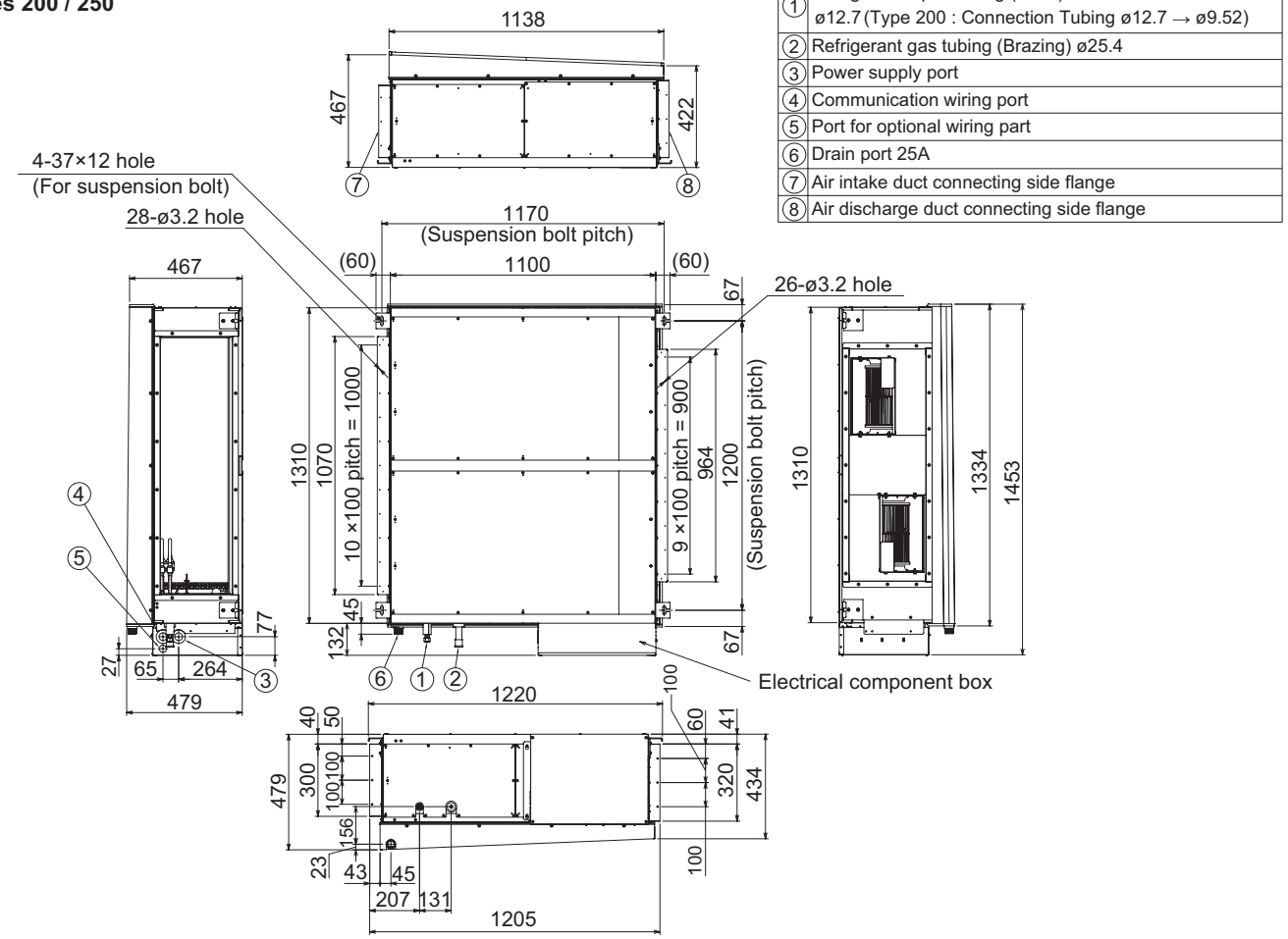


(2) Dimensions of indoor unit

Unit : mm

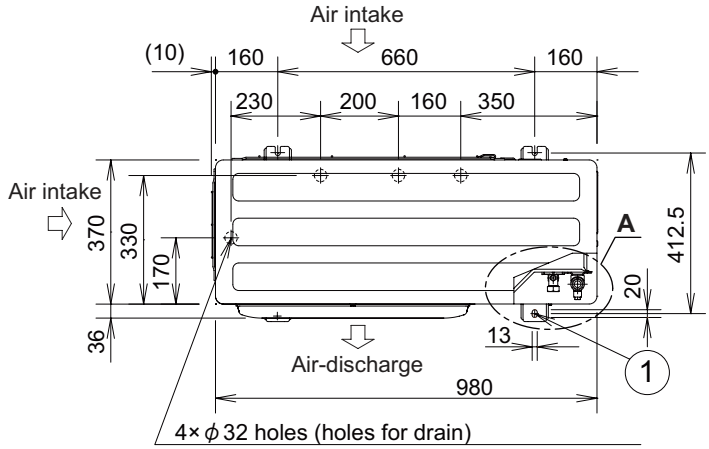
①	Refrigerant liquid tubing (Flare) ø12.7 (Type 200 : Connection Tubing ø12.7 → ø9.52)
②	Refrigerant gas tubing (Brazing) ø25.4
③	Power supply port
④	Communication wiring port
⑤	Port for optional wiring part
⑥	Drain port 25A
⑦	Air intake duct connecting side flange
⑧	Air discharge duct connecting side flange

Types 200 / 250



(B) Outdoor Unit: U-200PE2E8A

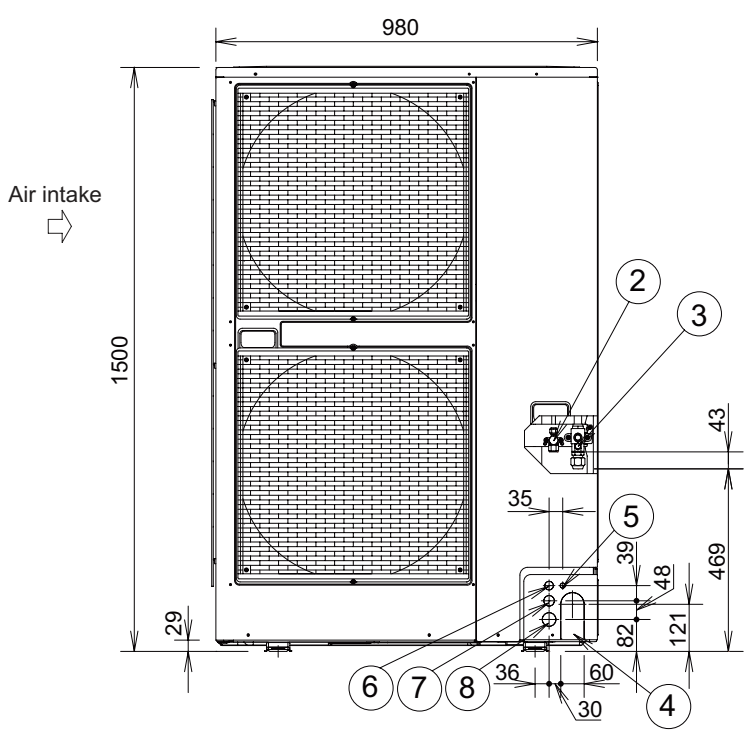
Unit: mm

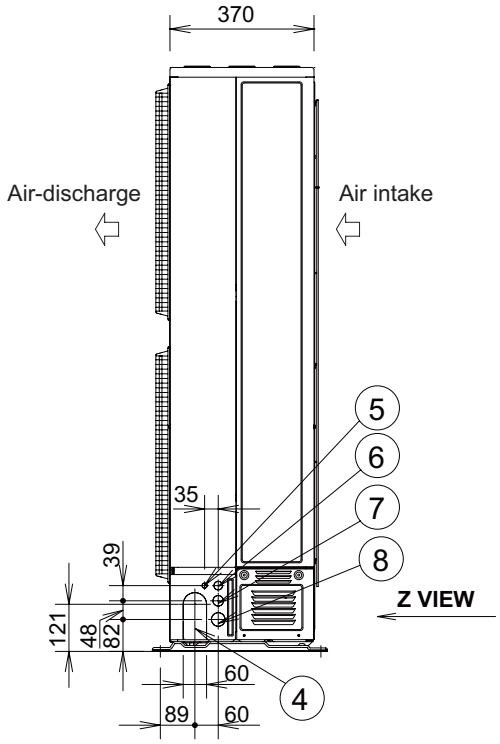


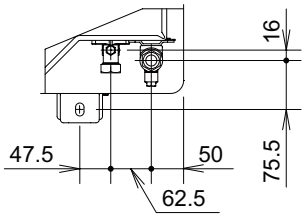
①	Mounting hole (4-R6.5), anchor bolt : M10
②	Refrigerant tubing (liquid tube), flared connection (ø9.52)
③	Refrigerant tubing (gas tube), flared connection (ø19.05)
④	Refrigerant tubing port
⑤	Electrical wiring port (ø13)
⑥	Electrical wiring port (ø22)
⑦	Electrical wiring port (ø27)
⑧	Electrical wiring port (ø35)

Specification for pipe connecting indoor unit to outdoor unit.

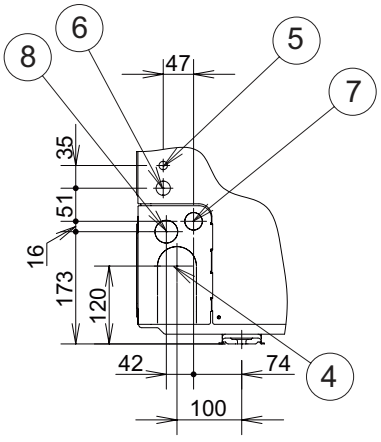
Model name		U-200PE2E8A
Piping Connections	Liquid side	ø9.52
	Gas side	ø19.05







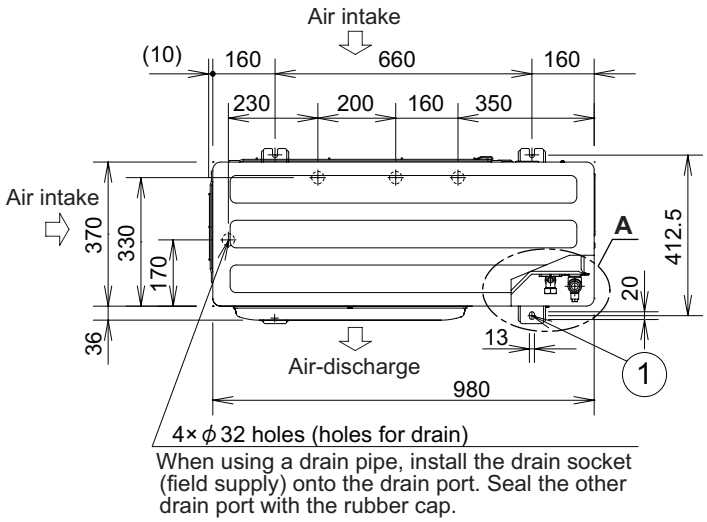
A VIEW



Z VIEW

(B) Outdoor Unit: U-250PE2E8A

Unit: mm

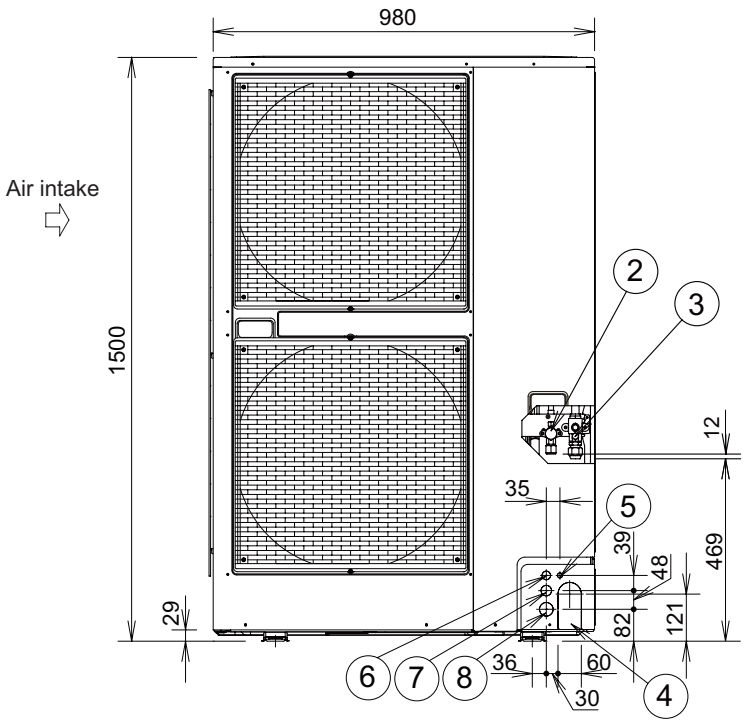


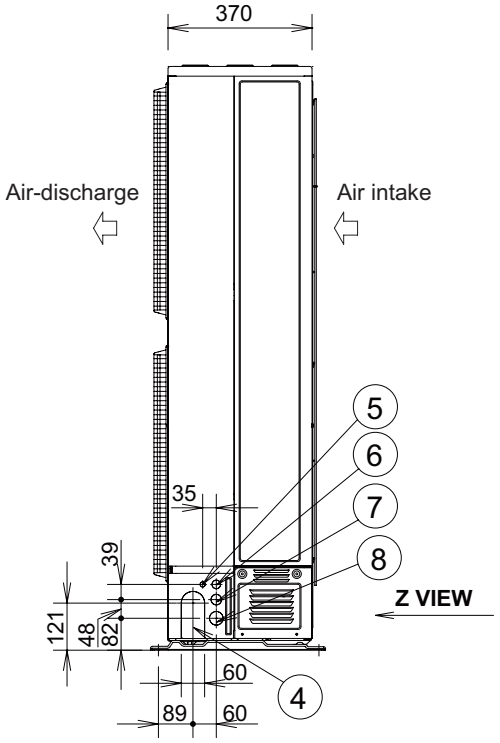
①	Mounting hole (4-R6.5), anchor bolt : M10
②	Refrigerant tubing (liquid tube), flared connection (ø12.7)
③	Refrigerant tubing (gas tube), flared connection (ø19.05)*1
④	Refrigerant tubing port
⑤	Electrical wiring port (ø13)
⑥	Electrical wiring port (ø22)
⑦	Electrical wiring port (ø27)
⑧	Electrical wiring port (ø35)

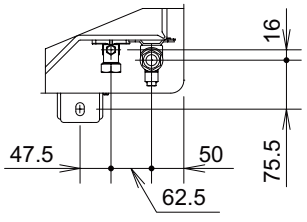
Specification for pipe connecting indoor unit to outdoor unit.

Model name		U-250PE2E8A
Piping Connections	Liquid side	ø12.7
	Gas side	ø25.4

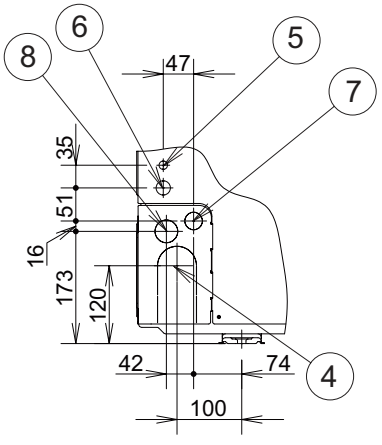
*1 (Gas piping connection) While the main gas side pipe is ø25.4, since connecting the outdoor unit's 3-way valve requires a ø19.05 flare, please be sure to use standard accessories joint piping B or A for connection (brazing), and connect as follows.





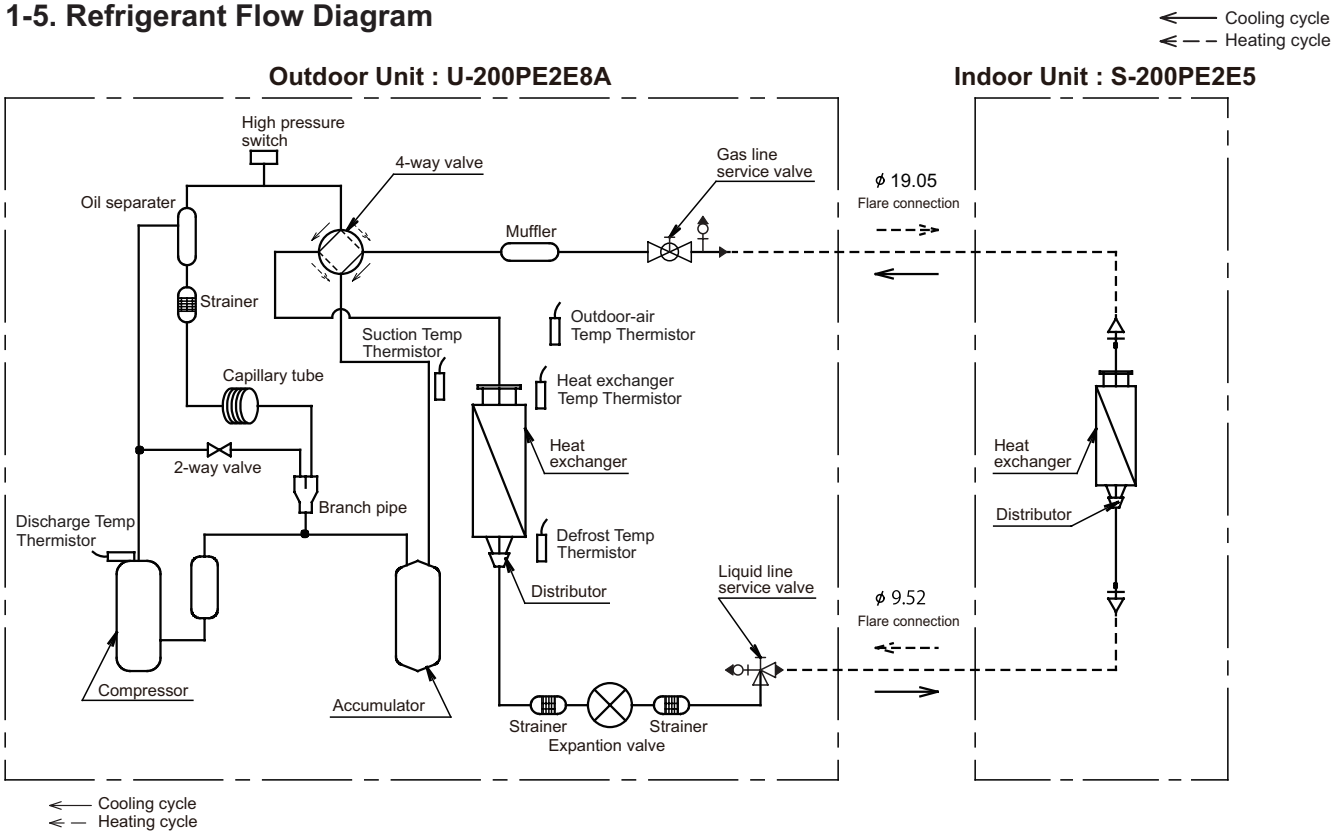


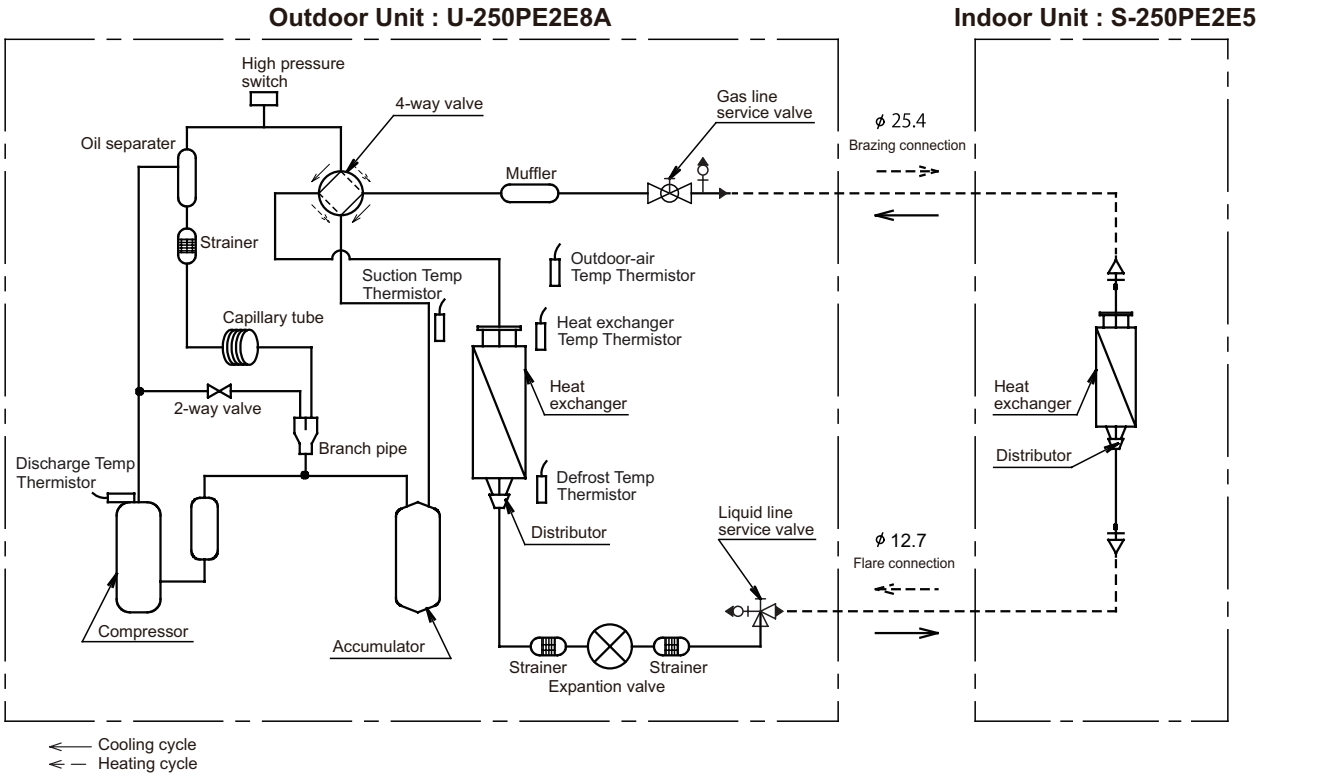
A VIEW



Z VIEW

1-5. Refrigerant Flow Diagram





1-6. Operating Range

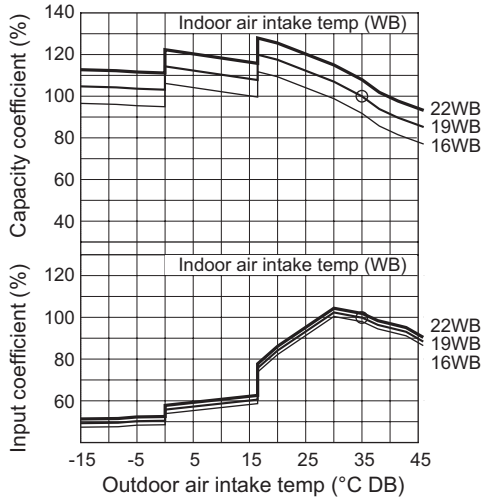
S-200PE2E5 ─ U-200PE2E8A
S-250PE2E5 ─ U-250PE2E8A

	Temperature	Indoor air intake temp.	Outdoor air intake temp.
Cooling	Maximum	32°C DB	46°C DB
	Minimum	18°C DB	–15°C DB
Heating	Maximum	30°C DB	24°C DB
	Minimum	16°C DB	–20°C DB

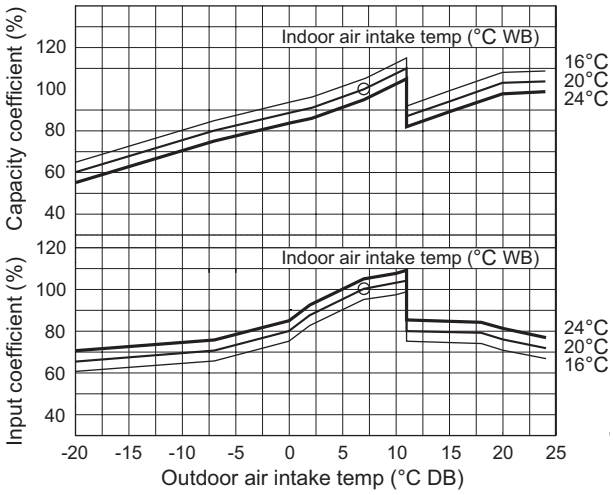
1-7. Capacity Correction Graph According to Temperature Condition

U-200PE2E8A / U-250PE2E8A (For 50 Hz)

① **Cooling capacity ratio (maximum capacity)**



Heating capacity ratio (maximum capacity)



NOTE 1

1. The graphs " ① " of the characteristics show the value under the following conditions.
   Equivalent tubing length : 7.5m
   Difference of elevation : 0m
   Wind speed : High
2. " ◯ " marking indicates the maximum capacity / maximum power consumption under the JIS condition.
   Maximum capacity indicates the maximum value in the parentheses of the specifications (cooling and heating capacity).
3. The characteristic of heating capacity excludes the decline of capacity when frosting (including defrost drive).

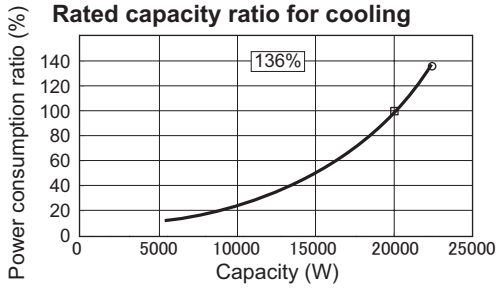
Outdoor unit heating capacity correction coefficient during of frosting / defrosting (RH approximately 85%)

Outdoor intake air temperature °C WB	-20	-15	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7
Correction coefficient	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.86	0.83	0.83	0.82	0.82	0.83	0.83	0.85	0.89	0.91	0.95	1.0

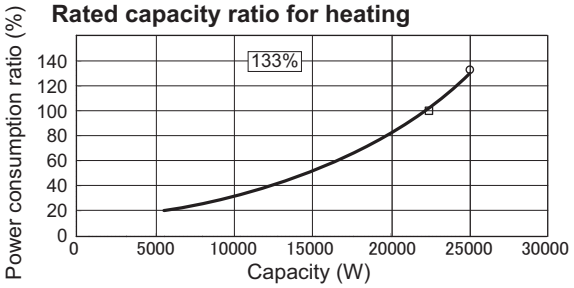
To calculate the heating capacity with consideration for frosting / defrosting operation, multiply the heating capacity found from the capacity graph by the correction coefficient from the table above.

② **U-200PE2E8A**

Rated capacity ratio for cooling

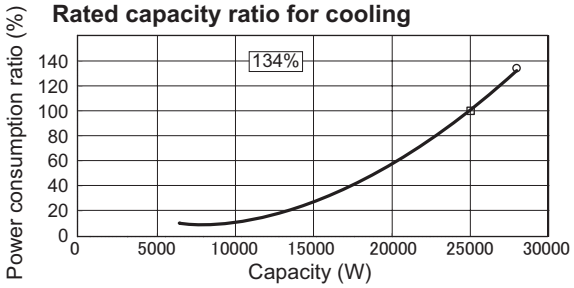


Rated capacity ratio for heating

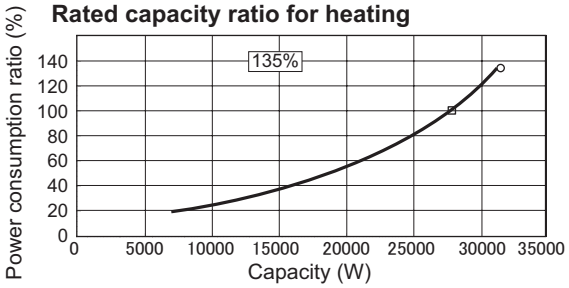


② **U-250PE2E8A**

Rated capacity ratio for cooling



Rated capacity ratio for heating



NOTE 2

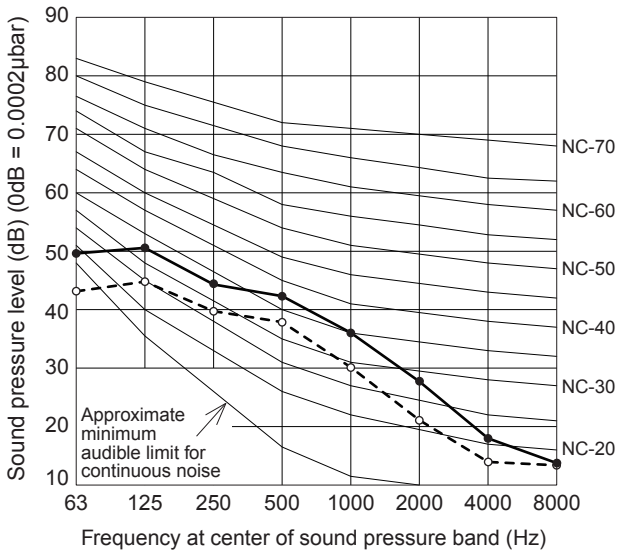
1. The graphs " ② " of the characteristics show the value under the following conditions.
   Equivalent tubing length : 7.5m
   Difference of elevation : 0m
   Wind speed : High
2. " □ " marking indicates the rated capacity / rated power consumption under the JIS condition.
   " ◯ " marking indicates the maximum capacity / maximum power consumption under the JIS condition.
3. The characteristic of heating capacity excludes the decline of capacity when frosting (including defrost drive).

1-8. Noise Criterion Curves

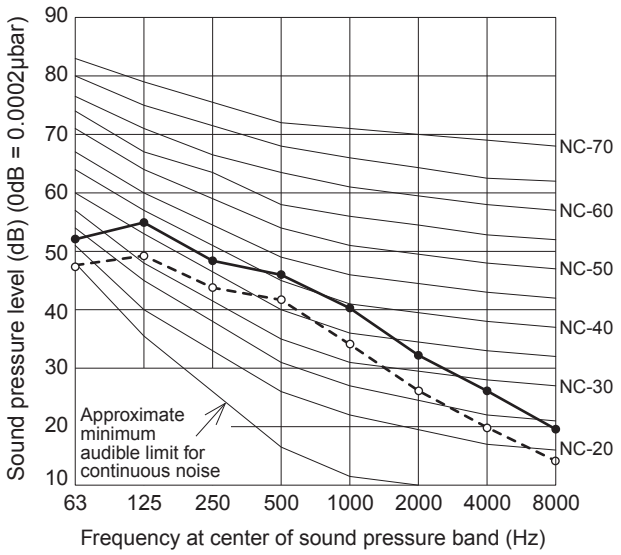
High Static Pressure Ducted Type

HIGH
LOW

MODEL	: S-200PE2E5	
SOUND LEVEL	: HIGH	43 dB(A)
	LOW	38 dB(A)
CONDITION	: Under the unit 1.5 m	

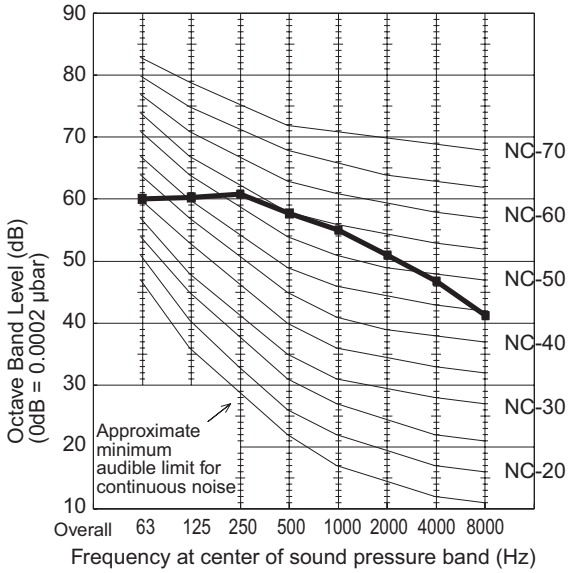


MODEL	: S-250PE2E5	
SOUND LEVEL	: HIGH	47 dB(A)
	LOW	42 dB(A)
CONDITION	: Under the unit 1.5 m	



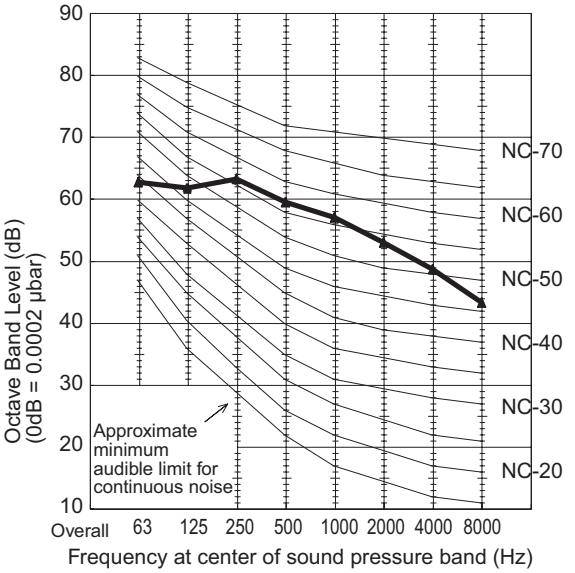
COOLING

MODEL	: U-200PE2E8A
SOUND LEVEL	: 60 dB(A)
CONDITION	: 1 m in front at height of 1.5 m



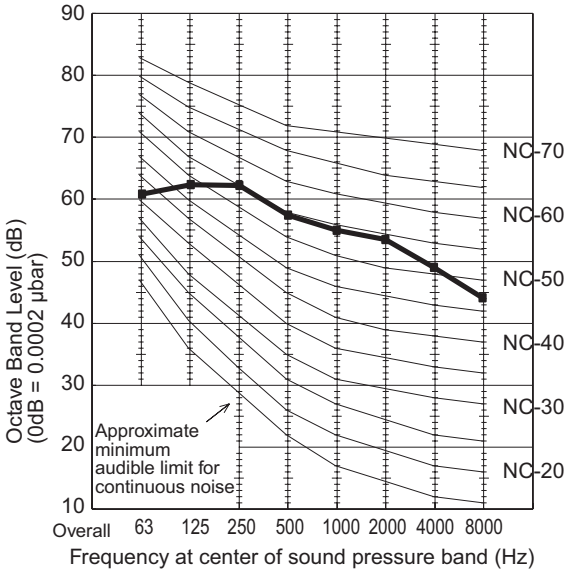
HEATING

MODEL	: U-200PE2E8A
SOUND LEVEL	: 62 dB(A)
CONDITION	: 1 m in front at height of 1.5 m



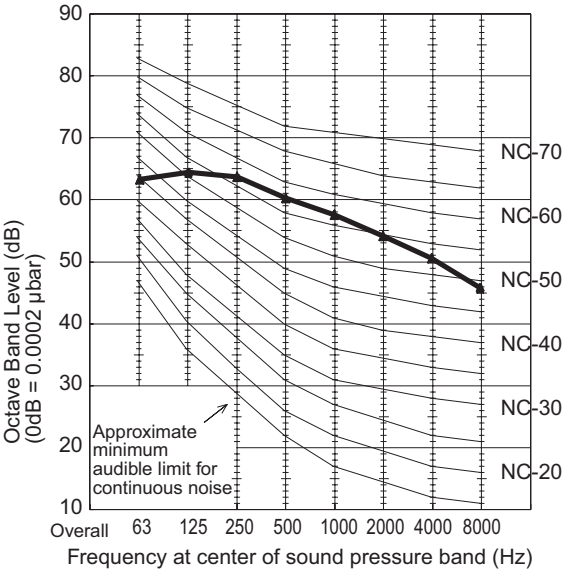
COOLING

MODEL	: U-250PE2E8A
SOUND LEVEL	: 61 dB(A)
CONDITION	: 1 m in front at height of 1.5 m



HEATING

MODEL	: U-250PE2E8A
SOUND LEVEL	: 63 dB(A)
CONDITION	: 1 m in front at height of 1.5 m



REMARKS:

1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
2. The test results were obtained from an nechoic room.

NOTE

To evaluate “Noise level” the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used.
Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

1-9. ELECTRICAL WIRING

● General Precautions on Wiring

(1) Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.

WARNING

(2) This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD). Otherwise, it may cause electrical shock and fire in case of equipment breakdown or insulation breakdown. Earth Leakage Circuit Breaker (ELCB) must be incorporated in the fixed wiring in accordance with the wiring regulations. The Earth Leakage Circuit Breaker (ELCB) must be an approved 10-16 A, having a contact separation in all poles.

(3) To prevent possible hazards from insulation failure, the unit must be grounded.

(4) Each wiring connection must be done in accordance with the wiring system diagram.
Wrong wiring may cause the unit to misoperate or become damaged.

(5) Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.

(6) Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or misoperation that occurs as a result of such unauthorized changes.

(7) Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning.
You must ensure that installation complies with all relevant rules and regulations.

(8) To prevent malfunction of the air conditioner caused by electrical noise, care must be taken when wiring as follows:

- The remote control wiring and the inter-unit control wiring should be wired apart from the inter-unit power wiring.
- Use shielded wires for inter-unit control wiring between units and ground the shield on both sides.

(9) If the power supply cord of this appliance is damaged, it must be replaced by a repair shop designated by the manufacturer, because special-purpose tools are required.

Recommended Wire Length and Wire Diameter for Power Supply System

Indoor unit

Type	(B) Power supply	Time delay fuse or circuit capacity
	2.5 mm^2	
E2	Max. 30 m	10-16 A

Control wiring

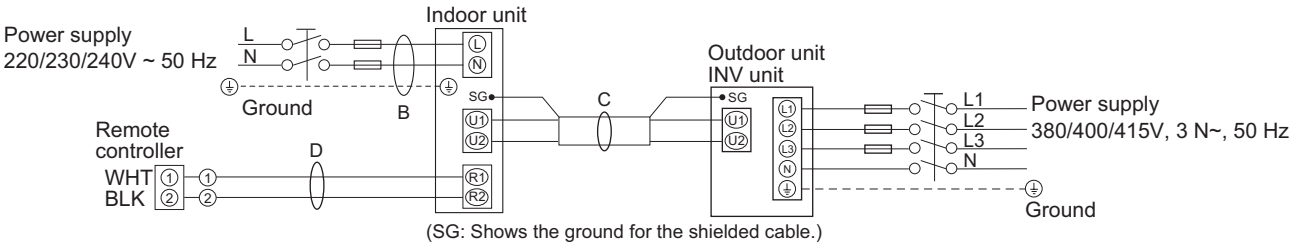
(C) Inter-unit control wiring (between outdoor and indoor units)	(D) Remote control wiring	(E) Control wiring for group control
0.75 mm^2 (AWG #18) **Use shielded wiring***	0.75 mm^2 (AWG #18)	0.75 mm^2 (AWG #18)
Max. 1,000 m	Max. 500 m	Max. 200 m (Total)

NOTE

* With ring-type wire terminal.

■ Wiring System Diagrams

<Type E2>



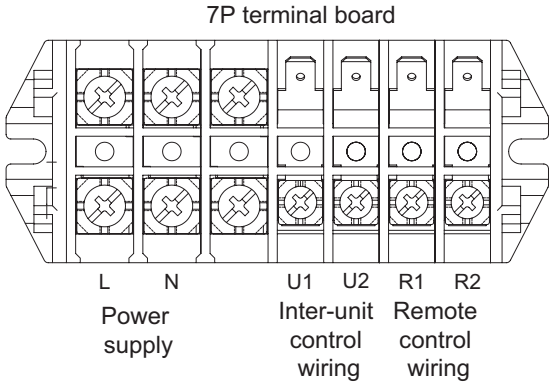
NOTE

(1) Refer to "Recommended Wire Length and Wire Diameter for Power Supply System" for the explanation of "B", "C" and "D" in the above diagram.

(2) The basic connection diagram of the indoor unit shows the terminal boards, so the terminal boards in your equipment may differ from the diagram.

(3) Refrigerant Circuit (R.C.) address should be set before turning the power on.

(4) Regarding R.C. address setting, refer to the installation instructions supplied with the outdoor unit. Auto address setting can be executed by remote controller automatically. Refer to the installation instructions supplied with the remote controller (optional).



Type E2

CAUTION

(1) When linking the outdoor units in a network, disconnect the terminal extended from the short plug from all outdoor units except any one of the outdoor units.
(When shipping: In shorted condition.)
For a system without link (no wiring connection between outdoor units), do not remove the short plug.

(2) Do not install the inter-unit control wiring in a way that forms a loop. (Fig. 1-1)

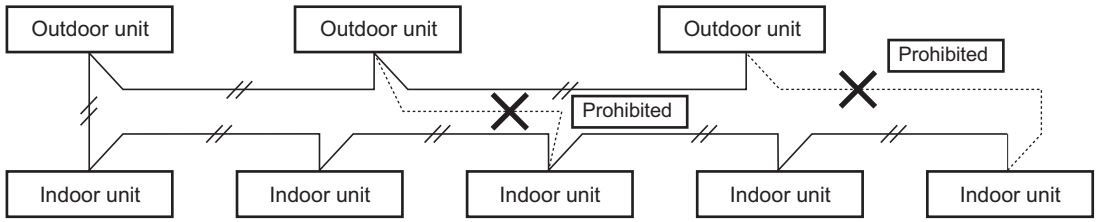


Fig. 1-1

(3) Do not install inter-unit control wiring such as star branch wiring. Star branch wiring causes mis-address setting. (Fig. 1-2)

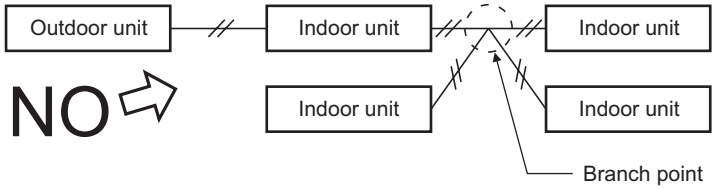


Fig. 1-2

(4) If branching the inter-unit control wiring, the number of branch points should be 16 or fewer.

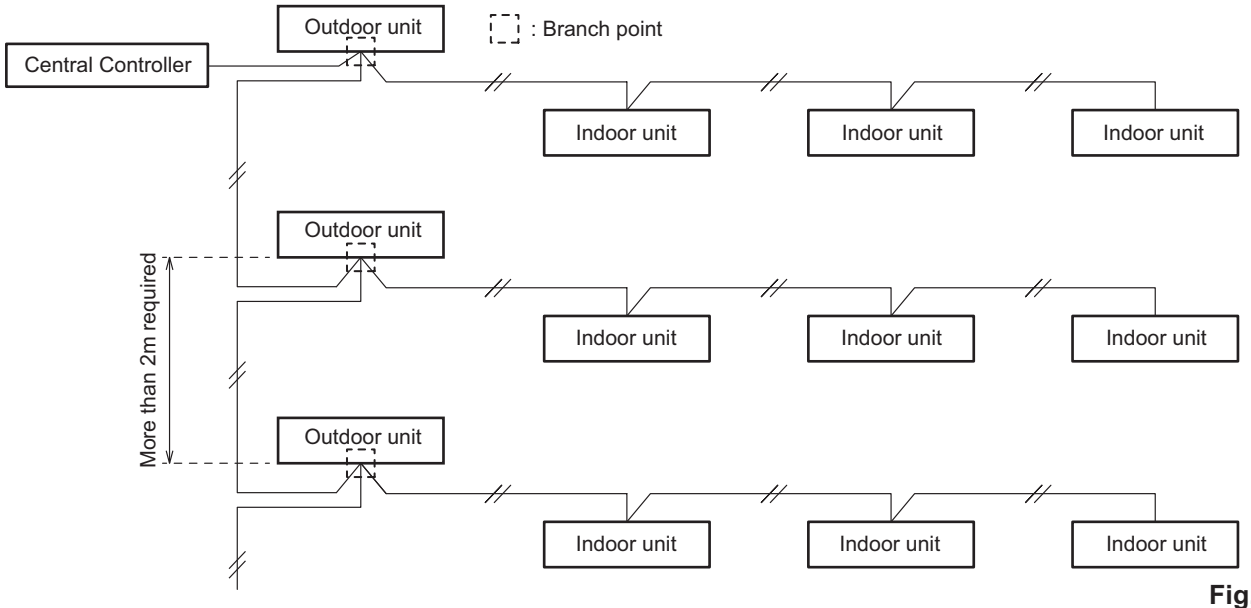


Fig. 1-3

(5) Use shielded wires for inter-unit control wiring (c) and ground the shield on both sides, otherwise misoperation from noise may occur. (Fig. 1-4)
Connect wiring as shown in Section "Wiring System Diagrams".

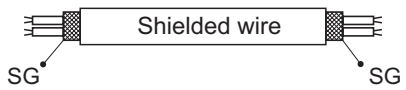


Fig. 1-4

(6)
- **Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 5 or 3 *1.5 mm² flexible cord. Type designation 60245 IEC 57 (H05RN-F, GP85PCP etc.) or heavier cord.**
- **Use the standard power supply cables for Europe (such as H05RN-F or H07RN-F which conform to CENELEC (HAR) rating specifications) or use the cables based on IEC standard. (60245 IEC57, 60245 IEC66)**

WARNING **Loose wiring may cause the terminal to overheat or result in unit malfunction.**
A fire hazard may also occur. Therefore, ensure that all wiring is tightly connected.

When connecting each power wire to the terminal, follow the instructions on "How to connect wiring to the terminal" and fasten the wire securely with the terminal screw.

How to connect wiring to the terminal

■ For stranded wiring

(1) Cut the wire end with cutting pliers, then strip the insulation to expose the stranded wiring about 10 mm and tightly twist the wire ends. (Fig. 1-5)

(2) Using a Phillips head screwdriver, remove the terminal screw(s) on the terminal board.

(3) Using a ring connector fastener or pliers, securely clamp each stripped wire end with a ring pressure terminal.

(4) Place the ring pressure terminal, and replace and tighten the removed terminal screw using a screwdriver. (Fig. 1-6)

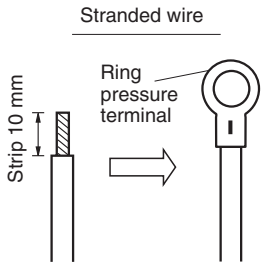


Fig. 1-5

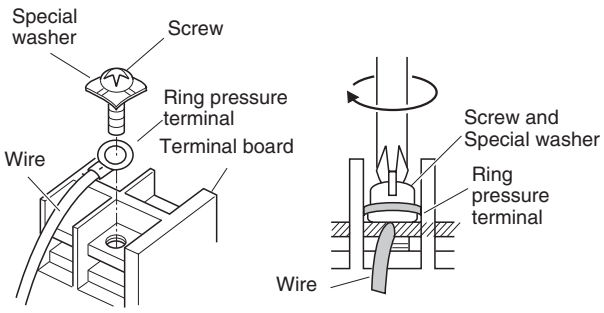


Fig. 1-6

■ Examples of shield wires

(1) Remove cable coat not to scratch braided shield. (Fig. 1-7)

(2) Unbraid the braided shield carefully and twist the unbraided shield wires tightly together. Insulate the shield wires by covering them with an insulation tube or wrapping insulation tape around them. (Fig. 1-8)

(3) Remove coat of signal wire. (Fig. 1-9)

(4) Attach ring pressure terminals to the signal wires and the shield wires insulated in Step (2). (Fig. 1-10)

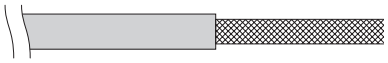


Fig. 1-7

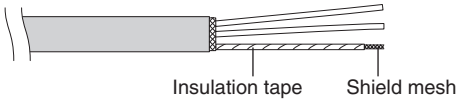


Fig. 1-8

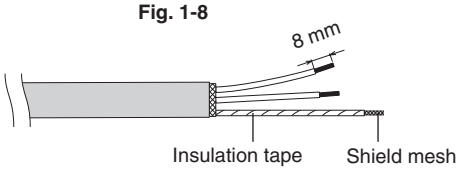


Fig. 1-9

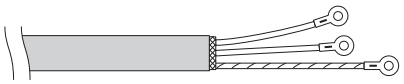
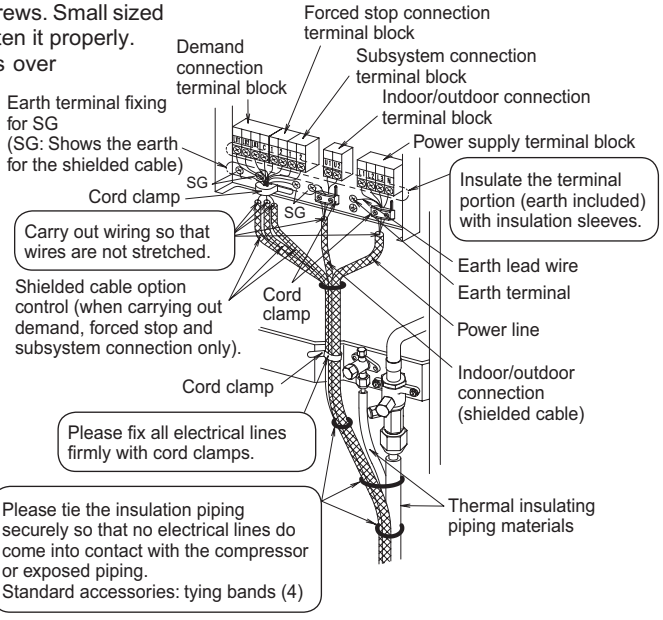


Fig. 1-10

⚠ WARNING	**This air conditioner must be installed in accordance with national wiring regulations.**
	Cables connected to outdoor unit must be approved polychloroprene sheathed type 60245 IEC 57 or H05RN-F/H07RN-F or heavier.
	The units must be connected to the supply cables for fixed wiring by qualified technician. Circuit breaker must be incorporated in the fixed wiring in accordance with the national wiring regulations. The circuit breaker must be approved, suitable for the voltage and current ratings of equipment and have a contact separation by 3mm in all poles. When the supply cable is damaged, it must be replaced by qualified technician.
	Be sure to install a current leakage breaker, main switch and fuse to the main power supply, otherwise electric shocks may result.
	Be sure to connect the unit to secure earth connection. If the earthing work is not carried out properly, electric shocks may result. ⏚
	Wiring shall be connected securely by using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

- Ensure to connect the electrical cable connections and clamp the wires securely to the terminal connections using cord clamps so that no undue force is placed on the wires (power source cable, indoor/outdoor connection cables, earth lead wire).
- Do not install a phase advance capacitor for power factor improvement. (It does not improve the power factor and will cause abnormal overheating.)
- Do not bind the excess cables together and place them inside this unit.
- Protect the electrical cable with the protective bushing provided so that the cables do no get damaged on the knock hole or etched portions. If there is space between the electrical cables and the protective bushing occurs, seal it accordingly.
- Tie the cables with the provided binding strap so that they do not touch the compressor and the pipes.
- When setting up the cables, inside of unit install properly so that the front panel will not lift up. Make sure that front pan el mount correctly.
- Use a round type terminal with an insulation sleeve for connecting to the terminal block.
- Use the appropriate screwdriver for tightening the terminal screws. Small sized screwdriver damages the head of the screw and cannot tighten it properly.
- There is risk of damaging the screw if the terminal screw is over tightened. Tighten with the appropriate torque.

Screw diameter name	Tightening torque N•m (kgf•m)
M4	1.6 ~ 2.0 (16.3 ~ 20.4)
M5	2.0 ~ 2.5 (20.4 ~ 25.5)
M6	4.0 ~ 4.5 (40.8 ~ 45.9)

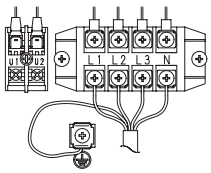


Indoor/outdoor, 2-wire mode format, option connection (demand, forced stop and subsystem connections only).

- Direction to pull out wires

Seal wiring holes after wiring using included protection bush. (other holes are for connecting conduit pipe)

- Earth lead wire set up



The earth lead wire shall be longer than other lead wires as shown in the figure for electrical safety in case it slips out of the cord from the anchorage.

- Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires.
- If connecting two separate wires to a single crimped terminal, place the two crimped terminal wires together as shown in Fig. A. (If the arrangement shown in Fig. B is used, poor contacts or contact damage may result.)

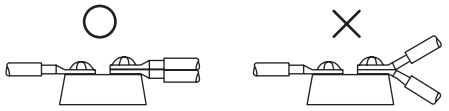
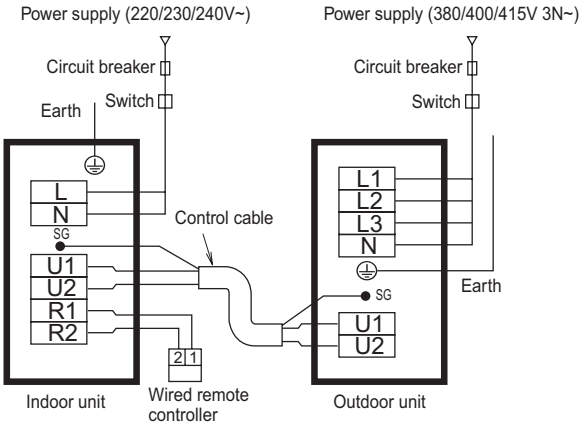


Fig. A (OK) Fig. B (not OK)

OUTDOOR UNIT/3-PHASE MODEL



This equipment complies with EN/IEC 61000-3-12 provided that the short-circuit power Ssc is greater than or equals to 1850 kVA at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure; by consultation with the distribution network operator if necessary that the equipment is connected only to supply with a short-circuit power Ssc greater than or equals to 1850 kVA.

Ssc : Short circuit power
SG : Shows the ground for the shielded cable.

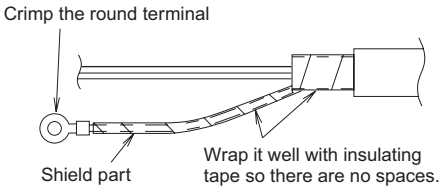
Model name	Power supply	Maximum electric current	*1 Control cable	Ssc
U-200PE2E8A	380/400/415V 3N~	20 A	0.75 mm²	1850 kVA
U-250PE2E8A	380/400/415V 3N~	20 A	0.75 mm²	1850 kVA

*1 Use a shielded cable for the control cable. Overall extension less than 1000m.

- Decide the length and size of the power supply cable based on the maximum ampere tabulated above in accordance with the national wiring regulations.
- Select the fuse(s) and/or circuit breaker(s) from the types and ratings suitable for the maximum ampere tabulated above in accordance with the national wiring regulations.
- If capacity of power supply circuit and enforcement are not enough, it can causes the electric shock and a fire.

For the shield part of the shielded cable, twist the end out, crimp it with a round terminal, and connect it to the SG screw.
After crimping it with a round terminal, wrap it with insulating tape so there are no spaces and adjust it so the shield part does not touch any live parts.

⚠ CAUTION	**Be sure that the shield part of the shielded cable does not touch the terminal block or any live parts. Failure to do so may lead to electric shock or fire.**



1-10. Installation Instructions

■ Outdoor Unit

1. Tubing Length

(A) Single type

- During tubing work, try to make both the tubing length (L) and the difference in elevation (H1) as short as possible. Refer to Table 1-1.

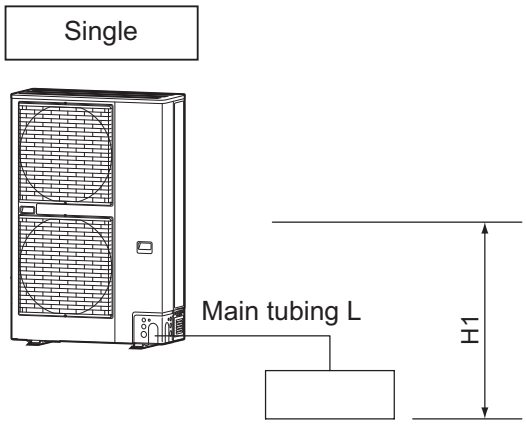


Table 1-1 Tubing Data for Models (Single)

Tubing Data \ Models		U-200PE2E8A	U-250PE2E8A
Tubing size outer diameter	Liquid tube mm (in.)	9.52 (3/8)	12.7 (1/2)
	Gas tube mm (in.)	25.4 (1)	
Limit of tubing length (L) (m)		120	
Height Differential of Indoor / Outdoor Units (H1)	Outdoor unit is placed higher (m)	30	
	Outdoor unit is placed lower (m)	30	
Max. allowable tubing length at shipment (m)		5 - 30	
Required additional refrigerant (g/m)		50*	80*
Refrigerant charged at shipment (kg)		5.60	6.40

No additional charge of compressor oil is necessary.

* If the total tubing length exceeds 30 m, charge the amount of refrigerant as shown above in "Required additional refrigerant" for every 1 m in excess of 30 m for outdoor units.

2. Check of limit density

When installing an air conditioner in a room, it is necessary to ensure that even if the refrigerant gas accidentally escapes, its density does not exceed the limit level.

If the density might exceed the limit level, it is necessary to set up an opening between it and the adjacent room, or to install mechanical ventilation which is interlocked with a leak detector.

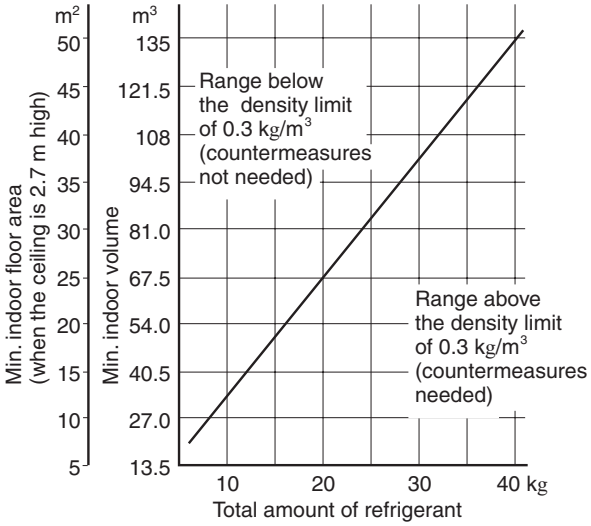
(Total refrigerant charged amount: kg)

(Min. indoor volume where the indoor unit is installed: m^3) ≤ Limit density 0.3 (kg/m^3)

The limit density of refrigerant which is used in this unit is 0.3 kg/m^3 (ISO 5149).

The shipped outdoor unit comes charged with the amount of refrigerant fixed for each type, so add it to the amount that is charged at the field. (For the refrigerant charge amount at shipment, refer to the unit's nameplate.)

Minimum indoor volume & floor area relative to the amount of refrigerant are roughly as given in the following table.



CAUTION

Pay special attention to any location, such as a basement or recessed area, etc. where leaked refrigerant can collect, since refrigerant gas is heavier than air.

3. SELECTING THE INSTALLATION SITE

The following parts are supplied as accessories with each outdoor unit. Check that all accessory parts are present before installing the outdoor unit.

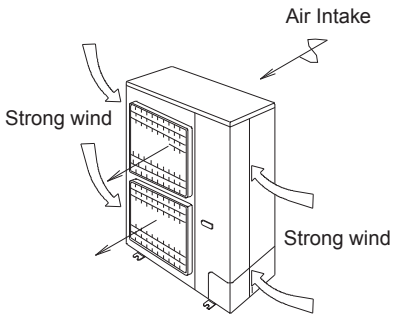
Part name	Diagram	Quantity
Joint piping A (ø19.05 → ø25.4)		1
Joint piping B (ø19.05)		1
Manual	A4 double-sided printing (booklet)	1

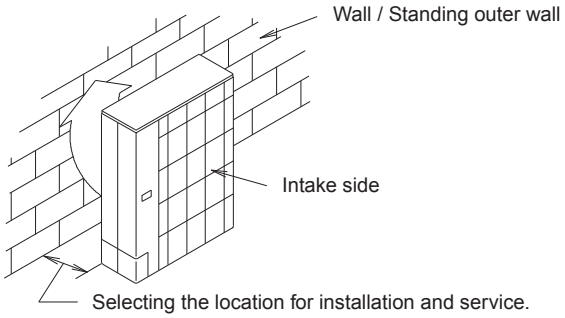
Part name	Diagram	Quantity
Protective bushing (for protecting electrical wires)		2
Banding strap (for tying electrical wires together)		4
Installation Instruction		

SELECT THE OUTDOOR UNIT INSTALLATION LOCATION

⚠ **WARNING**	**Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.**

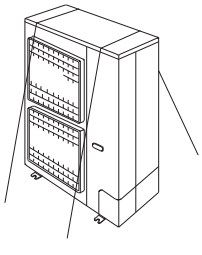
1. **Install the unit once you have checked that the installation location matches the following conditions.**
   - A location with sufficient ventilation.
   - Possibly a location that is sheltered from rain or direct sunlight and is well-ventilated so that hot and cool air does not build up.
   - A location where the area around the discharge is not exposed to animals or plants which could adversely affect the release of hot or cool air from the unit.
   - A location where the discharge and operation noise will not be a nuisance to the neighbours.
   - A location that can support the product's weight or vibrations and secured for horizontal installation wherever possible.
   - A location that does not obstruct the air discharge or intake.
   - A location where there is no danger of flammable or corrosive gas leaks.
   - A location that provides space for installation and service.
   - A location that allows the pipe and cable length fixture for internal and external connections.
   - It may need two or more people to carry out the installation work.
2. **Refer to the diagram below for the installation location which is exposed to strong wind.**
   - If a strong wind of more than 5 m/sec blows to the area directly in front of the discharge, the outdoor unit's air flow is reduced and the outflow may re-enter (short circuit) causing the following outcome:
     "Reduced capacity", "Increased frost formation during heating" or "Operation stopped due to increased pressure".
     Should an exceptionally strong wind blow to the area directly in front of the discharge of the outdoor unit; there is the risk of damage due to the fan's high-speed reverse rotation.
   - If the direction of the prevailing wind is known when operating the unit, place the unit at an appropriate angle to the wind's direction so that the discharge faces towards a building or a wall.





Selecting the location for installation and service.

3. **If installing at locations prone to snowfall, install the unit as high as possible with suitable roofing which shelters the unit from snow.**
4. **Avoid installing the unit in locations where there are petroleum products (such as machine oil), saline content (such as coastal areas), sulphurous gas and where high frequency noise is generated.**
5. **Place the indoor and outdoor unit, power cords and indoor/outdoor unit connection cables at a minimum distance of 1 meter or more away from televisions and radios. This is to avoid interference to picture and/or sound. (However, depending on the electromagnetic waves, noise interference may still occur even with the 1 meter separation.)**
6. **For restaurants and kitchens, avoid installing at locations which draws oil and steam. Plastic parts can deteriorate from droplets of oil and steam or it can cause falling parts or water leakage.**
7. **Avoid installing at the location where cutting oil mist or iron powder is present.**
8. **If there is an immense voltage fluctuation due to the location's problem, ensure to split the power supply.**
9. **When installing the product in a place where it will be affected by typhoon or strong wind such as wind blowing between buildings, including the rooftop of a building and a place where there is no building in surroundings, fix the product with an overturn prevention wire, etc.**
10. **Ensure to assign several people or use a mechanical lift, etc. to transport the unit.**



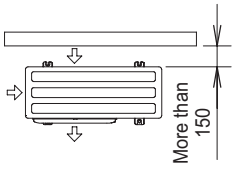
4. INSTALLATION SERVICE SPACE

Please secure necessary space to guarantee performance and service & maintenance. For multiple installations, please secure enough space to enable removal of side face screws between units. (unit: mm)

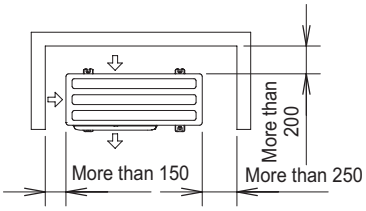
Where there are obstacles at the intake

If upper part is open

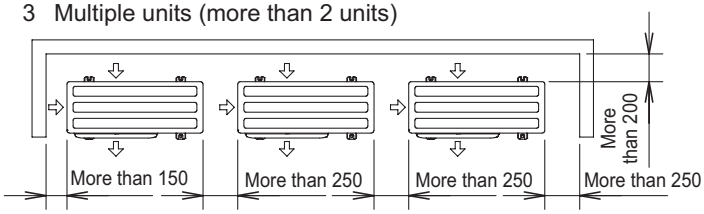
1 Separate location installation



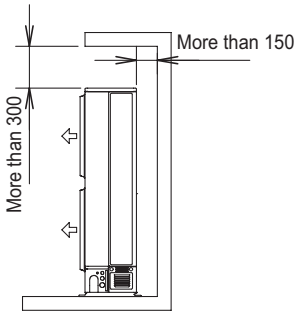
2 Obstacles on both sides



3 Multiple units (more than 2 units)



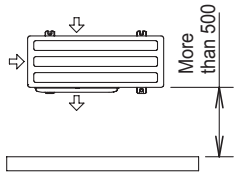
Obstacles at the upper part (both sides open in separate location installation)



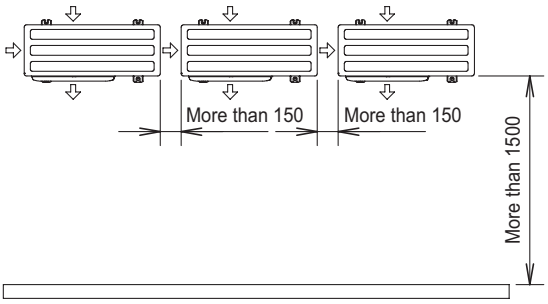
Where there are obstacles at the discharge

If upper part is open

1 Separate location installation

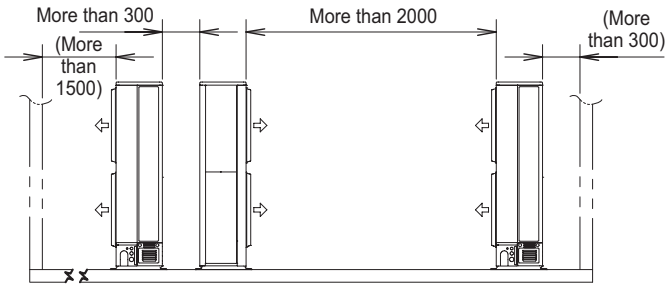


2 Multiple units (more than 2 units)



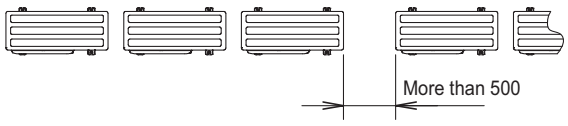
In the case of front and rear multiple units

Upper part and both side faces are open



Caution: Please ensure that the height of obstacles at either the front or rear faces is 2m or below.

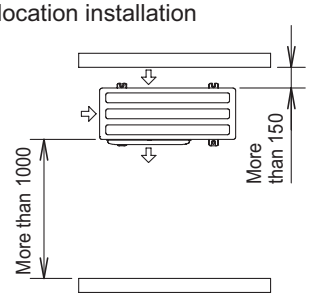
Caution: We recommend a maintenance space of more than 500mm for every 3 units in multiple units installation.



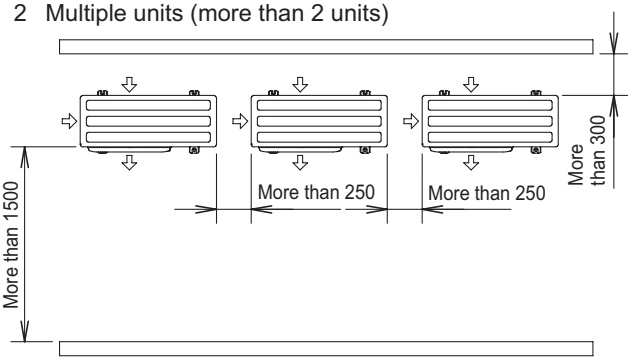
Where there are obstacles on the intake and discharge

Upper part and both side faces are open

1 Separate location installation



2 Multiple units (more than 2 units)



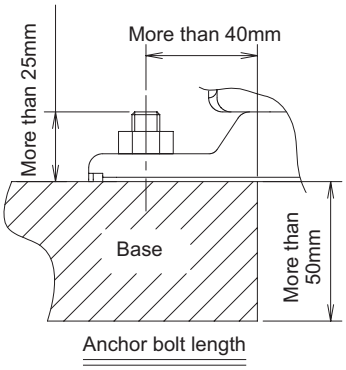
Caution: Please ensure that the height of obstacles at either the front or rear faces is less than 2m.

5. TRANSPORT AND INSTALL THE OUTDOOR UNIT

- **Transporting**
  1. Transport the outdoor unit in its original packaging as close as possible to the installation location.
  2. In the event that the unit needs to be lifted or suspended, use a rope or belt and use cloth or wood as padding to avoid damaging the unit.
  3. Use the side handles to carry the unit and be careful not to touch the fin with your hand or any objects.
- **Installation**
  1. Read the “Select the outdoor unit installation location” thoroughly before installing the outdoor unit.
  2. When installing to a concrete or solid surface, use M10 or a W 3/8 bolts and nuts to secure the unit. Ensure that it installed upright on a horizontal plane. (Use an anchor bolt for the installation as shown in the diagram below.)
  3. Avoid installing on the slanted roof.
  4. In the even where the roof is at risk of receiving oscillations or vibrations, secure the unit with a seismic isolating mount or vibration absorbing rubber.
  5. The drain water will be discharged from the unit during heating or defrosting operation mode.
     Select an appropriate location with good drainage system. (In the winter, there is risk of slipping due to freezing, and depending on the installation set up there is risk of drain water running overhead.)

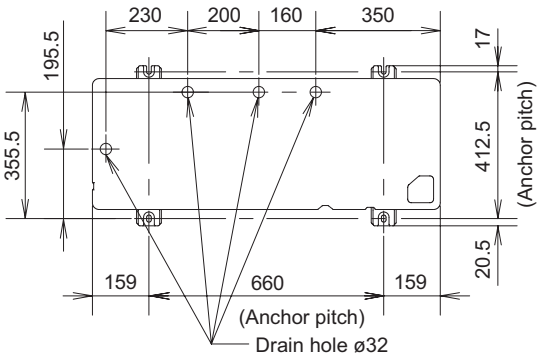
     * Please consult us if installing drain elbows.

     * In cold regions (where the outdoor temperature can drop to below 0˚ for 2 to 3 consecutive days), the drain water may freeze and may prevent the fan from operating. For this case, do not use the drain elbow.



Anchor bolt length

(Unit: mm)



Anchor bolt position

6. REFRIGERANT INSTALLATION

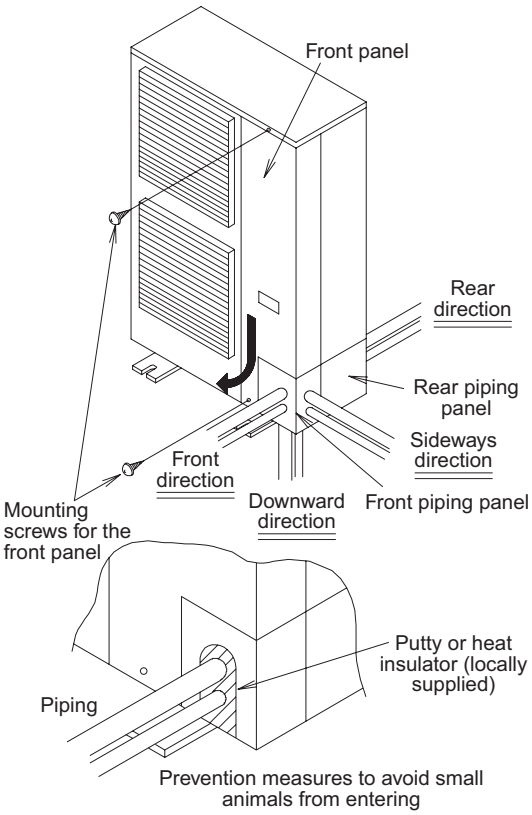
For indoor unit refrigerant piping installation, refer to the installation instruction manual that comes with that indoor unit.
Do not reuse existing piping, install new piping.

1. Precautions during refrigerant installation.

- Use clean pipes with no dust inside.
  The pipe may corrode with the presence of fluorine dust which will adversely affect the refrigerant piping system due to deterioration of the refrigerant oil, etc.
- This unit is specifically for R410A. Ensure to adhere to the following items and install accordingly:
  - Use pipe cutters and flaring tools which are specially designed for use with R410A.
  - When connecting with flaring tools, coat the flare section with ether-based oil.
  - Ensure to use flare nuts supplied with the unit when connecting this unit.
  - Only for storing or for open pipes.
  - Set the lower limit of the allowable pipe length to 5m.
    If the pipe is shorter than 5m, the refrigerant may become overfilled and a problem such as abnormal high pressure could occur.
  - Carefully handle the liquid refrigerant, as it may cause a frostbite.
  - Do not release refrigerants during the piping works for installing, re-installing and repairing refrigeration parts.

2. The local pipes can protrude from any four directions.

- Make holes in the pipe panel for the pipes to penetrate it and lay the pipes accordingly.
  - It is recommended to apply additional substance to the cut area for anti-rust protection.
- Ensure to install pipe panels to prevent rain water from getting into the unit.
- Close the gap at the pipe connected area with putty or heat insulator (locally supplied).
  - If an insect or small animal enters the outdoor unit, there is the risk of shorting in the product electronic casing.
    [Remove the front panel]
    (1) Remove the 2 mounting screws.
    (2) Slide the front panel using your hands downwards to release the pawls.
    Then remove by pulling the panel towards you.

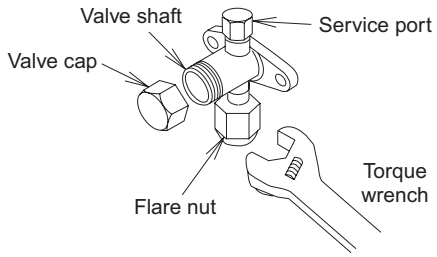


Specification for pipe connecting indoor unit to outdoor unit.

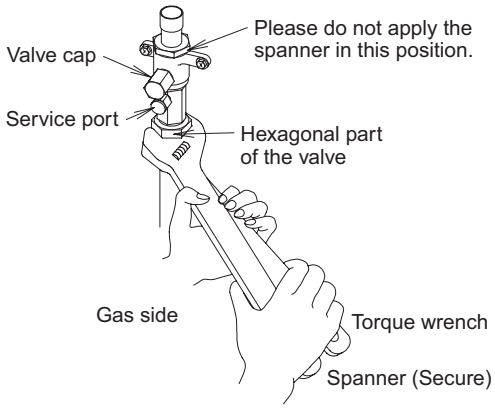
Model name		U-200PE2E8A	U-250PE2E8A
Maximum pipe length		120m	120m
Height difference	Outdoor located higher installation	30m	30m
	Outdoor located lower installation	30m	30m
Piping Connections	Liquid side	ø9.52	ø12.7
	Gas side	ø25.4	ø25.4

Precautions when operating the 3-way valve for piping installation

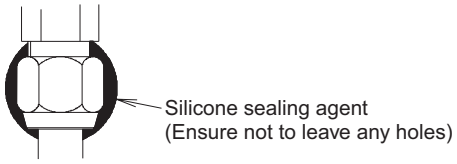
- Do not open the 3-way valve until the piping installation is completed.
  - It is closed during shipment.
  - During installation the side panel may warp if only the flare nut is loosened and tightened with a torque wrench. As a result, always be sure to secure to the hexagonal part of the 3-way valve with a spanner, or other tool.
- Refer to the following table for the tightening torque of the 3-way valve flare nuts.
  - If the nuts are over tightened, they may cause the flares to break or leak.
- Do not add additional force to the valve's cover.
  - Using spanners on the cover or valve itself (other than the hexagonal parts) may cause gas leakage. Avoid using spanners on the cover or parts other than the hexagonal part of the valve.



(Please use a single, open-end spanner to loosen and tighten the liquid side 3-way valve flare nut.)

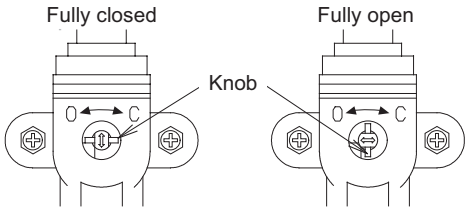


- During the cooling mode operation under low ambient pressure, the low pressure side of the valve can be prone to freezing. Secure the flare nut (shared gas side / liquid side) section of the valve with a silicone sealing agent to prevent this from occurring.

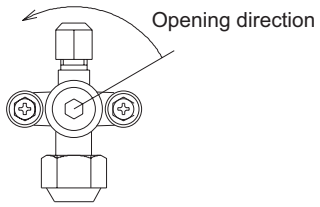


[3-way valve operation method] • Use an Allen wrench (Size 4 mm or 6 mm).
Direction to open

- Gas side
  Opening: Open the valve cap, pull out the knob and use pliers etc. to turn the knob 90° counter-clockwise.
  Closing: Open the valve cap, pull out the knob and use pliers etc. to turn the knob 90° clockwise.



- Liquid side
  Opening: Open the valve cap and turn the Allen wrench counter-clockwise until it stops.
  Closing: Open the valve cap and turn the Allen wrench clockwise until it stops.



Precautions for handling the valve cap

- Ensure not to scratch the inner surface of the valve or the end of the valve shaft.
  - Once adjustments to the valve are completed, ensure to tighten the valve cap according to the prescribed torque.

	Tightening torque N•m (kgf•m)
Gas side	20~25 (200~250)
Liquid side	17±3 (170±30)

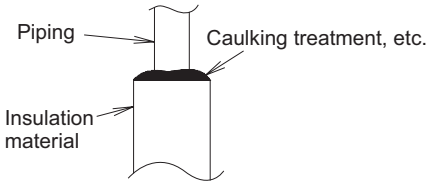
Precautions for handling the service ports

- Use a push-rod with a charge hose.
  - Once adjustments to the valve are completed, ensure to tighten the valve cap according to the prescribed torque.

Tightening torque
11.0±1.0N•m (110±10kgf•cm)

Precautions for connecting the pipes

- Ensure that the pipes do not come into contact with the compressor's bolts or exterior panel.
- There is a risk of condensation from the 3-way valve coming out between the insulation material and the indoor unit's piping when you install the outdoor unit above then the indoor unit. Ensure to caulk the connection parts.



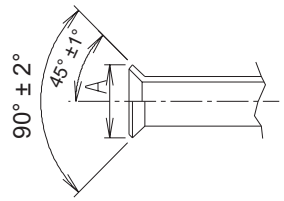
Precautions for insulation installation

Maximum temperature limit of gas or liquid piping exceeds 120 °C

- In high humidity environment, reinforce the insulation material for the refrigerant piping. Failure to do so may result in condensation on the surface of the insulation material.
- Use materials with good heat-resistant properties as the heat insulator for the pipes. Ensure to insulate both the gas side and liquid side pipes.
  If the pipes are not adequately insulated, condensation and water leakages may occur.
- Ensure that the current insulation covers the pipes up to the unit's connecting part.
  If the piping is exposed, it may cause condensation or burn (when touch the pipe).

Precautions for flare nut installation

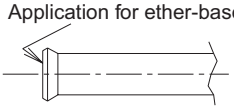
- Dimensions when adding flare nuts and the tightening torque

Piping size	Tightening torque	Flare section dimensions A	Flare configuration
ø 6.35	14.0N•m ~ 18.0N•m (140kgf•cm ~ 180kgf•cm)	8.7 ~ 9.1	
ø 9.52	34.0N•m ~ 42.0N•m (340kgf•cm ~ 420kgf•cm)	12.8 ~ 13.2	
ø 12.7	49.0N•m ~ 55.0N•m (500kgf•cm ~ 560kgf•cm)	16.2 ~ 16.6	
ø 15.88	68.0N•m ~ 82.0N•m (690kgf•cm ~ 830kgf•cm)	19.3 ~ 19.7	
ø 19.05	100N•m ~ 120N•m (1020kgf•cm ~ 1220kgf•cm)	23.6 ~ 24.0	

After piping connection has completed, ensure there is no gas leakage.

- When tightening the flare nut, coat the flares (inner surface only) with refrigerant oil on the flares
  Firstly, screw in 3-4 turns by hand.
  * Ensure not to get oil on the screw part.
  Refrigerant oil used is ether-based.

Application for ether-based oil



- Once the piping connections are completed, perform leakage inspection using nitrogen gas.

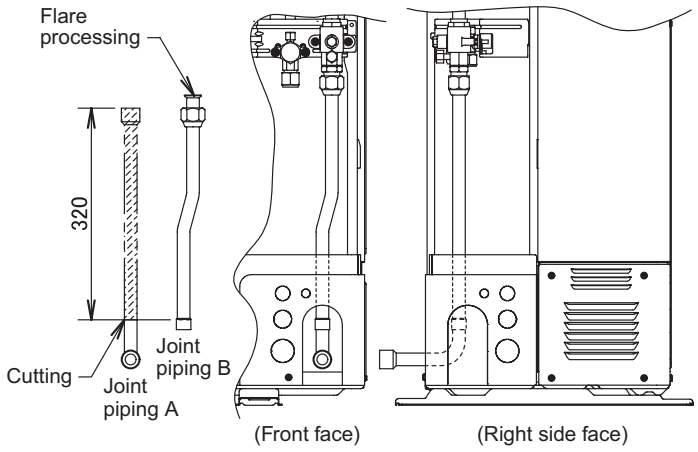
7. SELECTING THE LOCATION FOR INSTALLATION SERVICE

When installing multiple units, allow enough space in between the units and the side of the building.

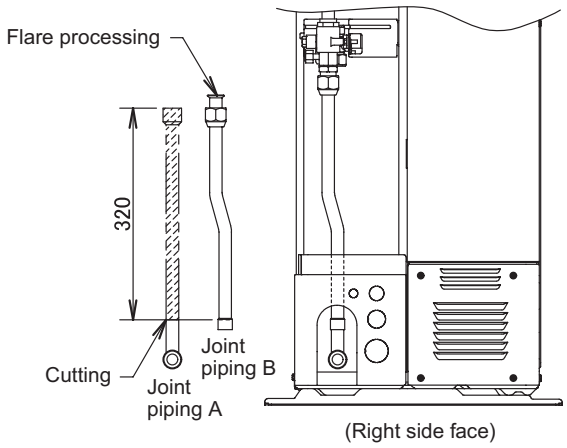
(unit: mm)

Example of connecting pipe process

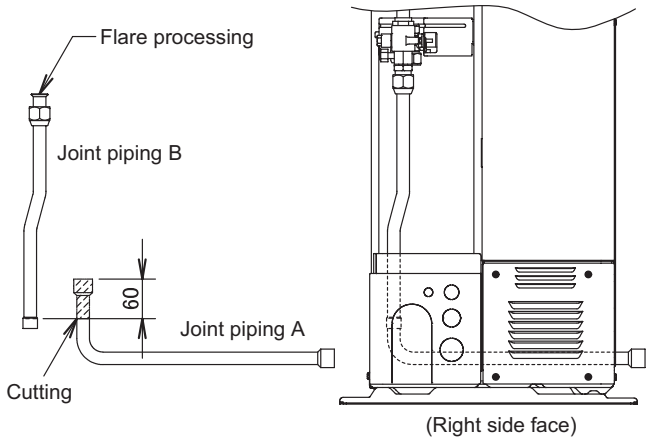
(1) Front mounting



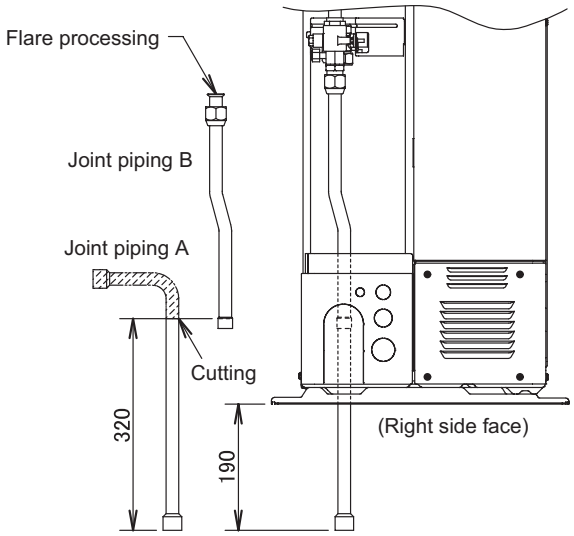
(2) Right mounting / flare processing



(3) Rear mounting



(4) Bottom mounting



- (Gas piping connection) While the main gas side pipe is ø25.4, since connecting the outdoor unit's 3-way valve requires a ø19.05 flare, please be sure to use standard accessories joint piping B or A for connection (brazing), and connect as follows.
  1. Since standard accessory joint piping B comes supplied for connecting the outdoor unit's 3-way valve, machine the upper edge to ø19.05 flare specifications.
  2. Refer to connection pipe process examples (1) - (4) to cut the joint piping A to the necessary length.
  3. Braze the machined (cut) joint piping A to the bottom edge of joint piping B.
  4. In order to protect wiring and parts in the unit, please carry out brazing outside the unit (since each type of joint piping is differently oriented, carry out brazing according to the orientations shown in the connection pipe process diagrams.
  5. Connect the brazed connection pipes to the outdoor unit's 3-way valve through the flare connection.

- When cutting the pipe, use a pipe cutter and be sure to carry out deburring.
- Ensure that water, sand etc. do not enter the interior of the piping.
- Using a flare tool, carry out sound flare process.

■ **Indoor Unit**

8. SELECTING THE INSTALLATION SITE

CAUTION

- **When moving the unit during or after unpacking, make sure to lift it by holding its lifting lugs. Do not exert any pressure on other parts, especially the refrigerant piping, drain piping and flange parts.**
- **If you think the humidity inside the ceiling might exceed 30°C and RH 80%, reinforce the insulation on the unit body. Use glass wool or polyethylene foam as insulation so that it is no thicker than 10 mm and fits inside the ceiling opening.**

Indoor Unit

AVOID:

- Areas where leakage of flammable gas may be expected.
- Places where large amounts of oil mist exist.
- Direct sunlight.
- Locations near heat sources which may affect the performance of the unit.
- Locations where external air may enter the room directly. This may cause “condensation” on the air-discharge ports, causing them to spray or drip water.
- Locations where the remote controller will be splashed with water or affected by dampness or humidity.
- Installing the remote controller behind curtains or furniture.
- Locations where high-frequency emissions are generated.
- Places where blocks air passages.
- Places where the false ceiling is not noticeably on an incline.

DO:

- Select an appropriate position from which every corner of the room can be uniformly cooled.
- Select a location where the ceiling is strong enough to support the weight of the unit.
- Select a location where tubing and drain pipe have the shortest run to the outdoor unit.
- Allow room for operation and maintenance as well as unrestricted airflow around the unit.
- Install the unit within the maximum elevation difference above or below the outdoor unit and within a total tubing length (L) from the outdoor unit as detailed in Table 1-1.
- Allow room for mounting the remote controller about 1 m off the floor, in an area that is not in direct sunlight or in the flow of cool air from the indoor unit.
- Places where optimum air distribution can be ensured.
- Places where sufficient clearance for maintenance and service can be ensured.

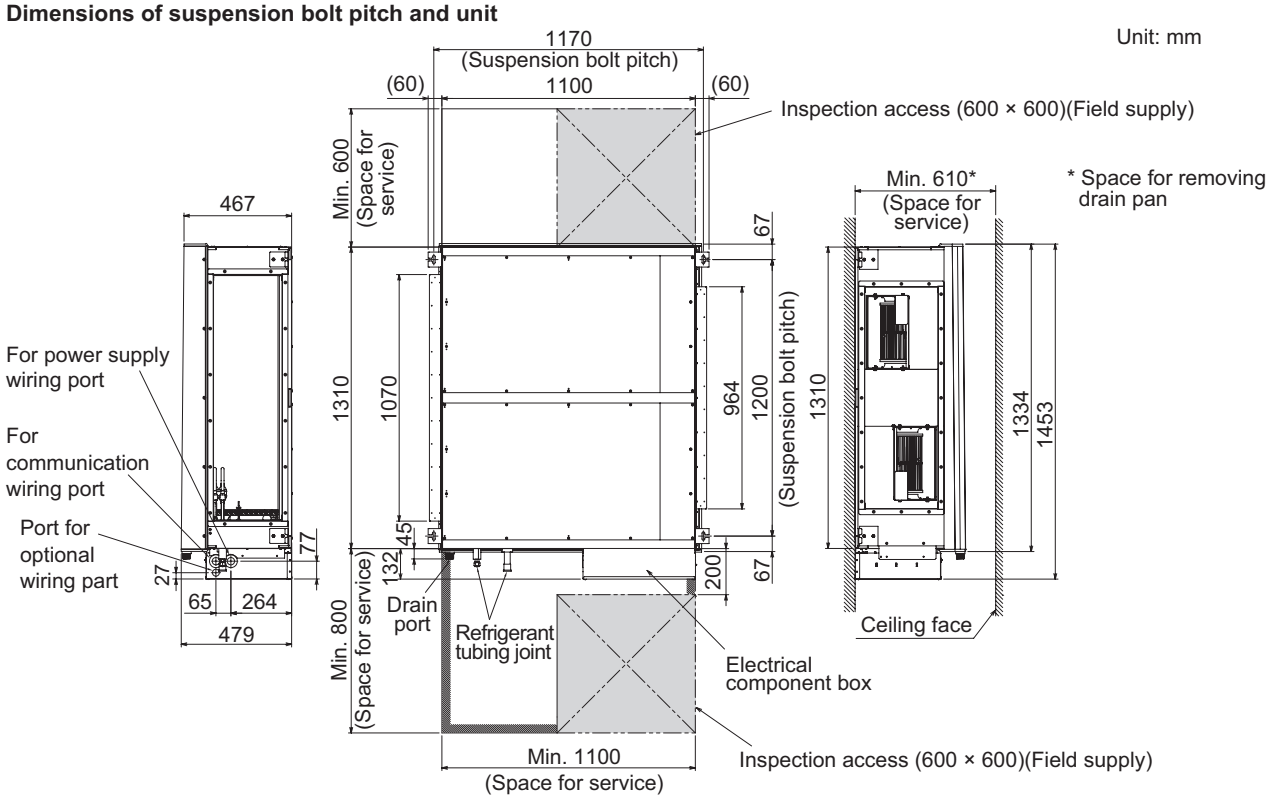
9. HOW TO INSTALL THE INDOOR UNIT

<Type E2>

9-1. Required Minimum Space for Installation and Service

(1) Dimensions of suspension bolt pitch and unit

Unit: mm

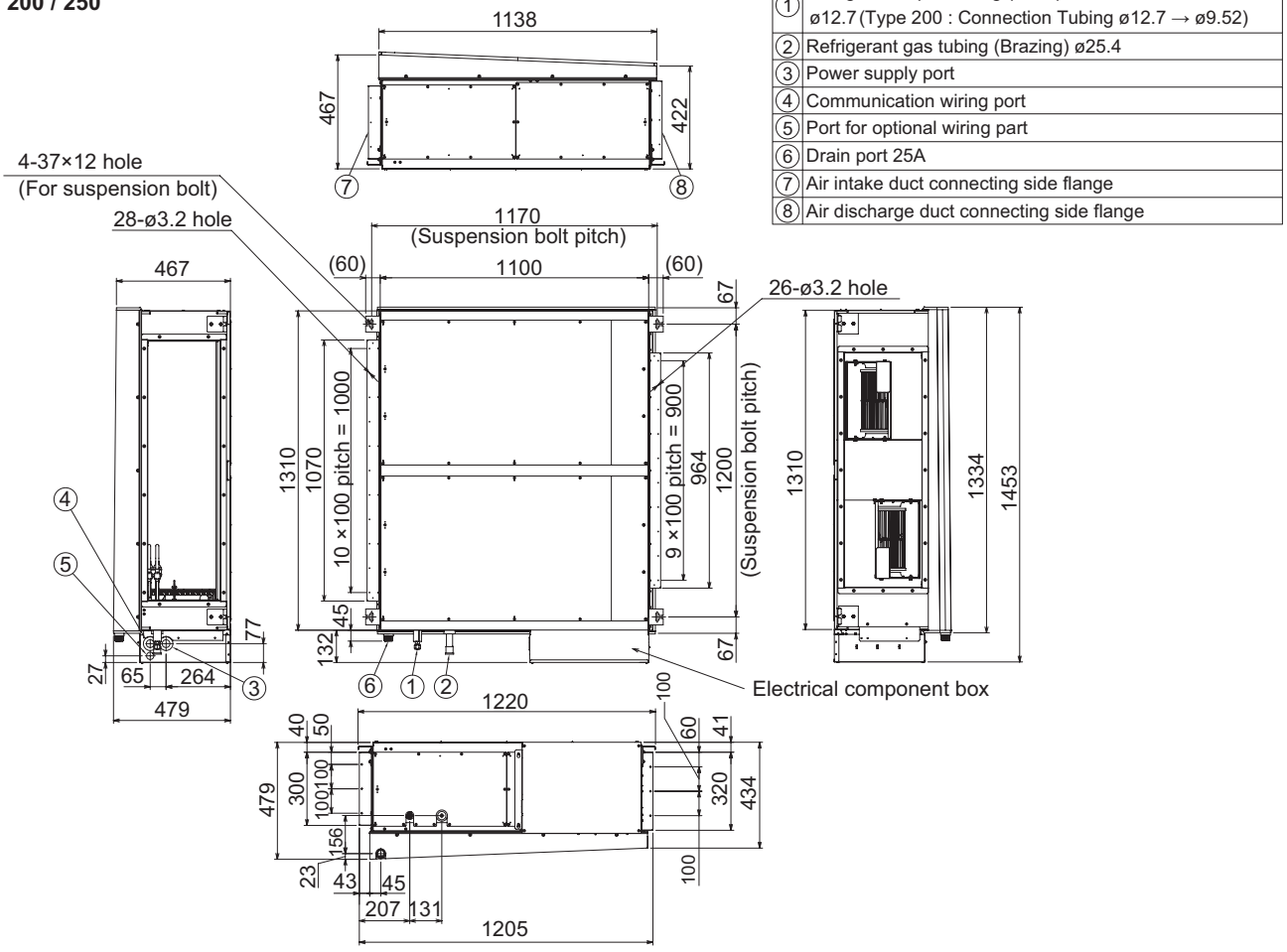


(2) Dimensions of indoor unit

Types 200 / 250

Unit : mm

①	Refrigerant liquid tubing (Flare) ø12.7 (Type 200 : Connection Tubing ø12.7 → ø9.52)
②	Refrigerant gas tubing (Brazing) ø25.4
③	Power supply port
④	Communication wiring port
⑤	Port for optional wiring part
⑥	Drain port 25A
⑦	Air intake duct connecting side flange
⑧	Air discharge duct connecting side flange



9-2. Suspending the Indoor Unit

Depending on the ceiling type:

1. Check the suspension bolt pitch.
2. Ensure that the ceiling is strong enough to support the weight of the unit.
3. To prevent the unit from dropping, firmly fasten the suspension bolts as shown in the figure below.

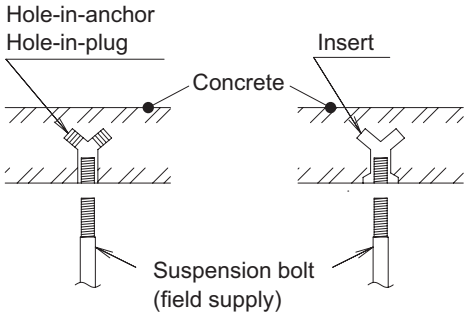


Fig. 1-11

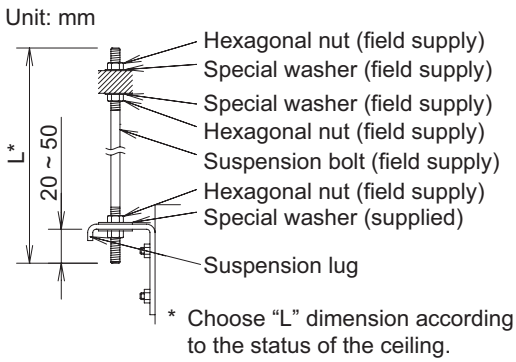


Fig. 1-12

NOTE

Type	200	250
Suspension bolt (field supply)	M10 or 3/8"	M10 or 3/8"

WARNING **It is important that you use extreme care in supporting the indoor unit inside the ceiling.**
Ensure that the ceiling is strong enough to support the weight of the unit.
Before suspending the unit, test the strength of each attached suspension bolt.

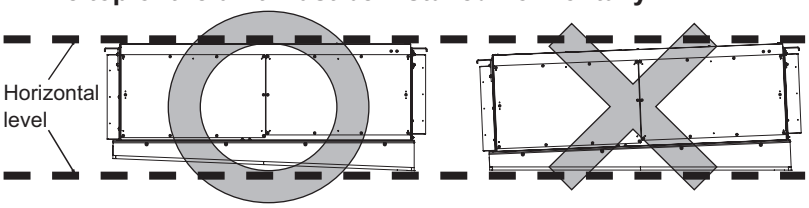
(1) When placing the unit inside the ceiling, determine the pitch of the suspension bolts referring to the dimensional data given previously. Tubing must be laid and connected inside the ceiling when suspending the unit.
If the ceiling is already constructed, lay the tubing into position for connection to the unit before placing the unit inside the ceiling.

(2) Screw in the suspension bolts allowing them to protrude from the ceiling as shown in Fig. 1-11. (Cut the ceiling material, if necessary.)

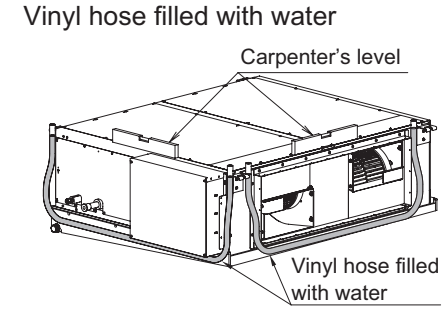
(3) Suspend and fix the indoor unit using the 2 hexagonal nuts (field supply) and special washers (supplied with the unit) as shown in Fig. 1-12.

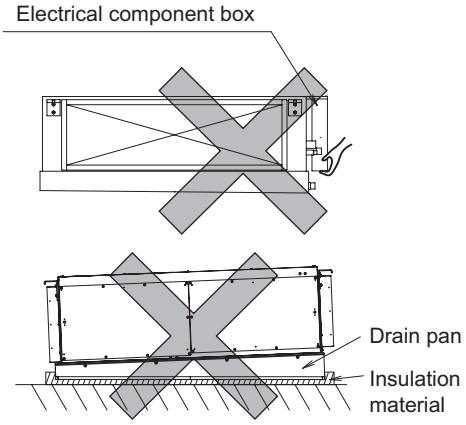
CAUTION

- **The top of the unit must be installed horizontally.**



- **Check the unit is placed horizontally.**
  Make sure the unit is installed level using a level or a vinyl hose filled with water.
  In using a vinyl hose instead of a level, adjust the top surface of the unit to the surface of the water at both ends of the vinyl hose and make horizontal adjustment on all 4 corners of the unit.
  If the air-discharge side of the unit is installed downward, splashing water or water leak may occur.
  Also, the dust may accumulate inside the drain pan caused by draining residual water.
- **When lifting the unit, do not attempt to hold the electrical component box in hand.**
- **Do not leave the drain pan of the unit downward for long hours.**
  If doing so, the insulation material can be crushed.
  Crushed insulation can lead to condensation.





9-3. Installing the Refrigerant Tubing

The size of the refrigerant tubing is as shown in the table below.

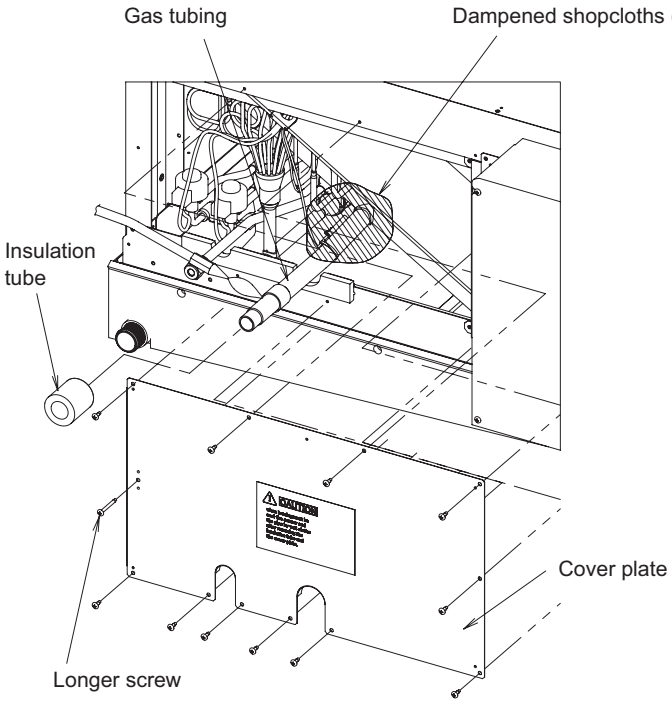
Table 1-2

Type	200	250
Gas tube	ø25.4 (Brazing connection)	ø25.4 (Brazing connection)
Liquid tube	ø9.52 (Flare connection) Tightening torque (approximate) : 34 ~ 42 N · m Thickness of connecting tube : 0.8 mm	ø12.7 (Flare connection) Tightening torque (approximate) : 34 ~ 42 N·m Thickness of connecting tube : 0.8 mm

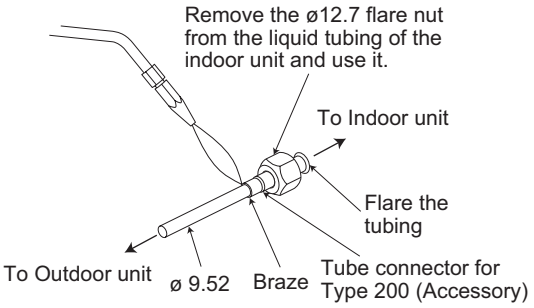
NOTE

To fasten the flare nuts, apply specified torque.

- When brazing, must be cool the pipe by wet cloths after removing the insulation tube and the cover plate.
- When brazing the gas tubing, cool the tubing with dampened shopcloths as you work, as shown in the figure below, to protect the unit's thermistor from the heat generated by brazing.



- The Type 200 indoor unit comes with a tube connector that is for liquid tubing.
  Configure as shown in the illustration and connect it.
  When flaring the tube, put the flare nut onto it first and then flare it.



- Pipe insulation must be made after leak detection for tubing connection area was performed.
- Be sure to insulate both the gas tubing and liquid tubing.
  In addition, wrap the supplied insulation material around the tubing joints, and fasten in place with vinyl tape or other means.
  Failure to insulate the tubing may result in water leakage from condensation.
- Plug all gaps at tube through-holes in the unit with insulation or a similar substance to prevent air leakage.

9-4. Installing the Drain Piping

(1) Prepare standard hard PVC pipe (O.D. 32 mm) for the drain and use the supplied drain socket to prevent water leaks.
The PVC pipe must be purchased separately.
When doing this, apply adhesive for the PVC pipe at the connection point.

(2) If connecting a drain socket (supplied) to the threaded drain port, first wrap the drain port threads with sealing tape, then connect the joint. (Fig. 1-13)

(3) Ensure the drain pipe has a downward slant (1/100 or more). (See the Fig. 1-14)

(4) The drain pipe with a trap should be installed away from the indoor unit.

(5) Do not forcibly install the drain pipe to the indoor unit tubing.
If forcibly installed, it may result in water leakage.

(6) The drain pipe should be fixed at the nearest of the indoor unit.
Failure to do so may result in water leakage.

(7) Do not attach any air purge equipment.
If attached, drain water may result in splashing out of the drain pipe.

(8) When the drain piping is completed, perform the water leak test and check for a water leak.
If detected, it may result in water leakage or condensation.

(9) When the drain piping is completed, perform the drainage test if the water drains smoothly.
If not draining smoothly, it may result in water leakage or condensation.

(10) When the drain piping work is finished securely, wrap the insulation material around the indoor side drain pipe.
At this time, do not wrap together with the refrigerant tubing.
If wraped together, the drain pipe is lifted and water drainage will not be operated.
Coincidentally, the water comes out of the drain pan and it can lead to water leakage.

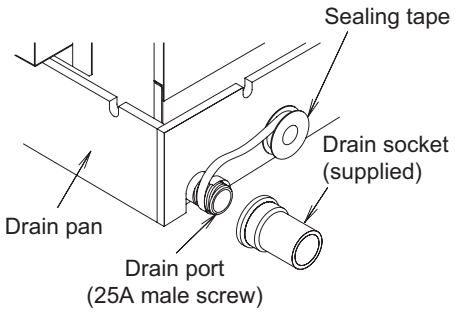


Fig. 1-13

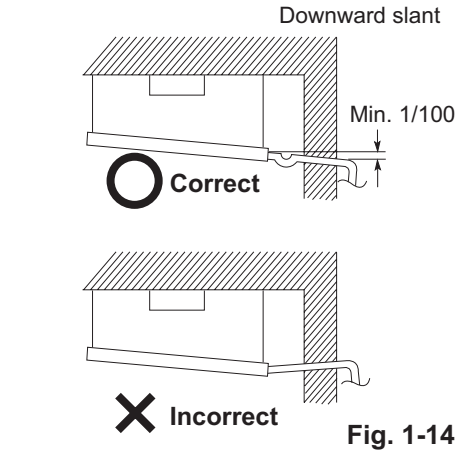
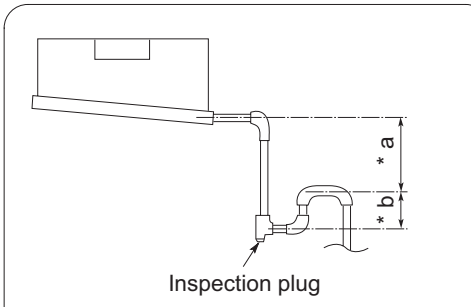


Fig. 1-14



*a: over 100mm
*b: over 50mm

Note:
Since the drain trap area easily accumulates the dust inside the drain pipe, necessarily install the plug in order to clean out the drain trap.

Fig. 1-15

9-5. Caution for Ducting Work

- This unit has high static pressure.
  In case of small pressure resistance (for instance, a short duct), install an airflow control damper (field supply) for adjusting airflow volume as airflow volume / airflow noise increases.
- If the air conditioner is to be installed in a room such as an office or meeting room which needs a low sound level, provide a supply and return sound absorption chamber with an acoustic liner.
- Use a flexible canvas connection or vibration isolation hanger (field supply) to break transmission of mechanical vibration of the unit.

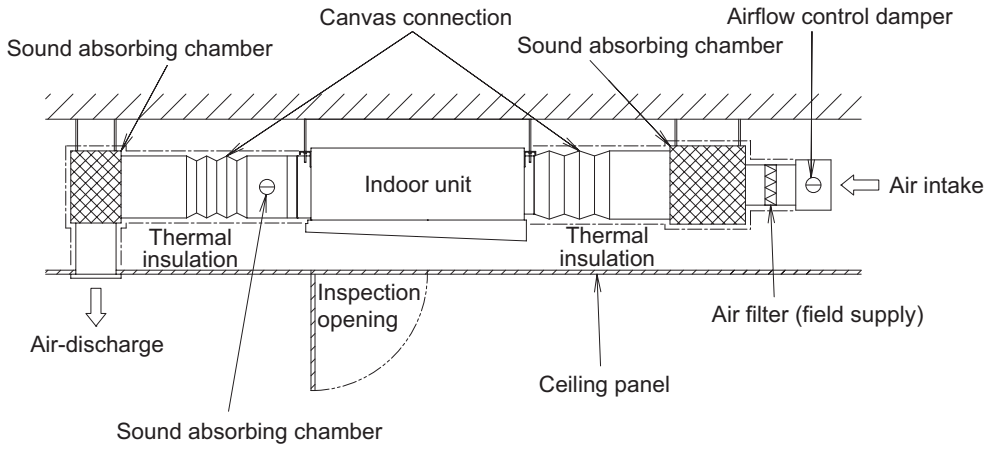


Fig. 1-16

CAUTION

- Use incombustible duct materials.
- Use thermal insulation to prevent duct condensation.
- An air filter (field supply) must be installed at the air intake side.
  If not installed, the heat exchanger will get dirty and the unit will reduce the quality.
- Obtain and install an air filter (field supply) which can easily wash away the dust by lukewarm, soapy water orsuck up with a vacuum cleaner.
- Clean the air filter periodically to collect dust and other particles from the air.
- Use duct static pressure within a range of specification value.

9-6. External Static Pressure Setting

Choose one of the methods (selection of “a”, “b”, “c” within the range of dotted line as shown in the flowchart below) and make settings.

a. No setting changes:

When using as it is factory preset at shipment.
(If resetting after external static pressure setting once, it might be different from factory preset.)

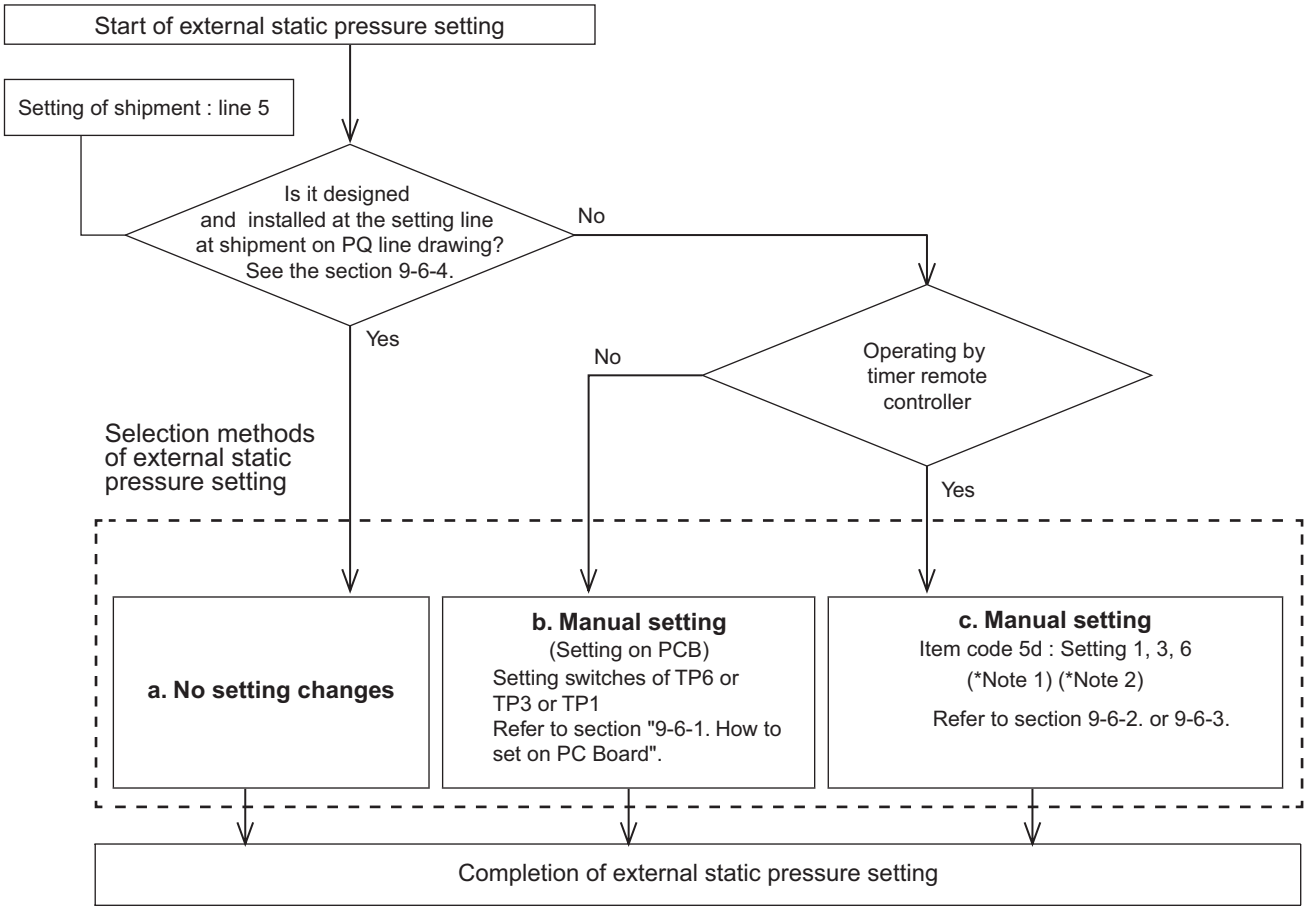
b. Manual setting (on PCB):

This is static pressure setting excepting factory preset at shipment. Dip switch select method.

c. Manual setting (by timer remote controller):

Static pressure setting excepting factory preset at shipment.

Flow of External Static Pressure



NOTE

(1) Refer to Table 1-4, 1-5 and Fig. 1-18 for details on the relationship between the value of item code “5d” and the external static pressure.

(2) When set in group control (connecting multiple indoor units with one timer remote controller), set each indoor unit to item code “5d”.
When amending the setting after selecting [b. Manual setting] (due to airflow path changes, etc.), it is necessary to cancel [b. Manual setting] (switching OFF positions).
When [b. Manual setting] has not been cancelled, [c. Manual setting] will be activated if selected, but [b. Manual setting] takes precedence when the power is switched back on after power outages, etc.

CAUTION

- **Make sure the external static pressure is in a range of specifications. Then proceed the external static pressure setting. Improper settings can cause noise, a shortage of airflow volume and water leakage. Refer to Fig. 1-18 for the external static pressure setting range.**
- **Be sure to set the [External Static Pressure Setting] once again after amending the airflow path for the duct or air outlet after setting the external static pressure.**

9-6-1. How to Set on PC Board

1. Turn off the power breaker to halt the supply of electricity to the PC board.
2. Open the lid of the electrical component box and confirm the location where the Select switch on the indoor unit control PCB is placed. (Fig. 1-17)
3. Set the On/Off switches in the Off position which are now set in the On position.
   Select the positions of the Select SW001 switches respectively to make the desired external static pressure settings referring to the Table 1-3.

Table 1-3 External static pressure SW setting

External static pressure at the time of rated airflow volume		SW001		
200	250	TP6	TP3	TP1
270Pa	270Pa	ON 1	2	3
140Pa	140Pa	1	ON 2	3
60Pa	72Pa	1	2	ON 3

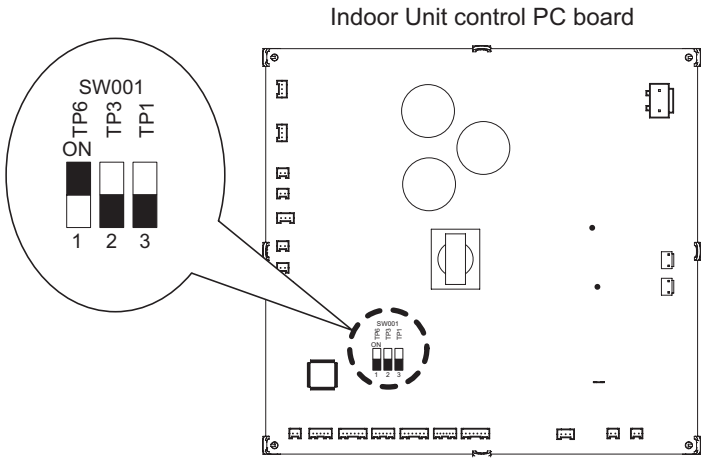


Fig. 1-17

9-6-2. Operating the Timer Remote Controller (CZ-RTC4)

- **How to set the external static pressure**

(1) Press and hold down the , CANCEL and SET buttons simultaneously for 4 or more seconds. (SETTING, the Unit No., Item Code and Detailed Data will blink on the LCD display.)

(2) The indoor unit numbers in the group control will be sequentially displayed whenever the Unit Select button is pressed UNIT.
Only the fan motor for the selected indoor unit will operate during this time.

(3) Specify the "Sd" item code by pressing the ▽ / △ buttons for the temperature setting buttons and confirm the values.
("0001" set at shipment)

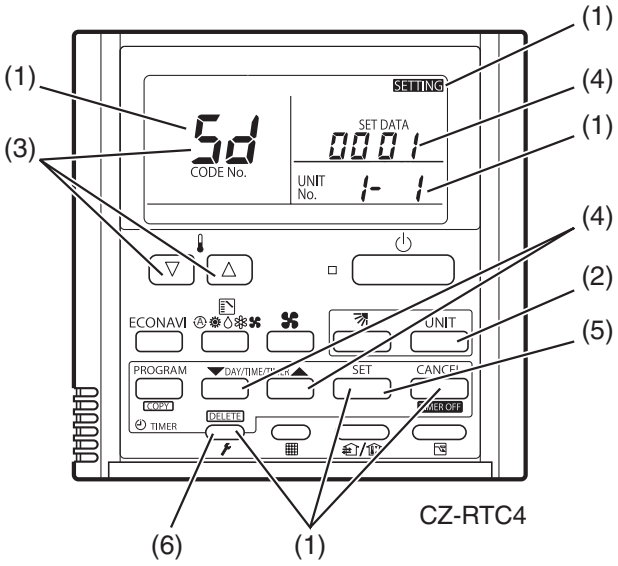
(4) Press the DAY/ / TIMER buttons for the time to amend the values for the set data.
Refer to Table 1-4 and Fig. 1-18 and select a value "0006", "0003" or "0001".

(5) Press the SET button.
The display will stop blinking and remain illuminated.

(6) Press the button. The fan motor will stop operating and the LCD display will return to the normal stop mode.

Table 1-4 Setting the external static pressure

Indoor unit		Item code
200	250	Sd
External static pressure of the rated air flow volume		
270 Pa	270 Pa	0006
140 Pa	140 Pa	0003
60 Pa	72 Pa	0001



NOTE:

Failure to set this parameter may result in decreased airflow and condensation.

9-6-3. Operating the High-spec Wired Remote Controller (CZ-RTC3 / CZ-RTC5A)

How to set the external static pressure

1. Keep pressing the [↩], [↵] and [▶] buttons simultaneously for 4 or more seconds.
   The “Maintenance func” screen appears on the LCD display.

Maintenance func 20:30 (THU)
1. Outdoor unit error data
2. Service contact
3. RC setting mode
4.Test run
Sel. Page [↵] Confirm

2. Press the [▼] or [▲] button to see each menu. If you wish to see the next screen instantly, press the [◀] or [▶] button.
   Select “8. Detailed settings” on the LCD display and press the [↵] button.

Maintenance func 20:30 (THU)
5. Sensor info.
6. Servicing check
7. Simple settings
8. Detailed settings
Sel. Page [↵] Confirm

   The “Detailed settings” screen appears on the LCD display.
   Select the “Unit no.” by pressing the [▼] or [▲] button for changes.

Detailed settings	20:30 (THU)	
Unit no.	Code no.	Set data
3-1	10	0006
Sel. Next		

3. Select the “Code no.” by pressing the [◀] or [▶] button.
   Change the “Code no.” to “5D” by pressing the [▼] or [▲] button (or keeping it pressed).

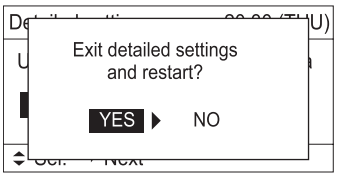
Detailed settings	20:30 (THU)	
Unit no.	Code no.	Set data
3-1	5D	0001
Sel. Next		

4. Select the “Set data” by pressing the [◀] or [▶] button.
   Select one of the “Set data” among “0006”, “0003” or “0001” according to the desired external static pressure setting by pressing the [▼] or [▲] button. (See Table 1-5 and Fig. 1-18.)
   Then press the [↵] button.

Table 1-5 Setting the external static pressure

Indoor unit		Item code
200	250	**5D**
External static pressure of the rated air flow volume		
270 Pa	270 Pa	**0006**
140 Pa	140 Pa	**0003**
60 Pa	72 Pa	**0001**

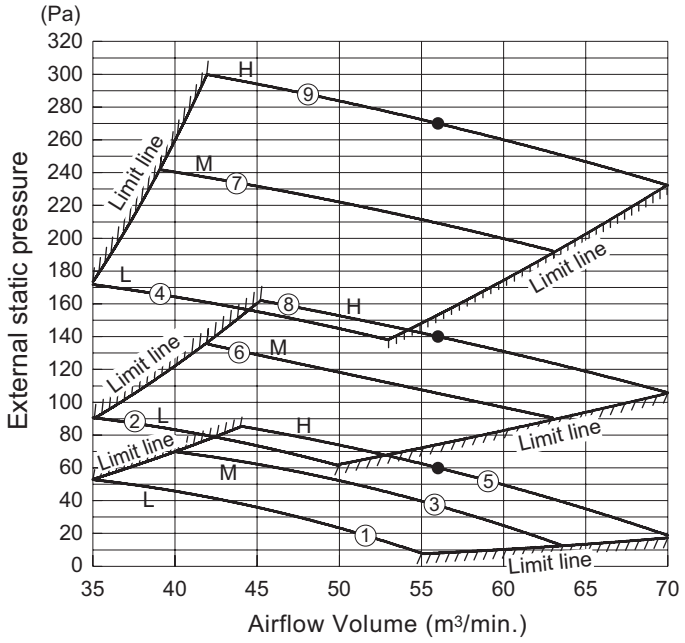
5. Select the “Unit no.” by pressing the [◀] or [▶] button and press the [↩] button.
   The “Exit detailed settings and restart?” (Detailed setting-end) screen appears on the LCD display.
   Select “YES” and press the [↵] button.



9-6-4. Indoor Fan Performance

				Tap								
				①	②	③	④	⑤	⑥	⑦	⑧	⑨
Item code "5d"	0006		Cooling				L			M		H
			Heating				L			M		H
	0003		Cooling		L				M		H	
			Heating		L				M		H	
	0001	Setting at shipment	Cooling	L		M		H				
			Heating	L		M		H				

Type 200



Type 250

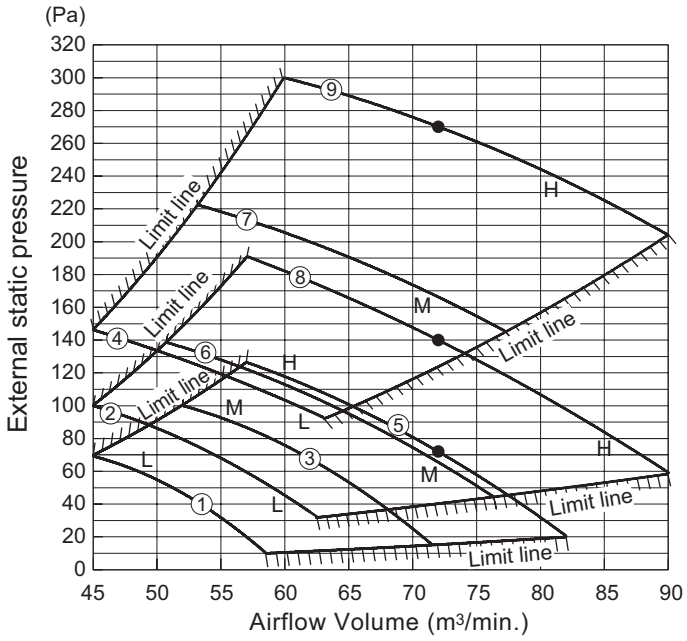


Fig. 1-18

1-11. HOW TO PROCESS TUBING

<Type E2>

The liquid tubing side is connected by a flare nut, and the gas tubing side is connected by brazing.

1. Connecting the Refrigerant Tubing

Use of the Flaring Method

Many of conventional split system air conditioners employ the flaring method to connect refrigerant tubes that run between indoor and outdoor units.
In this method, the copper tubes are flared at each end and connected with flare nuts.

Flaring Procedure with a Flare Tool

(1) Cut the copper tube to the required length with a tube cutter. It is recommended to cut approx. 30 – 50 cm longer than the tubing length you estimate.

(2) Remove burrs at each end of the copper tubing with a tube reamer or a similar tool. This process is important and should be done carefully to make a good flare. Be sure to keep any contaminants (moisture, dirt, metal filings, etc.) from entering the tubing. (Figs. 1- 19 and 1- 20)

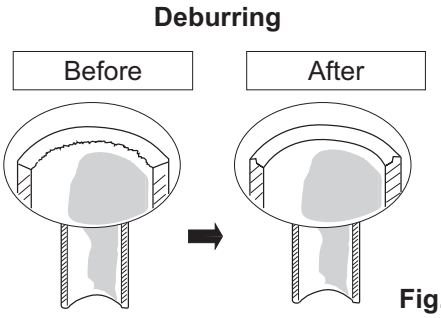


Fig. 1- 19

NOTE

When reaming, hold the tube end downward and be sure that no copper scraps fall into the tube. (Fig. 1- 20)

(3) Remove the flare nut from the unit and be sure to mount it on the copper tube.

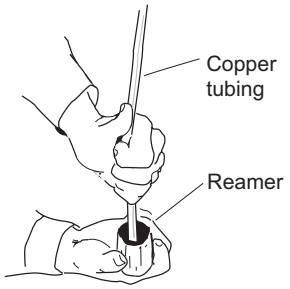


Fig. 1- 20

(4) Make a flare at the end of the copper tube with a flare tool. (Fig. 1- 21)

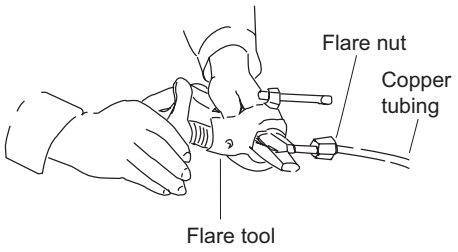


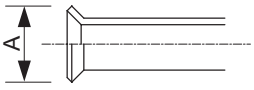
Fig. 1- 21

NOTE

A good flare should have the following characteristics:

- inside surface is glossy and smooth
- edge is smooth
- tapered sides are of uniform length

Flare size: A (mm)



Copper tubing (Outer dia.)	$A^{0}_{-0.4}$
ø6.35	9.1
ø9.52	13.2
ø12.7	16.6
ø15.88	19.7
ø19.05	24.0

Caution Before Connecting Tubes Tightly

(1) Apply a sealing cap or water-proof tape to prevent dust or water from entering the tubes before they are used.

(2) Be sure to apply refrigerant lubricant (ether oil) to the inside of the flare nut before making piping connections. This is effective for reducing gas leaks. (Fig. 1- 22)

(3) For proper connection, align the union tube and flare tube straight with each other, then screw on the flare nut lightly at first to obtain a smooth match. (Fig. 1- 23)

- Adjust the shape of the liquid tube using a tube bender at the installation site and connect it to the liquid tubing side valve using a flare.

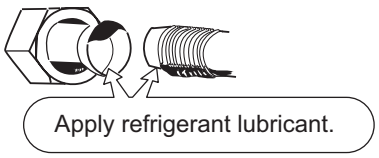


Fig. 1- 22

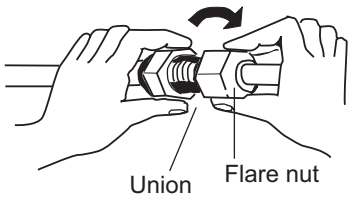


Fig. 1- 23

Cautions During Brazing

- **Replace air inside the tube with nitrogen gas to prevent copper oxide film from forming during the brazing process. (Oxygen, carbon dioxide and Freon are not acceptable.)**
- **Do not allow the tubing to get too hot during brazing.**
  The nitrogen gas inside the tubing may overheat, causing refrigerant system valves to become damaged. Therefore allow the tubing to cool when brazing.
- **Use a reducing valve for the nitrogen cylinder.**
- **Do not use agents intended to prevent the formation of oxide film.**
  These agents adversely affect the refrigerant and refrigerant oil, and may cause damage or malfunctions.

2. Connecting Tubing Between Indoor and Outdoor Units

(1) Tightly connect the indoor-side refrigerant tubing extended from the wall with the outdoor-side tubing.

(2) To fasten the flare nuts, apply specified torque.

- When removing the flare nuts from the tubing connections, or when tightening them after connecting the tubing, be sure to use a torque wrench and a spanner. (Fig. 1- 24)
  If the flare nuts are over-tightened, the flare may be damaged, which could result in refrigerant leakage and cause injury or asphyxiation to room occupants.
- For the flare nuts at tubing connections, be sure to use the flare nuts that were supplied with the unit, or else flare nuts for R410A (Type 2). The refrigerant tubing that is used must be of the correct wall thickness as shown in the table.

  Because the pressure is approximately 1.6 times higher than conventional refrigerant pressure, the use of ordinary flare nuts (Type 1) or thin-walled tubes may result in tube rupture, injury, or asphyxiation caused by refrigerant leakage.
- In order to prevent damage to the flare caused by overtightening of the flare nuts, use the table as a guide when tightening.
- When tightening the flare nut on the liquid tube, use an adjustable wrench with a nominal handle length of 200 mm.

Indoor Unit Tubing Connection (ℓ_1, ℓ_2...ℓ_{n-1})

Indoor unit type	200	250
Gas tubing (mm)	ø25.4	ø25.4
Liquid tubing (mm)	ø9.52	ø12.7

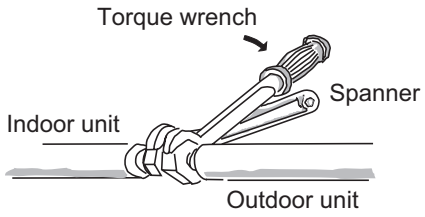


Fig. 1- 24

Tube diameter	Tightening torque (approximate)	Tube thickness
ø6.35 (1/4")	14 – 18 N · m {140 – 180 kgf · cm}	0.8 mm
ø9.52 (3/8")	34 – 42 N · m {340 – 420 kgf · cm}	0.8 mm
ø12.7 (1/2")	49 – 61 N · m {490 – 610 kgf · cm}	0.8 mm
ø15.88 (5/8")	68 – 82 N · m {680 – 820 kgf · cm}	1.0 mm
ø19.05 (3/4")	100 – 120 N · m {1000 – 1200 kgf · cm}	1.0 mm

3. Insulating the Refrigerant Tubing

Tubing Insulation

- Thermal insulation must be applied to all units tubing, including distribution joint (field supply).
  * For gas tubing, the insulation material must be heat resistant to 120°C or above.
    For other tubing, it must be resistant to 120°C or above.
    For other tubing, it must be heat resistant to 80°C or above.

  Insulation material thickness must be 10 mm or greater.
  If the conditions inside the ceiling exceed DB 30°C and RH 70%, increase the thickness of the gas tubing insulation material by 1 step.

Two tubes arranged together

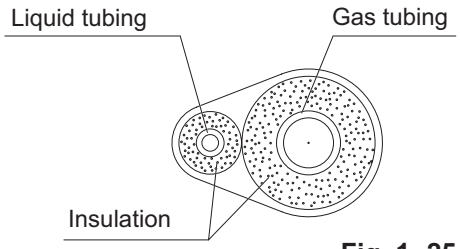


Fig. 1- 25

WARNING

If the exterior of the outdoor unit valves has been finished with a square duct covering, make sure you allow sufficient space to access the valves and to allow the panels to be attached and removed.

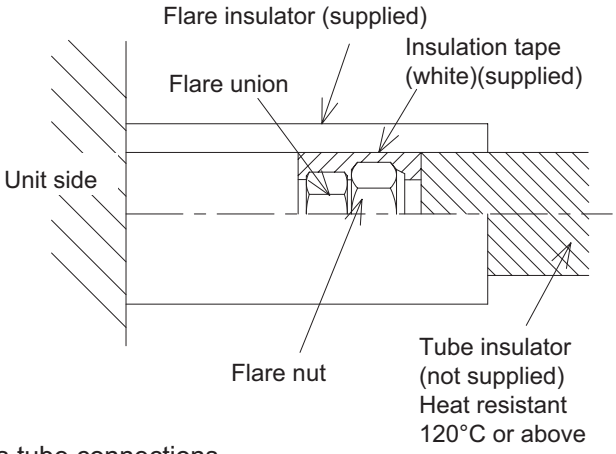


Fig. 1- 26

Taping the flare nuts

Wind the white insulation tape around the flare nuts at the gas tube connections.
Then cover up the tubing connections with the flare insulator, and fill the gap at the union with the supplied black insulation tape.
Finally, fasten the insulator at both ends with the supplied vinyl clamps. (Fig. 1- 26)

Insulation material

The material used for insulation must have good insulation characteristics, be easy to use, be age resistant, and must not easily absorb moisture.

WARNING

After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.
Never grasp the drain or refrigerant connecting outlets when moving the unit.

4. Taping the Tubes

(1) At this time, the refrigerant tubes (and electrical wiring if local codes permit) should be taped together with armoring tape in 1 bundle. To prevent condensation from overflowing the drain pan, keep the drain hose separate from the refrigerant tubing.
(2) Wrap the armoring tape from the bottom of the outdoor unit to the top of the tubing where it enters the wall. As you wrap the tubing, overlap half of each previous tape turn.
(3) Clamp the tubing bundle to the wall, using 1 clamp approx. each meter. (Fig. 1- 27)

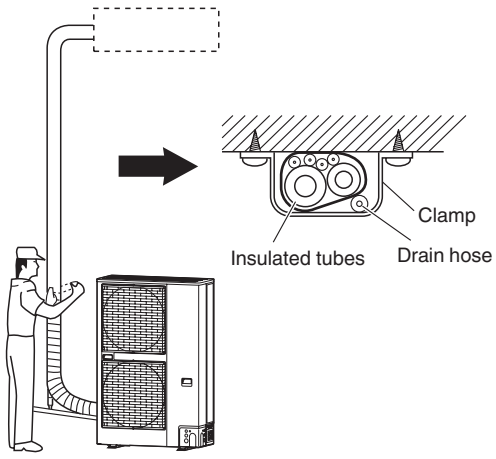


Fig. 1- 27

NOTE

Do not wind the armoring tape too tightly since this will decrease the heat insulation effect.
Also ensure that the condensation drain hose splits away from the bundle and drips clear of the unit and the tubing.

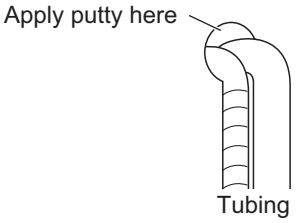


Fig. 1- 28

5. Finishing the Installation

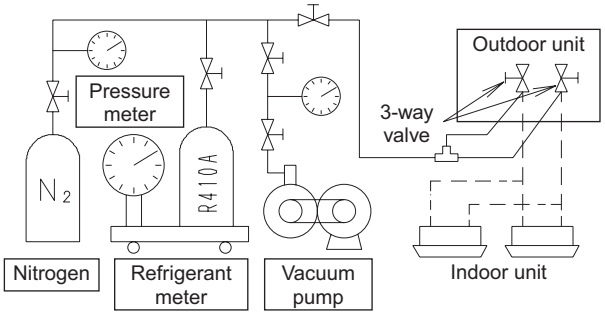
After finishing insulating and taping over the tubing, use sealing putty to seal off the hole in the wall to prevent rain and draft from entering. (Fig. 1- 28)

1-12. VACUUM PURGING

Leak Tightness Test Method

- Keep 3-way valve fully closed and pressurize through 3-way valve service port.
- Do not pressurize to the default value at once. Pressurize gradually.
  1 Pressurize to 0.5MPa (5kgf/cm²G) and then leave it for 5 minutes to ensure that the pressure does not drop.
  2 Pressurize to 1.5MPa (15kgf/cm²G) and leave it for 5 minutes to ensure that the pressure does not drop.
  3 For the test, pressurize to 4.15MPa and leave it for about 1 day to ensure that the pressure does not drop.

Use nitrogen gas for the leak tightness test.
Using flammable gas can cause an explosion.



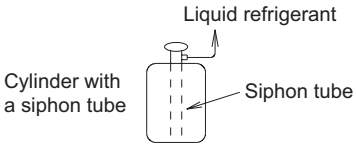
Vacuum Purging

- Use a vacuum pump (with back-flow prevention device) to vacuum through the 3-way valve service port to achieve the pressure below -101kPa (5 Toor).
- Air and moisture remaining in the refrigerant system due to poor vacuum drying can cause performance decrement and malfunction of the compressor.

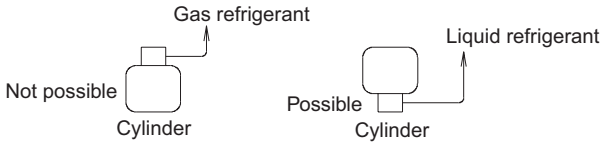
1-13. REGARDING REFRIGERANT FILLING

Precautions during refrigerant filling

- Ensure to fill only with liquid refrigerant when refilling.
  If gas refrigerant is filled, the refrigerant composition will not be balanced and will cause abnormal operation.



- If using cylinders as shown in the bottom left diagram; without a siphon tube inside, turn it upside down and use it.
  (It is recommended to use the manifold with the side glass.)



- Use tools that are designed specifically for R410A, for pressure resistance and to prevent mixing impurities.
- Fill the refrigerant from the 3-way valve's service port on the liquid-side.

For filling and replacing all refrigerant (For refilling due to a leak)

- For refilling refrigerant, first collect all residual refrigerant and after vacuum dehydration using the vacuum pump. Refill the refrigerant according to the prescribed amount stated on the placard affixed to this unit.

Precautions after the pipes' connection have completed

- Ensure to open the 3-way valve after completing the piping installation, leak test and vacuuming. If it is closed during operation, it can lead to compressor failure.

Charging with refrigerant

- At the time of shipment from the factory, this unit is charged with enough refrigerant for an equivalent pipe length of 30m. If the equivalent pipe length used will be 30m or less, no additional charging will be necessary.
- If the equivalent pipe length will be between 30 and 120m, charge with additional refrigerant according to the equivalent length given in the table below.
  - For standard type

Model name	Add. gas amount	Equivalent length	Minimum length
U-200PE2E8A	50g/m	120m	5m
U-250PE2E8A	80g/m	120m	5m

- Pump down operation
  Please refer to the service manual for pump down method.

1-14. PRECAUTIONS REGARDING TEST RUN

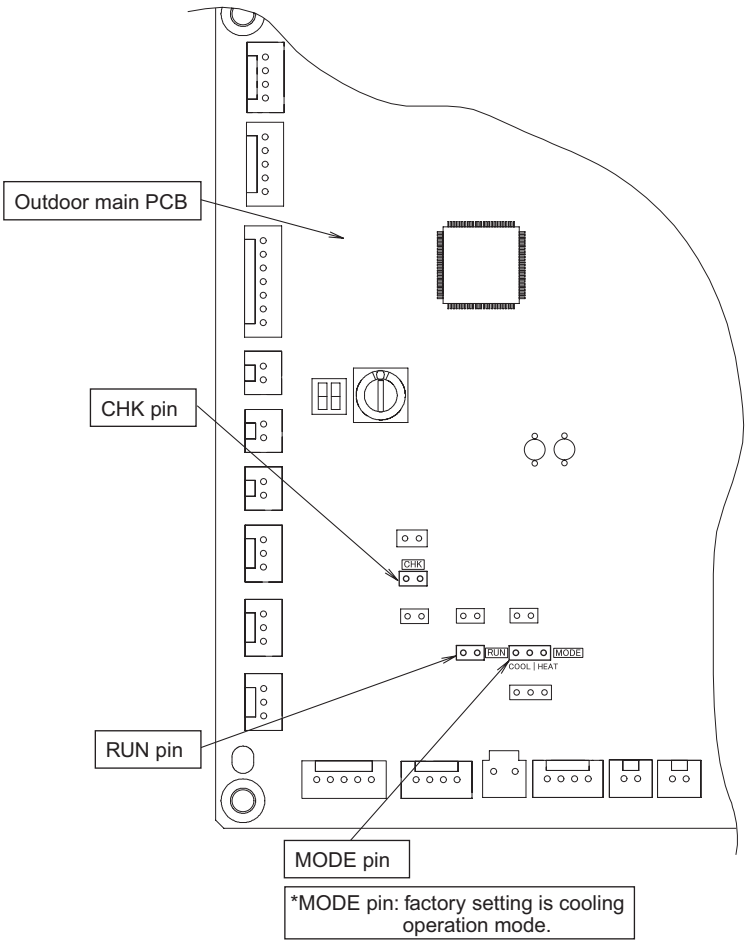
Check Before Test Run

	Content check
Power supply cable Indoor/outdoor connection wire Earth wire	● Is the wire set up and connected as described in the instructions? Check for any phase sequence. ● Are the wire connection's screws loose? ● Is the open and close device / leakage breaker installed? ● Is the power supply cable's thickness and length appropriately measured as described in the instructions? ● Is it earthed (grounded)? ● Check that the insulation resistant value is more than 1 MΩ. Use the 500 V mega-testers to measure the insulation. Do not use the mega-tester for any other circuit except for voltage of 220-240V or 380-415V. ● Are the wire connections for the indoor/outdoor units connected as described in the instructions? Are there any looped wires? ● Was the "N-phase" surely connected when connecting the power supply wire on the three-phase model? If N-phase is not connected, only the fan may repeat turning ON/OFF without the compressor operating. In that case, check if there is any problem with N-phase connection.
Refrigerant pipe	● Is the piping installed as described in the instructions? ● Are the pipes sizes appropriate? ● Does the pipe's length adhere to the specifications? ● Is the branch pipe slant being appropriately done as described in the instructions? ● Was vacuum removal sufficiently carried out? ● Was the leak tightness test carried out with nitrogen gas? Use the testing pressure of 4.15 MPa. ● Is the piping insulation material appropriately installed? (Insulation material is necessary for both gas and liquid piping.) ● Is the 3-way valve for the liquid side and gas side open?

- Always be sure to use a properly insulated tool to operate the short-circuit pin on the circuit board. (Do not use your finger.)
- Never switch the power supply ON until the installation has completed.
- Supply electrical current through all indoor units and check the voltage.
- Supply electrical current through all the outdoor units and check each inter-phase voltage.
- Before the test run, ensure to check that the 3-way valve is open. Operating while the valve is closed causes the compressor to fail.

Test Run Procedure

- If there are duplicated system addresses, or if the settings for the Nos. of the indoor units are not consistent, an alarm will occur and the system will not start.
- Switch the power supply ON both indoor and outdoor unit.
- Short-circuit CHK pin on the outdoor main PCB.
  Do not remove CHK pin until test run is completed.
  Removing CHK pin stops test run.
- Short-circuit RUN pin on the outdoor main PCB for one second or longer.
  Factory setting is cooling operation mode and cooling operation test run starts.
  If heating operation starts, short-circuit both right side and centre of the MODE pin (centre and COOL) continuously.
- Ensure to conduct a test run. In addition, be sure to run the cooling operation test run for at least 20 minutes before starting the heating operation test run.
- To conduct heating operation test run, short-circuit left side and centre of the MODE pin (centre and HEAT) continuously.
- Removing CHK pin's and MODE pin's short-circuit stops test run.
- For the test run using remote control unit, please see installation manual included with the remote control unit.



1-15. CHECKS AFTER INSTALLATION HAVE COMPLETED

- Check the following items after completing installation.
  - ☐ Is there a short circuit with the intake air flow?
  - ☐ Is the insulation secure? (Refrigerant piping)
  - ☐ Are there any errors with the wiring?
  - ☐ Are the terminal screws loose? Tightening torque (Unit: N•m {kgf•m})
    M4… 1.57-1.96 {0.16-0.2}, M5... 1.96-2.45 {0.2-0.25}.
  - ☐ Is the drain water flowing smoothly?
  - ☐ Is the insulation material properly installed?
  - ☐ Is the earth wire securely connected?
  - ☐ Is the front panel and the indoor unit air conditioner firmly fixed and was the installation completed without any leakage from the refrigerant?
  - ☐ Are the indoor and outdoor units secured firmly installed with bolts at secured locations?

1-16. REGARDING DELIVERY TO THE CUSTOMER

- Request the customer to review the instruction manual and explain the operating method for the product.
- In addition, it is also recommended that regular inspection checks are agreed upon for maintenance.

User inspection places	• Filter and grill cleaning
	• Exterior cleaning
Serviceman inspection places	• Check the operating status
	• Clean the drain pan or things related to the water discharge
	• Heat exchanger cleaning

Refer to the installation instruction manual provided with the indoor unit for the specifications on the indoor unit installation.

1-17. Supplement

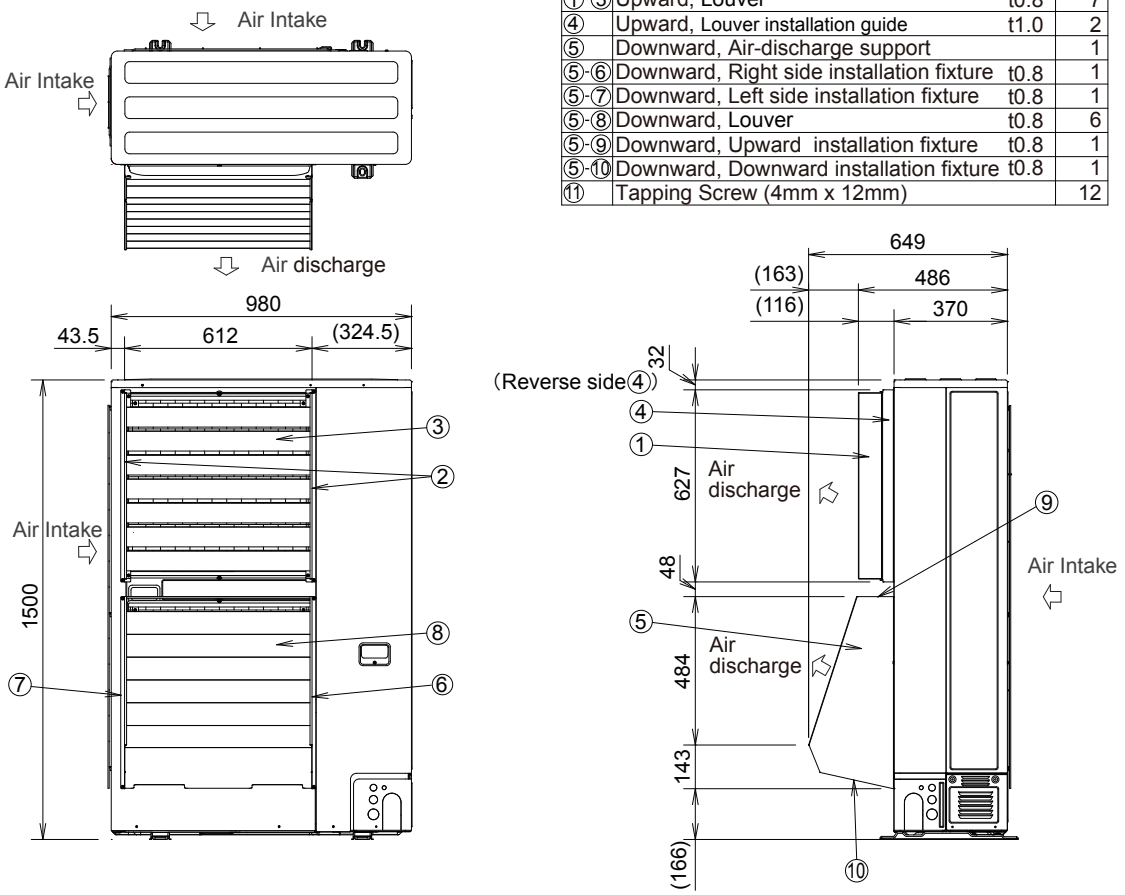
1. Dimensions of Air-Discharge Chamber

In snowy regions, if there is concern that snow may enter the air discharge chamber, remove the base of the chamber before using.

Reference diagram

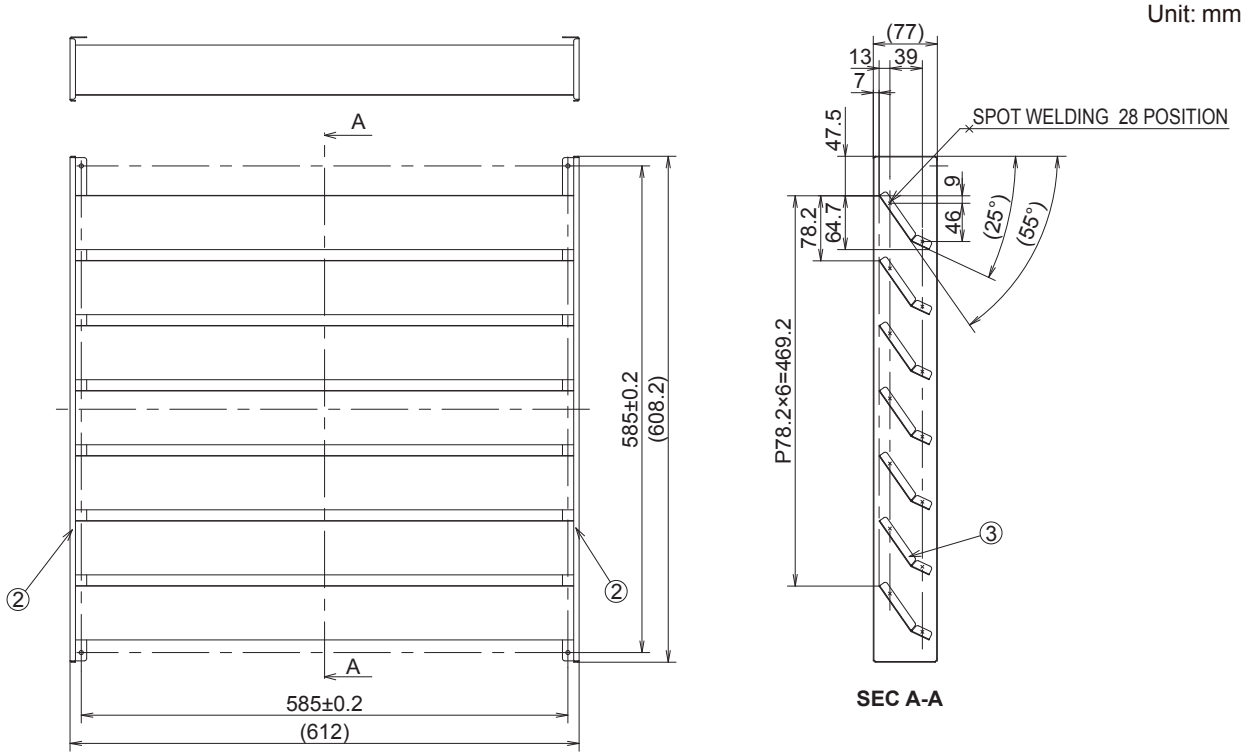
			Q'ty
①	Upward, Air-discharge support		1
①-②	Upward, side installation fixture	t0.8	2
①-③	Upward, Louver	t0.8	7
④	Upward, Louver installation guide	t1.0	2
⑤	Downward, Air-discharge support		1
⑤-⑥	Downward, Right side installation fixture	t0.8	1
⑤-⑦	Downward, Left side installation fixture	t0.8	1
⑤-⑧	Downward, Louver	t0.8	6
⑤-⑨	Downward, Upward installation fixture	t0.8	1
⑤-⑩	Downward, Downward installation fixture	t0.8	1
⑪	Tapping Screw (4mm x 12mm)		12

Unit: mm



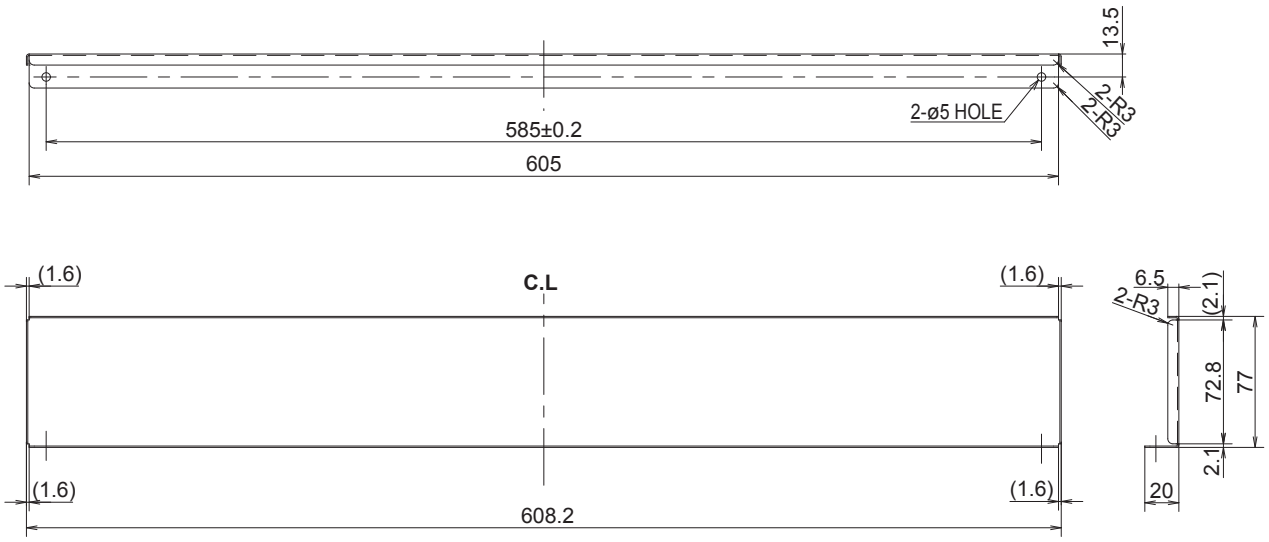
① Reference diagram for Upward Air-discharge support (field supply)

Unit: mm



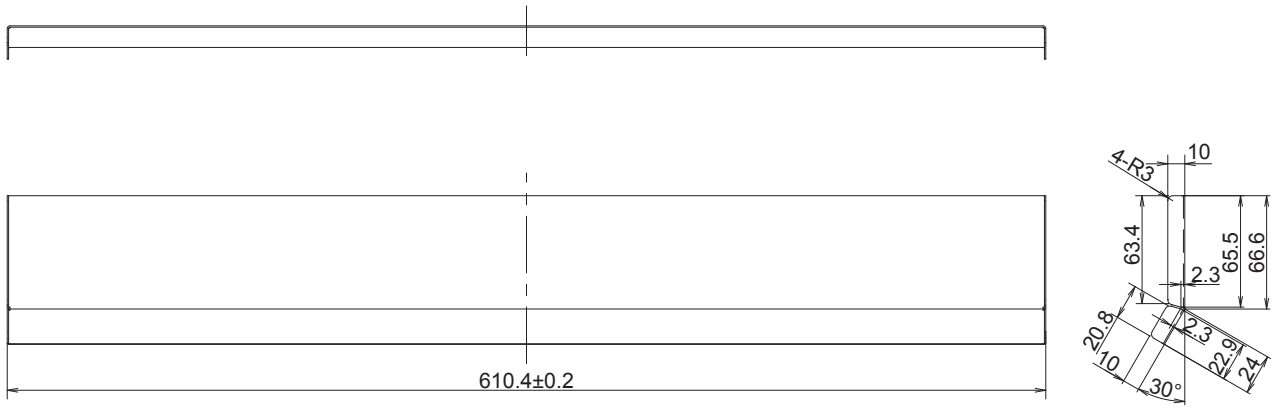
② Reference diagram for **Upward, side installation fixture** (field supply)

Unit: mm



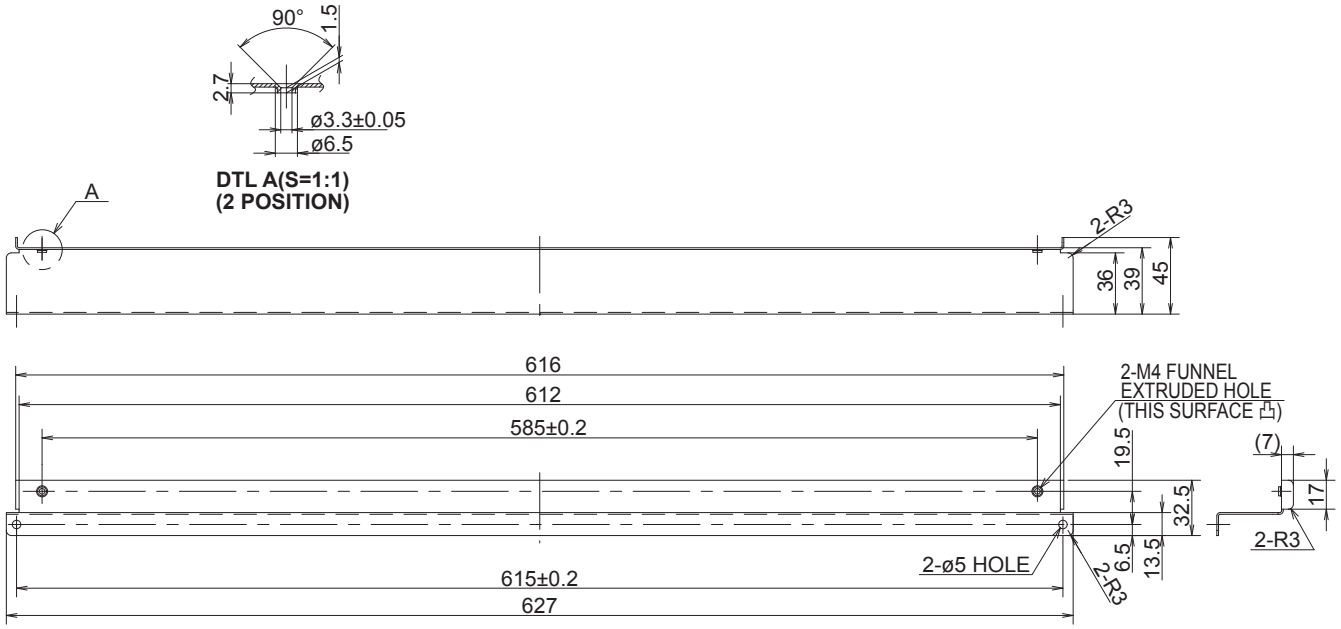
③ Reference diagram for **Upward, Louver** (field supply)

Unit: mm



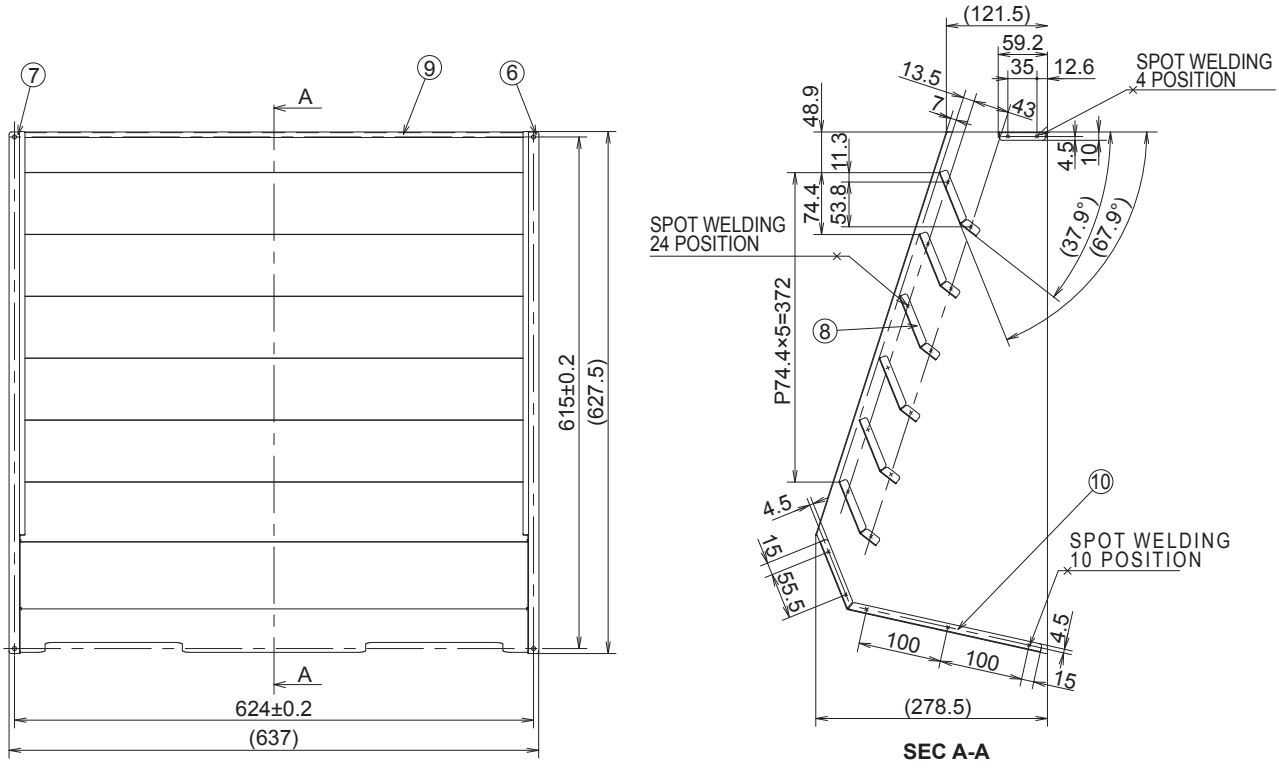
④ Reference diagram for **Upward, Louver installation guide** (field supply)

Unit: mm



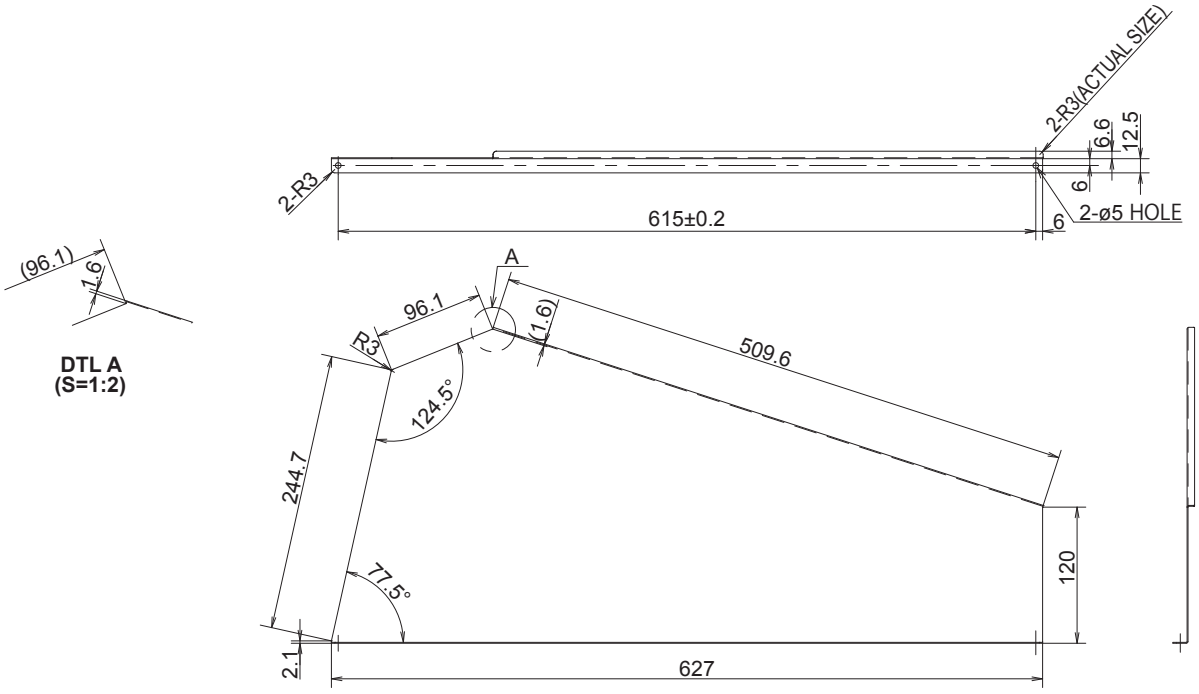
⑤ Reference diagram for **Downward, Air-discharge support** (field supply)

Unit: mm



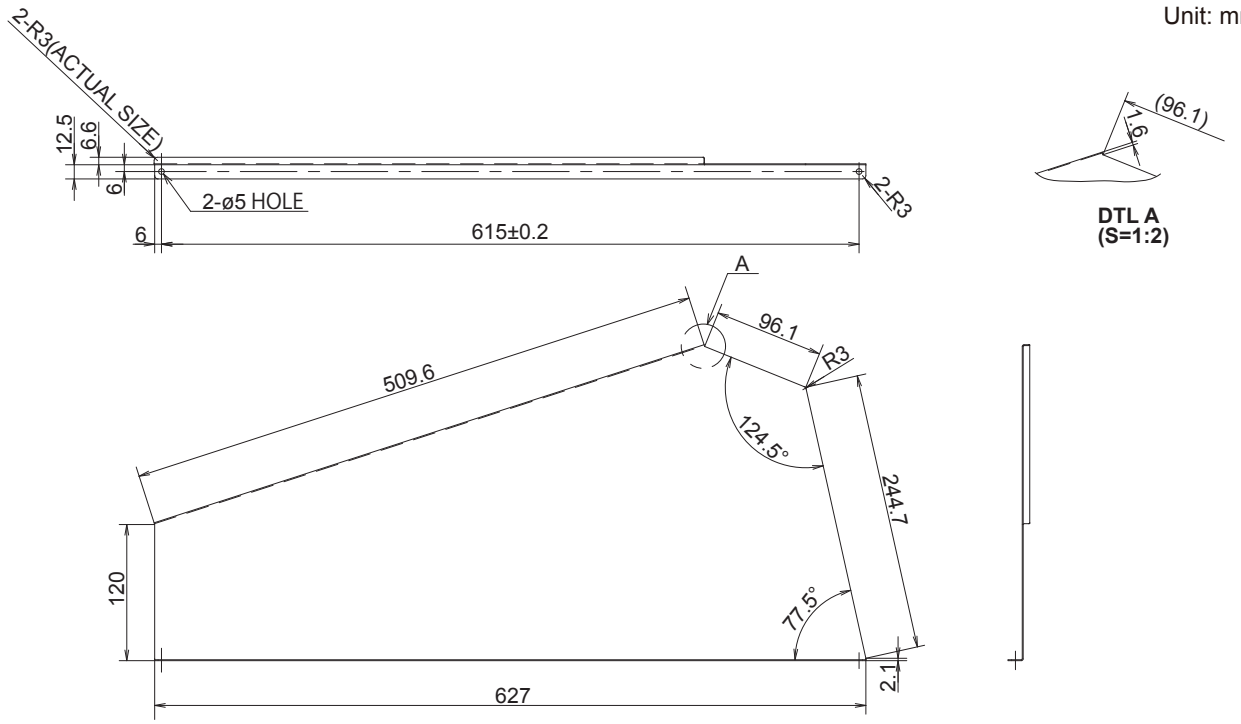
⑥ Reference diagram for **Downward, Right side installation fixture** (field supply)

Unit: mm



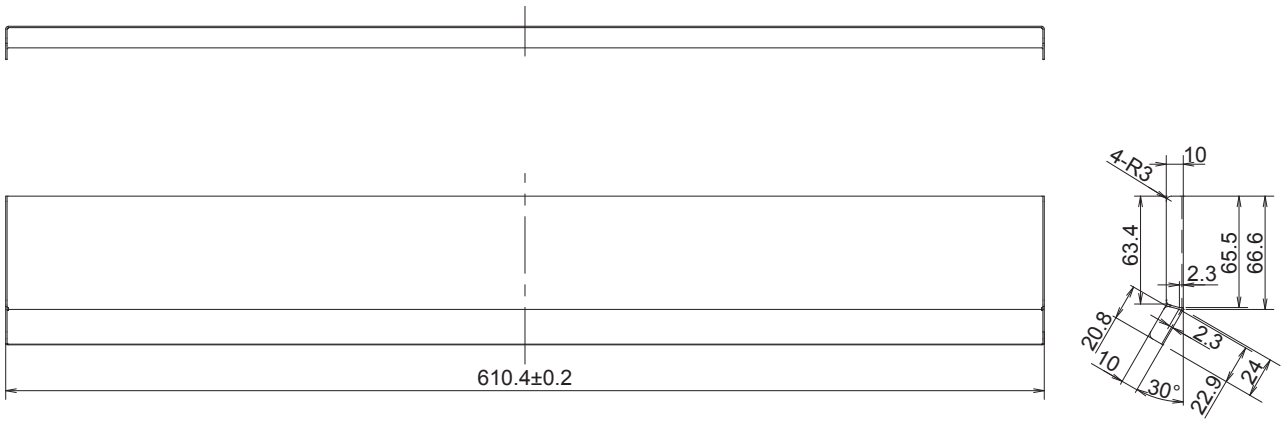
⑦ Reference diagram for **Downward, Left side installation fixture** (field supply)

Unit: mm



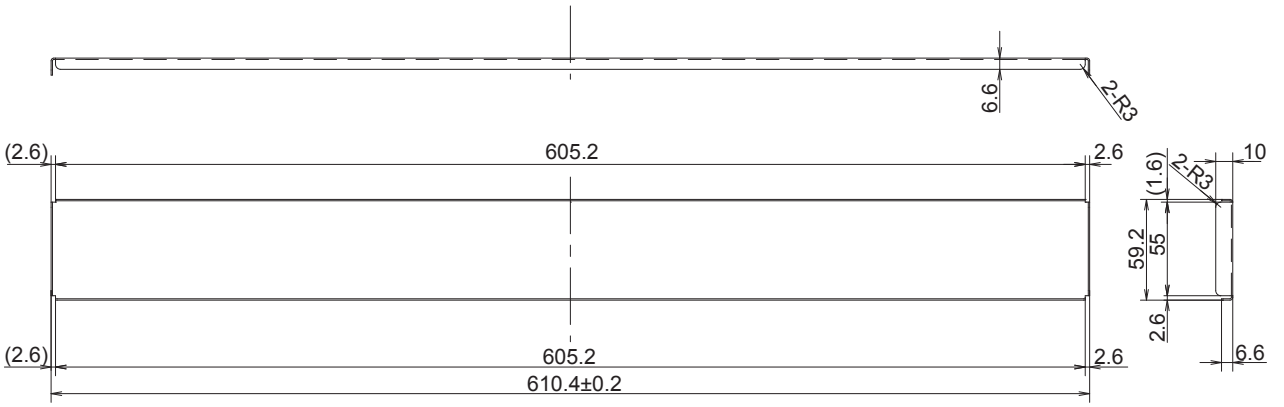
⑧ Reference diagram for **Downward, Louver** (field supply)

Unit: mm



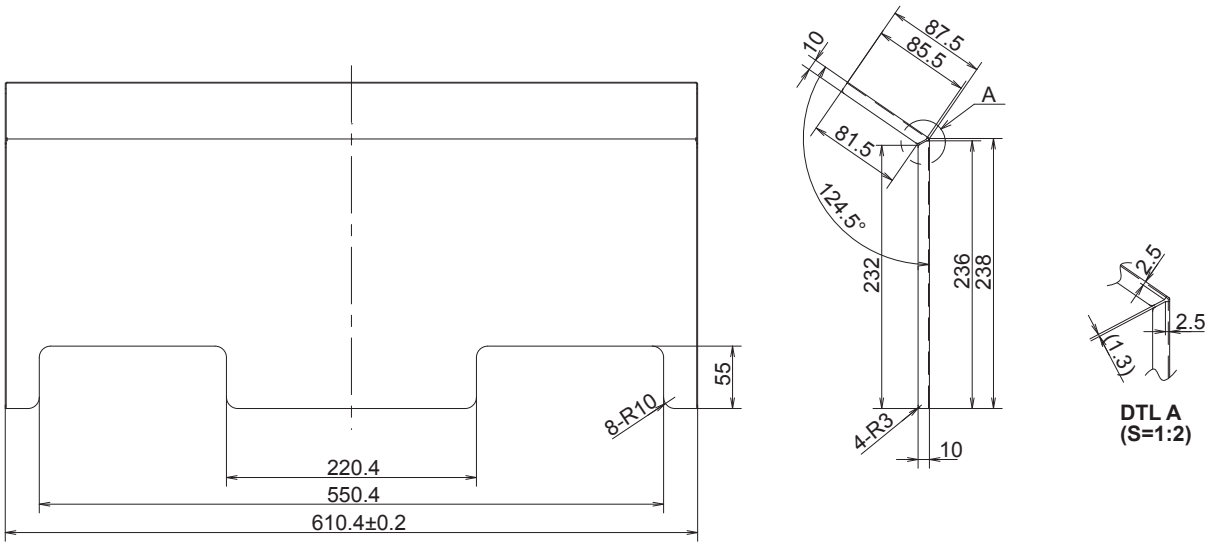
⑨ Reference diagram for **Downward, Upward installation fixture** (field supply)

Unit: mm



⑩ Reference diagram for **Downward, Downward installation fixture** (field supply)

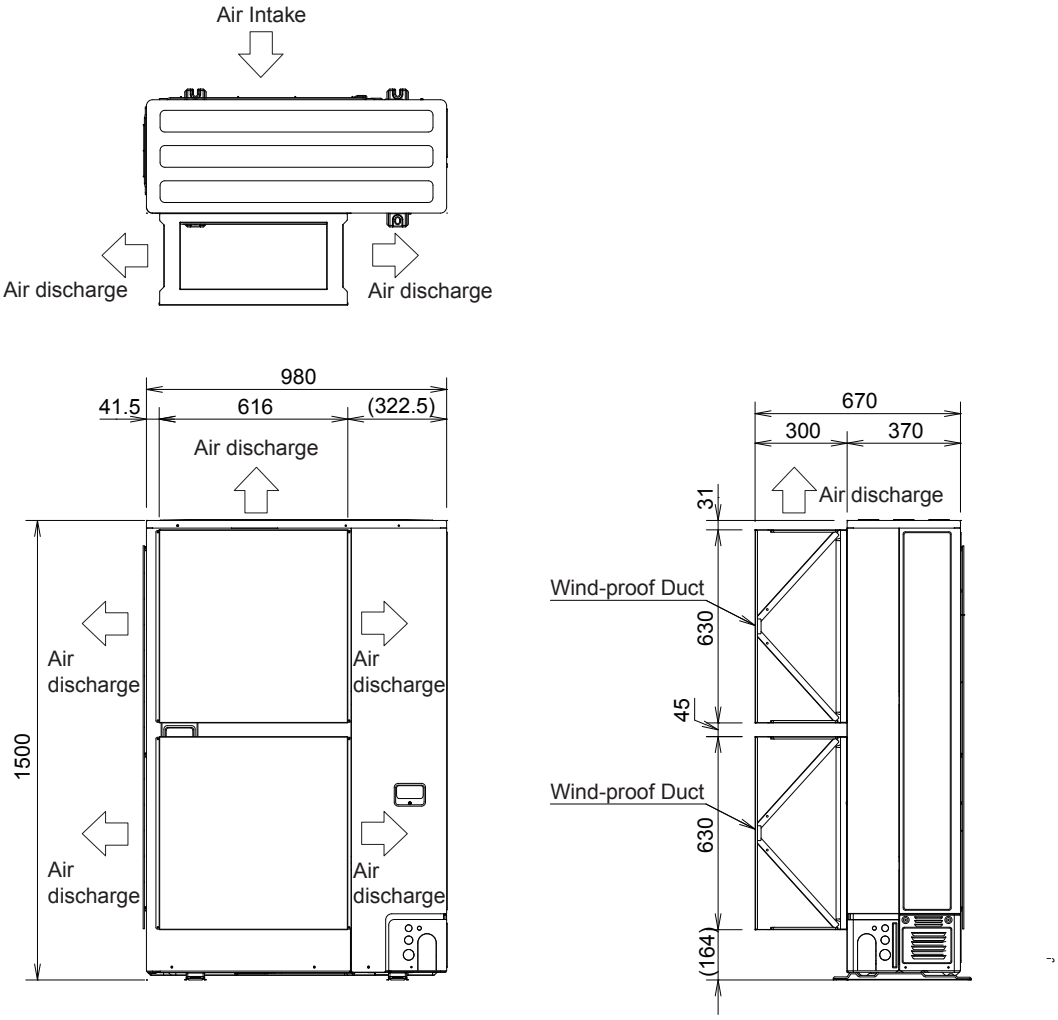
Unit: mm



2. Dimensions of Wind-proof Duct

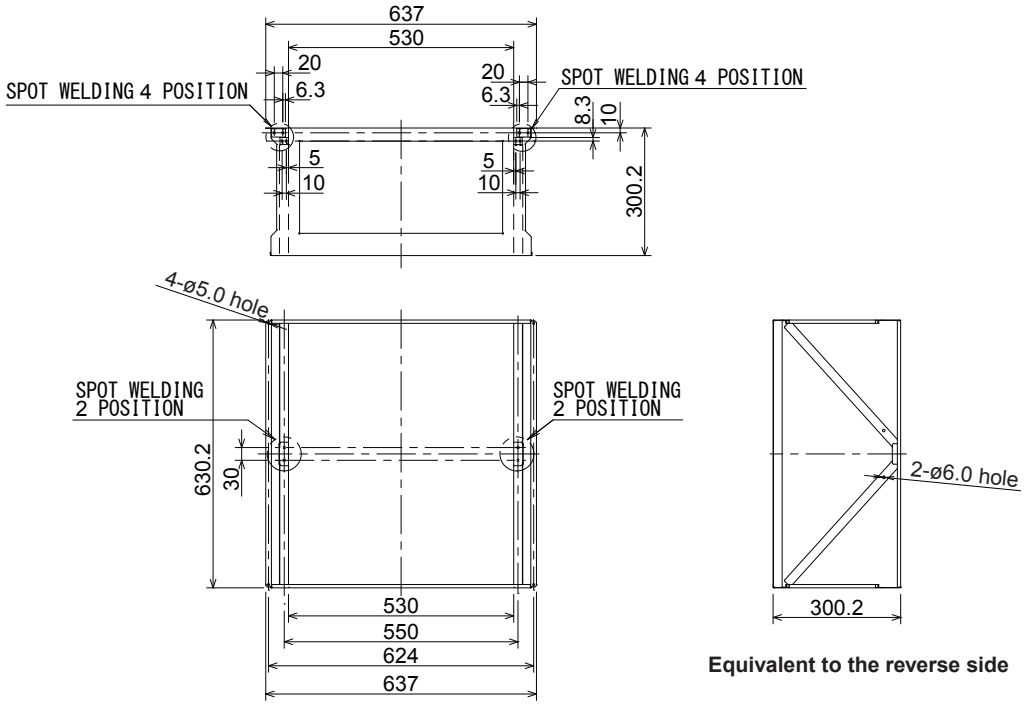
Reference diagram

Unit: mm



Reference diagram for wind-proof duct (field supply)

Unit: mm



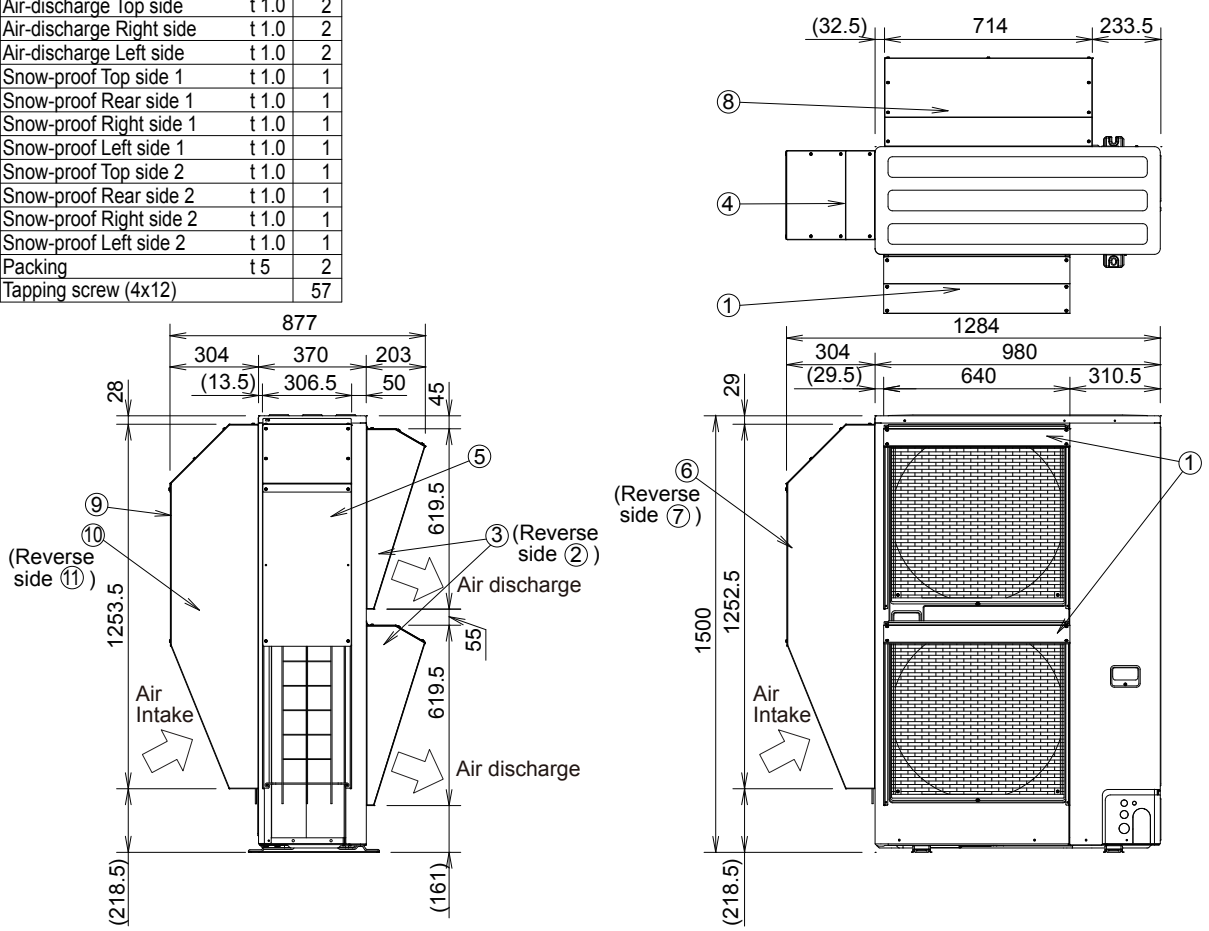
Equivalent to the reverse side

3. Dimensions of Snow-proof Vents

Reference diagram

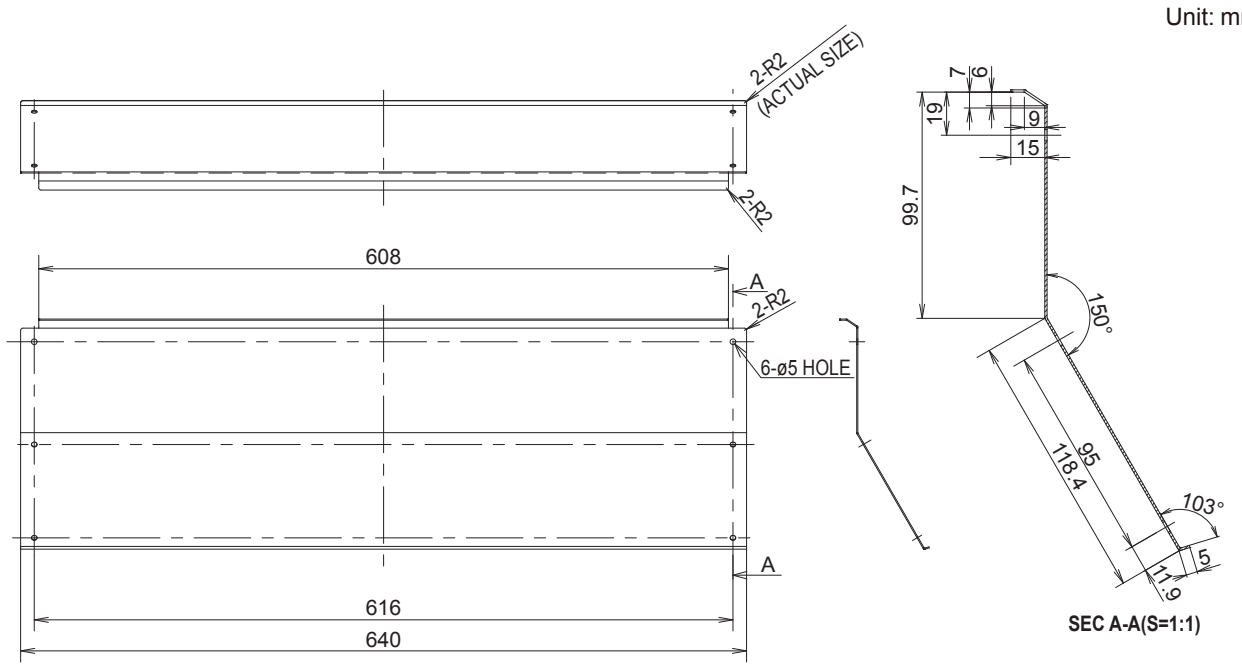
			Q'ty
①	Air-discharge Top side	t 1.0	2
②	Air-discharge Right side	t 1.0	2
③	Air-discharge Left side	t 1.0	2
④	Snow-proof Top side 1	t 1.0	1
⑤	Snow-proof Rear side 1	t 1.0	1
⑥	Snow-proof Right side 1	t 1.0	1
⑦	Snow-proof Left side 1	t 1.0	1
⑧	Snow-proof Top side 2	t 1.0	1
⑨	Snow-proof Rear side 2	t 1.0	1
⑩	Snow-proof Right side 2	t 1.0	1
⑪	Snow-proof Left side 2	t 1.0	1
⑫	Packing	t 5	2
⑬	Tapping screw (4x12)		57

Unit: mm



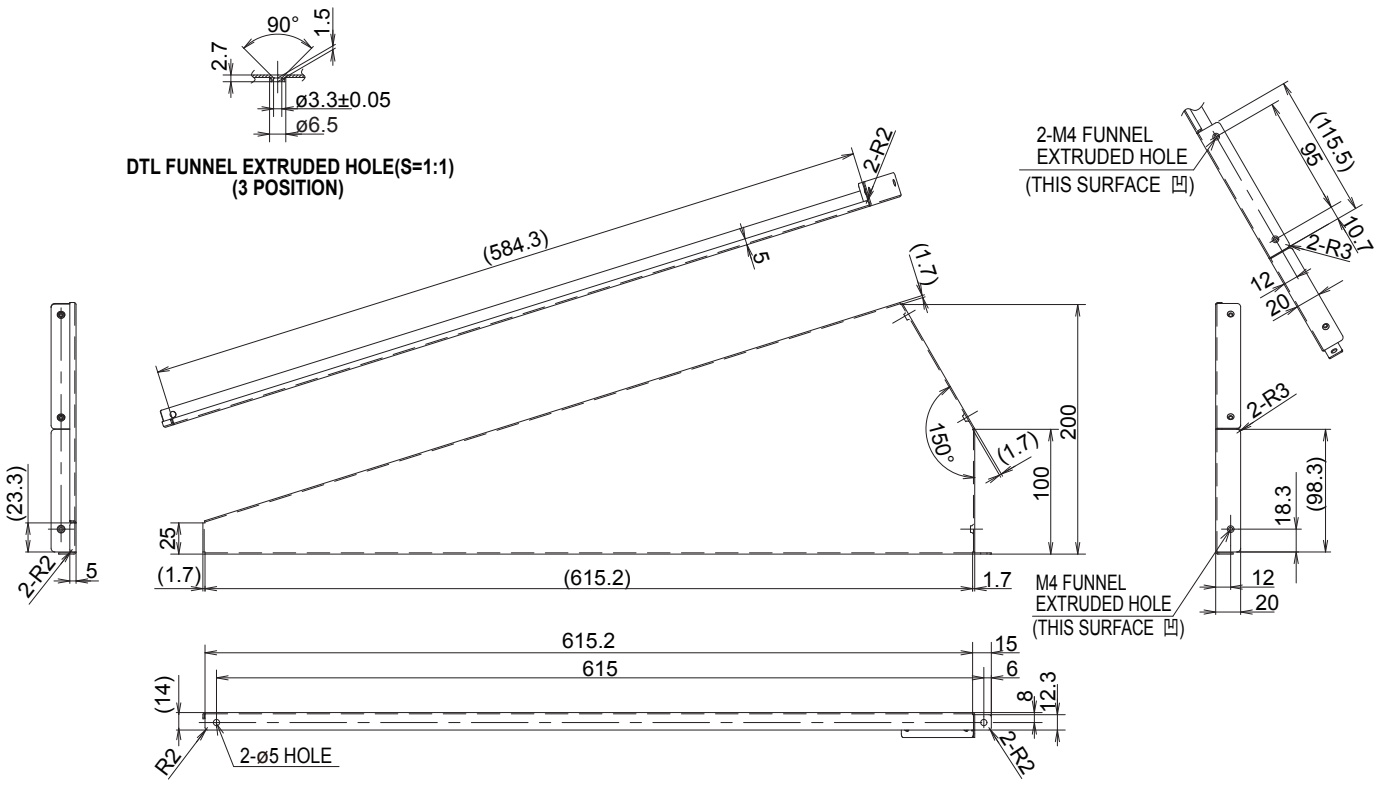
① Reference diagram for Air-discharge Top side (field supply)

Unit: mm



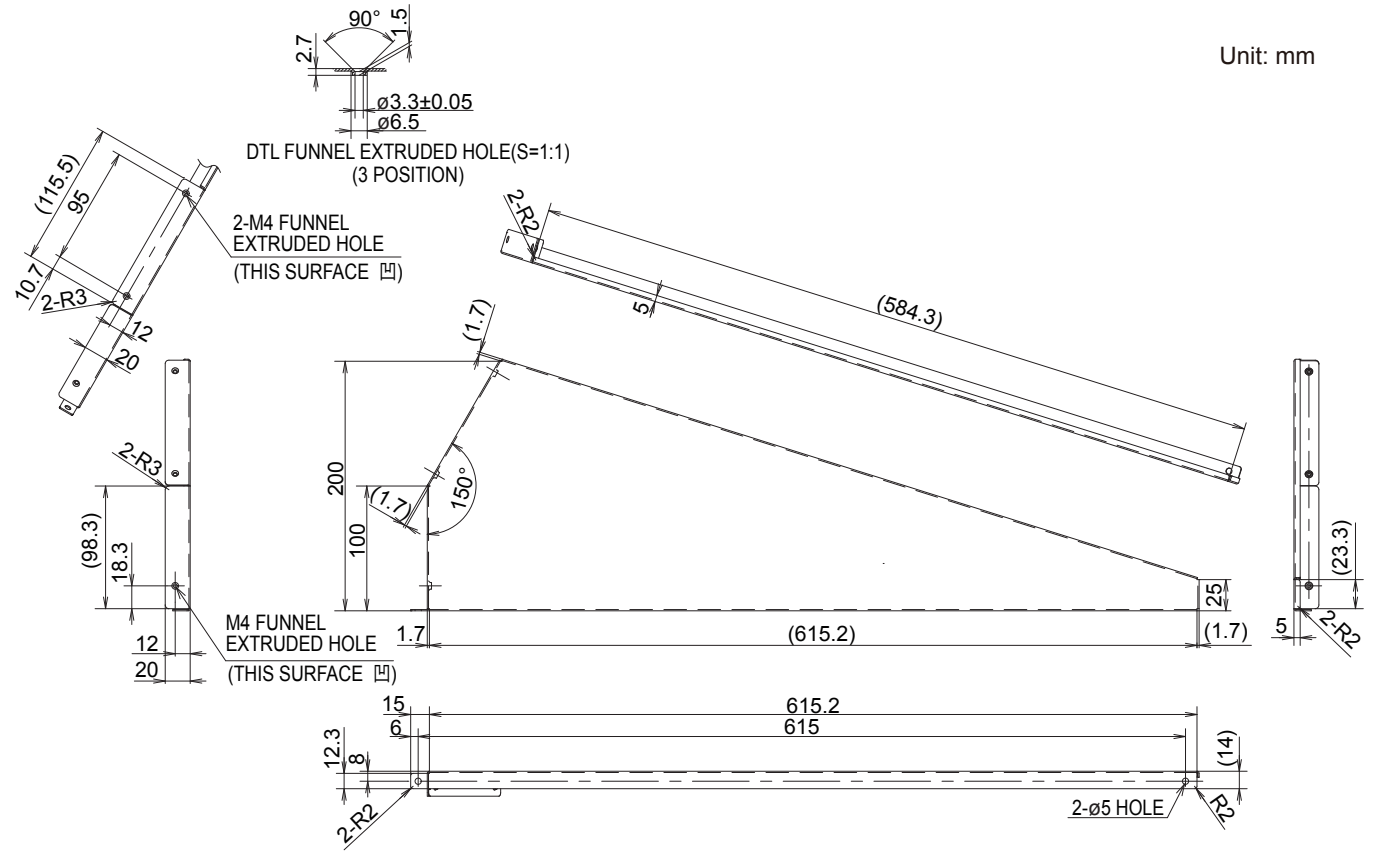
② Reference diagram for Air-discharge Right side (field supply)

Unit: mm



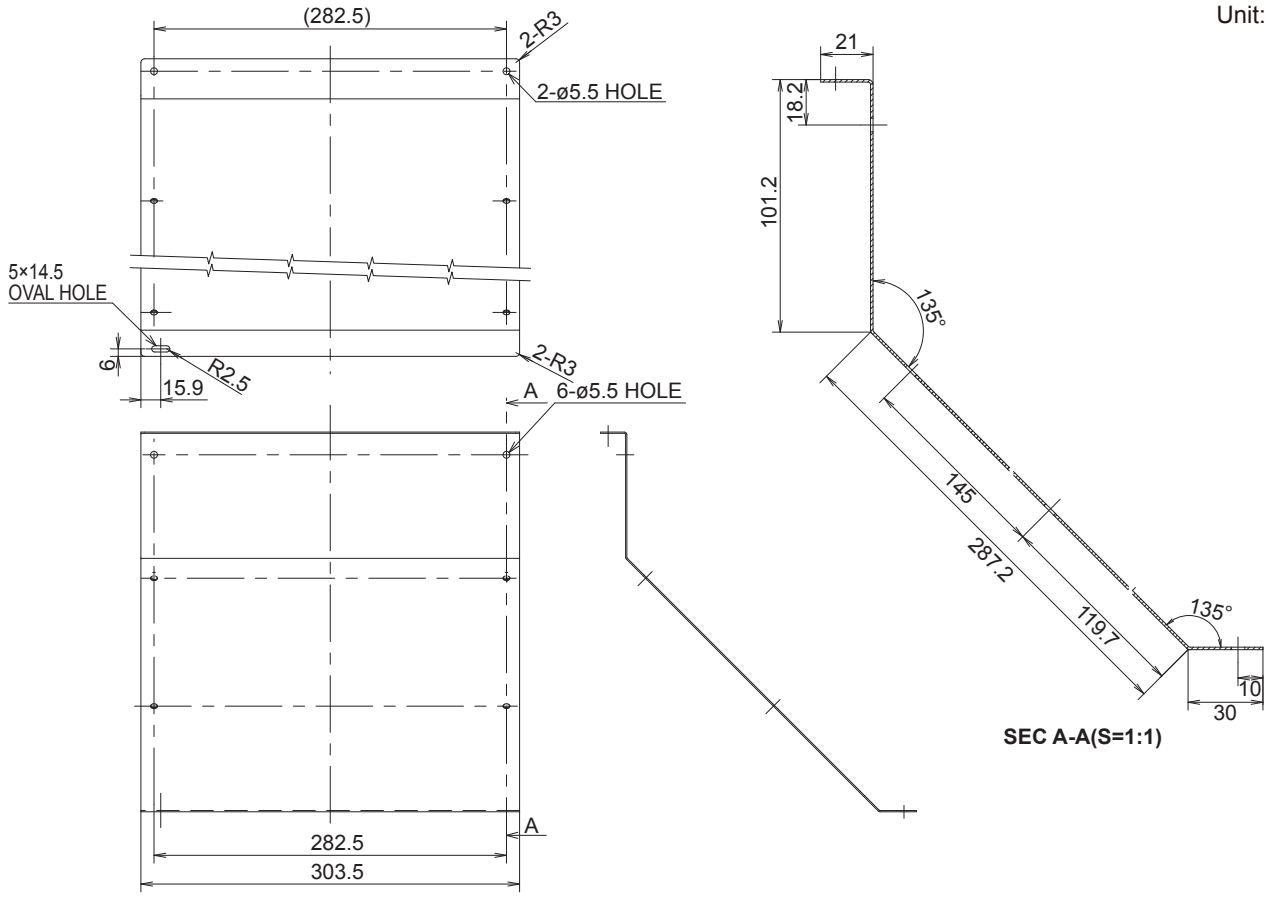
③ Reference diagram for Air-discharge Left side (field supply)

Unit: mm



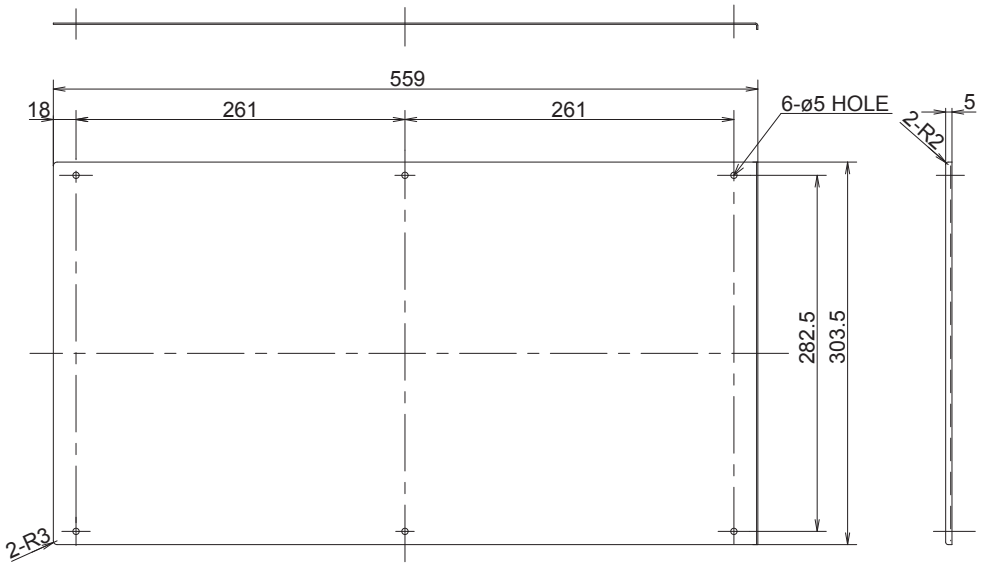
④ Reference diagram for Snow-proof Top side 1 (field supply)

Unit: mm



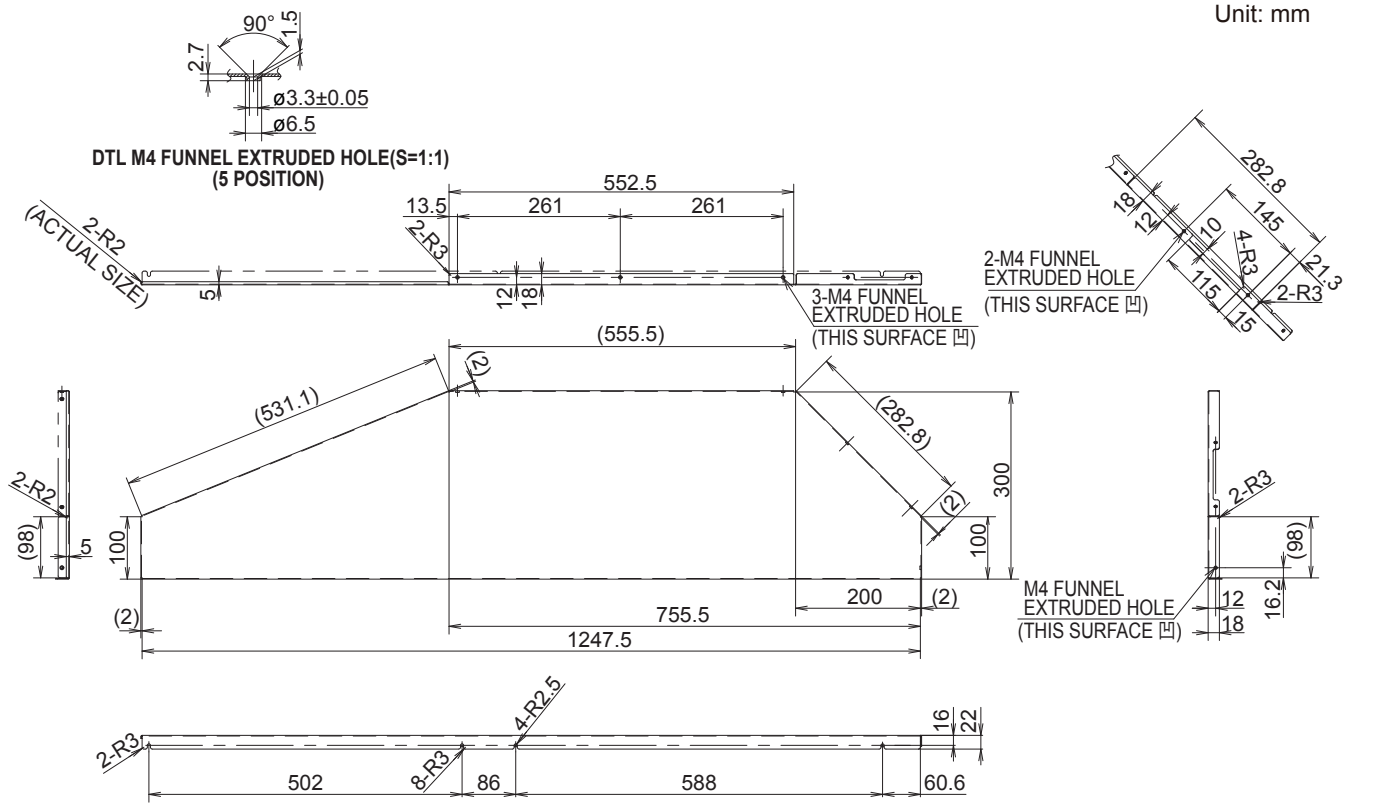
⑤ Reference diagram for Snow-proof Rear side 1 (field supply)

Unit: mm



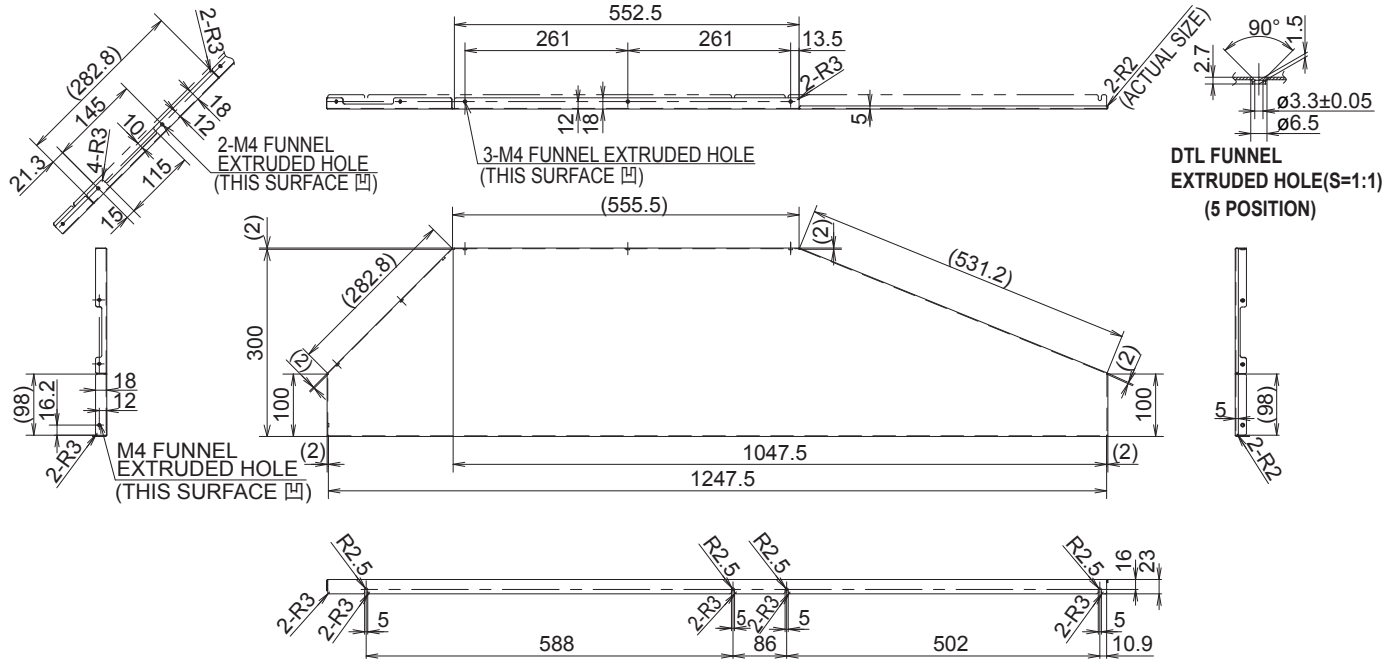
⑥ Reference diagram for Snow-proof Right side 1 (field supply)

Unit: mm



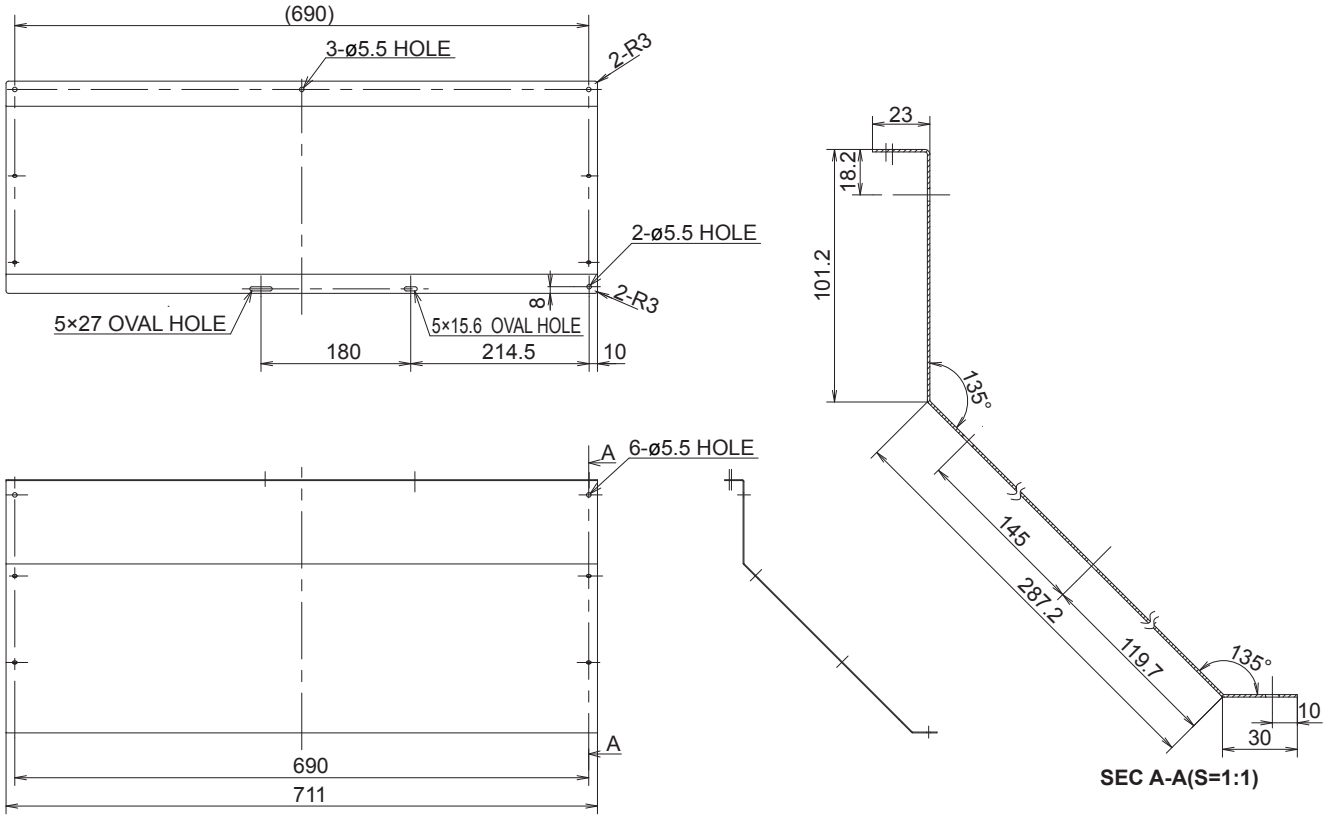
⑦ Reference diagram for Snow-proof Left side 1 (field supply)

Unit: mm



⑧ Reference diagram for Snow-proof Top side 2 (field supply)

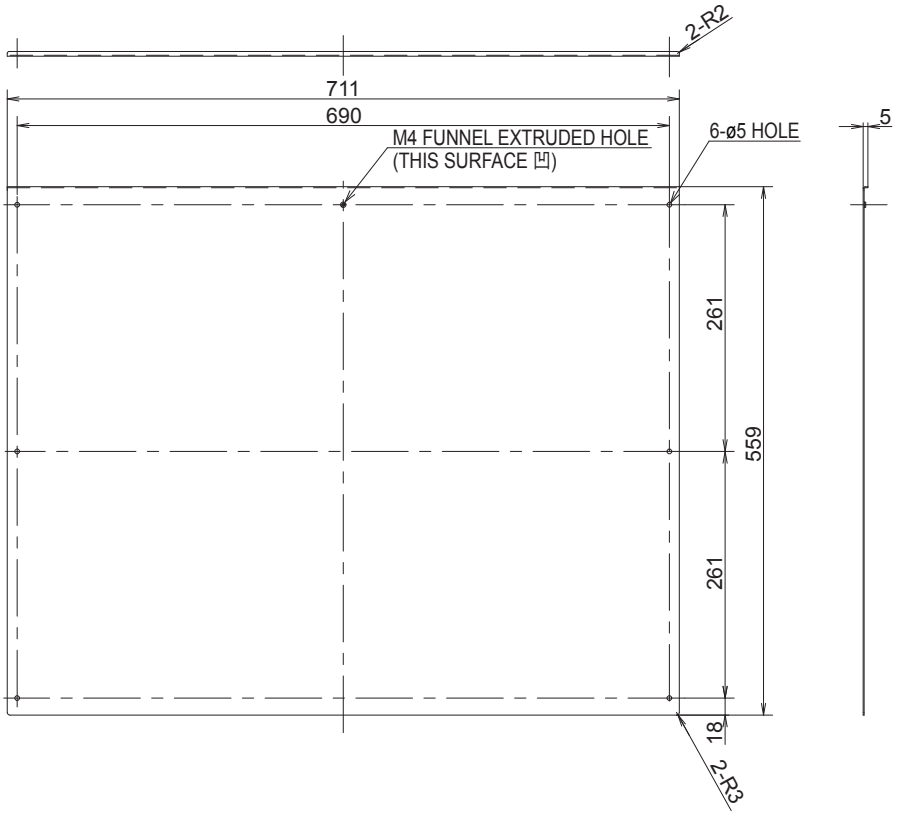
Unit: mm

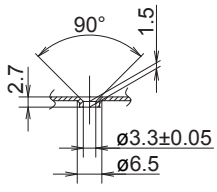


SEC A-A(S=1:1)

⑨ Reference diagram for Snow-proof Rear side 2 (field supply)

Unit: mm

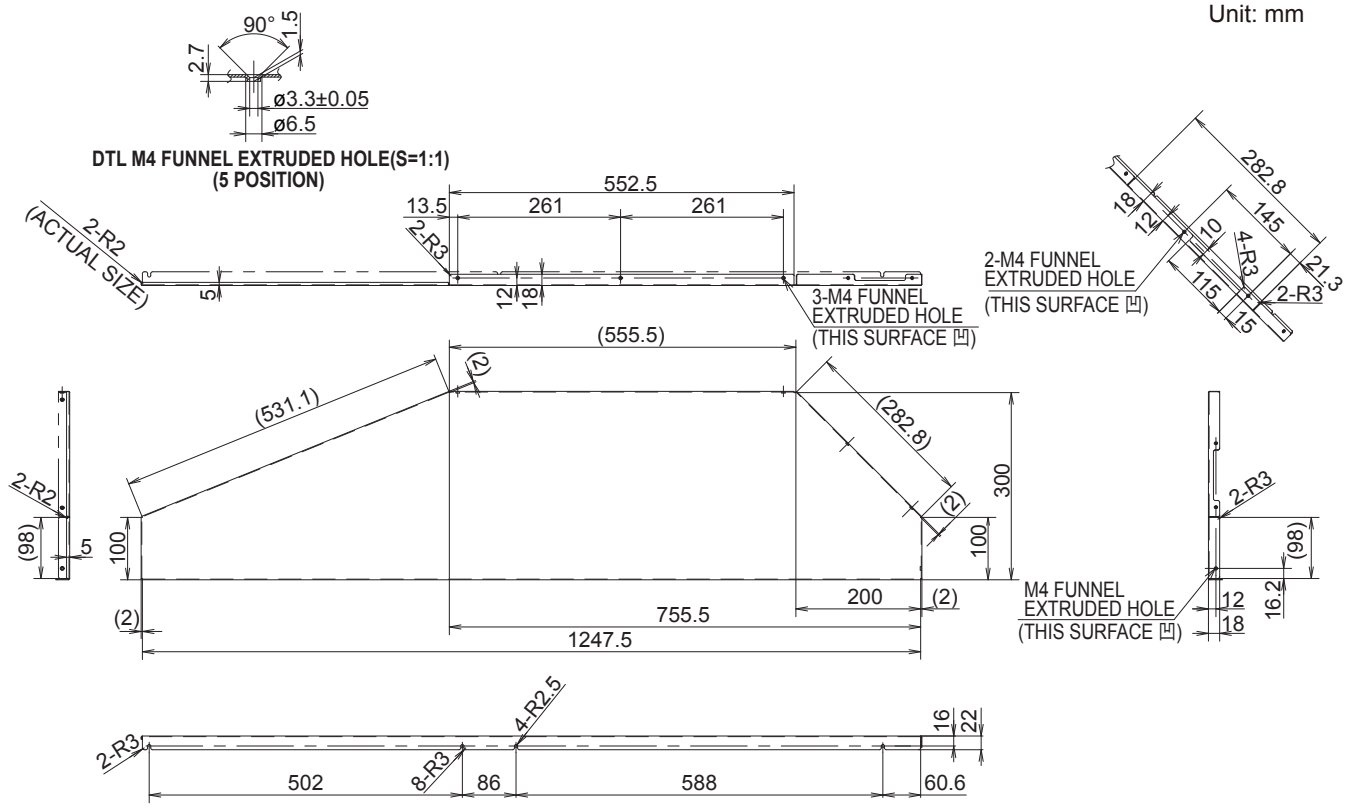




DLT FUNNEL EXTRUDED HOLE(S=1:1)
(1 POSITION)

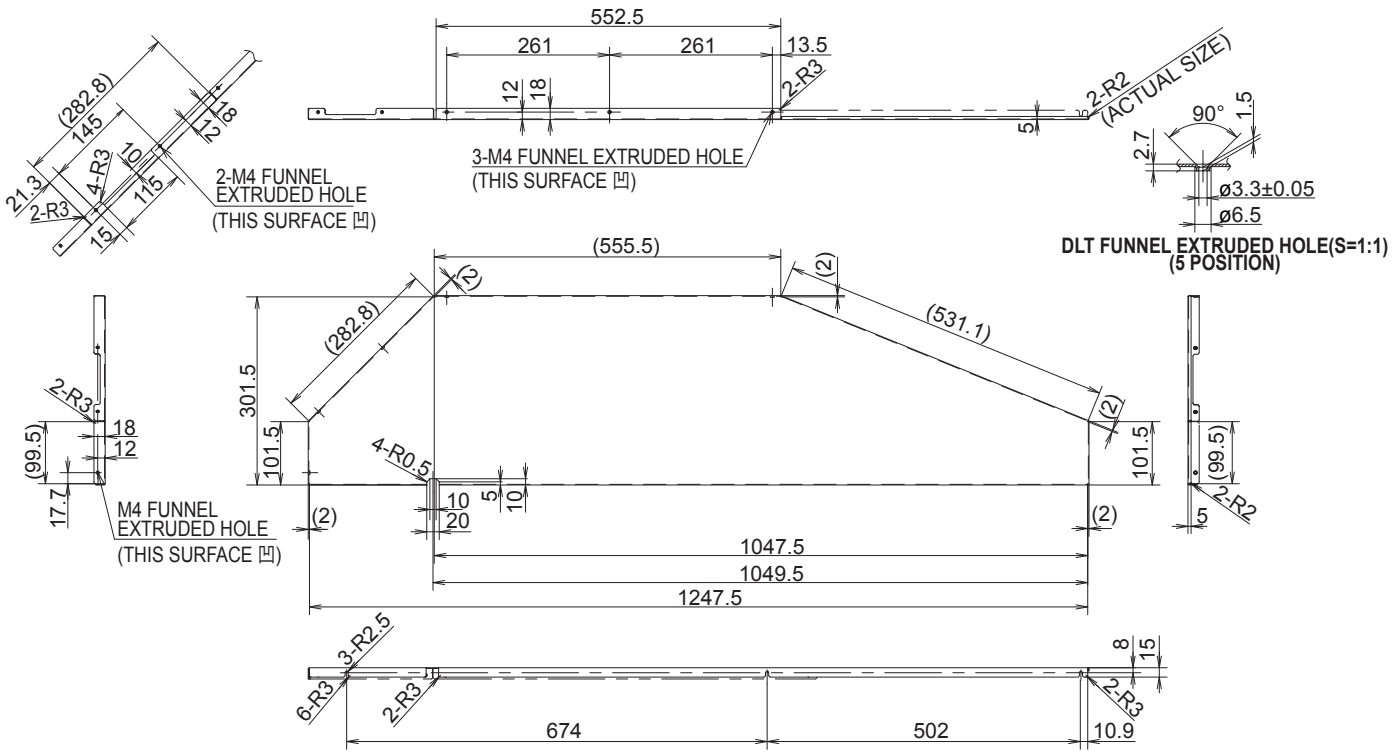
⑩ Reference diagram for Snow-proof Right side 2 (field supply)

Unit: mm



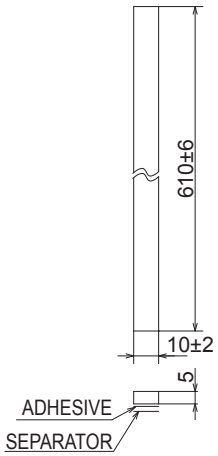
⑪ Reference diagram for Snow-proof Left side 2 (field supply)

Unit: mm



⑫ Reference diagram for Packing (field supply)

Unit: mm



EPT SEAL

– MEMO –

2. TEST RUN

2-1. Preparing for Test Run

• Before attempting to start the air conditioner, check the following:

(1) All loose matter is removed from the cabinet especially steel filings, bits of wire, and clips.

(2) The control wiring is correctly connected and all electrical connections are tight.

(3) The protective spacers for the compressor used for transportation have been removed.
If not, remove them now.

(4) The transportation pads for the indoor fan have been removed. If not, remove them now.

(5) The power has been supplied to the unit for at least 12 hours before starting the compressor. The bottom of the compressor should be warm to the touch and the crankcase heater around the feet of the compressor should be hot to the touch. (Fig. 2-1)

(6) Both the gas and liquid tube service valves are open.
If not, open them now. (Fig. 2-2)

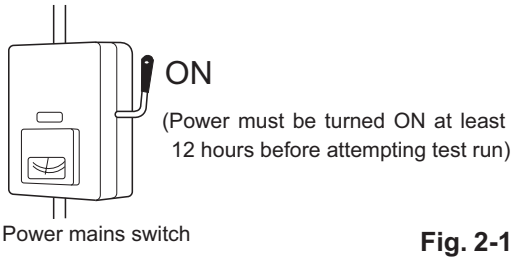


Fig. 2-1

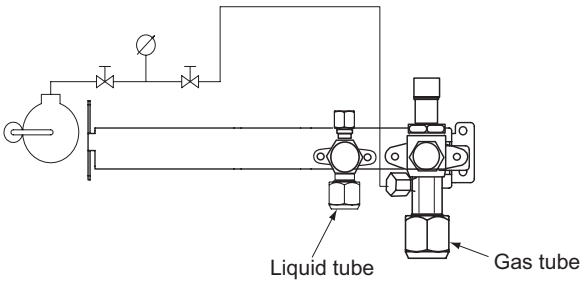


Fig. 2-2

(7) Request that the customer be present for the test run. Explain the contents of the instruction manual, and then have the customer actually operate the system.

(8) Be sure to give the instruction manual and warranty certificate to the customer.

(9) When replacing the control PCB, be sure to make all the same settings on the new PCB as were in use before replacement. The existing EEPROM is not changed, and is connected to the new control PCB.

■ **Indoor Units (Type E2)**

2-2. Caution

- **This unit may be used in a single-type refrigerant system where 1 outdoor unit is connected to 1 indoor unit.**
- **The indoor and outdoor unit control PCB utilizes a semiconductor memory element (EEPROM).**
  The settings required for operation were made at the time of shipment.
  Only the correct combinations of indoor and outdoor units can be used.
- **This test run section describes primarily the procedure when using the wired remote controller.**

2-3. Test Run Procedure

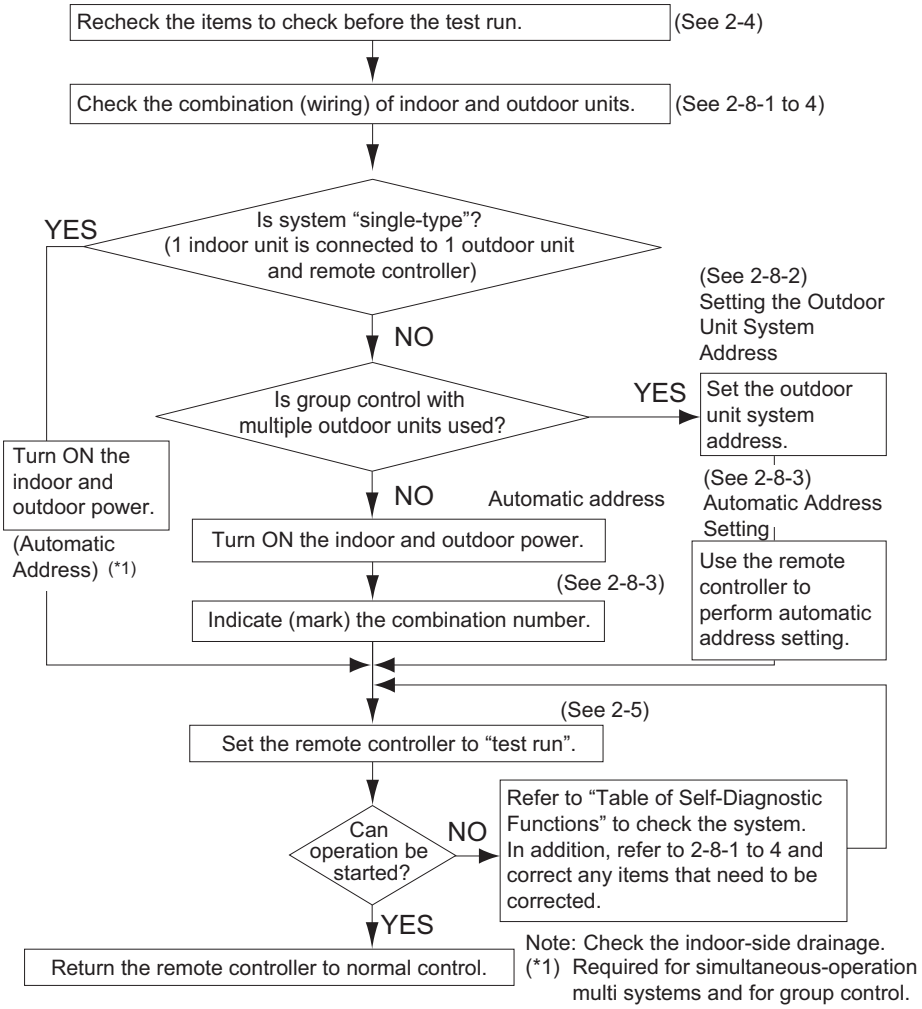


Fig. 2-3

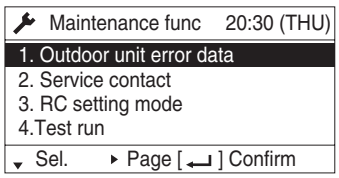
2-4. Items to Check Before the Test Run

(1) Turn the remote power switch ON at least 12 hours in advance in order to energize the crankcase heater.
(2) Fully open the closed valves on the liquid-tube and gas-tube sides.

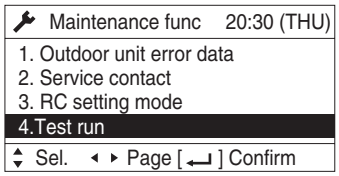
2-5. Test Run Using the Remote Controller

CZ-RTC5A (High-spec wired remote controller)

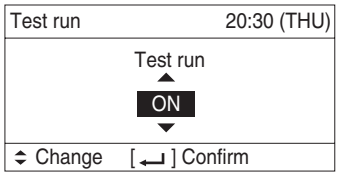
(1) Keep pressing the [↩], [↵] and [▶] buttons simultaneously for 4 or more seconds.
The "Maintenance func" screen appears on the LCD display.



(2) Press the [▼] or [▲] button to see each menu.
If you wish to see the next screen instantly, press the [◀] or [▶] button.
Select "4. Test run" on the LCD display and press the [↵] button.



Change the display from OFF to ON by pressing the [▼] or [▲] button. Then press the [↵] button.



CZ-RTC4 (Timer remote controller)

(1) Press the remote controller [⚲] button for 4 seconds or longer.
Then press the [⏻] button.

- "TEST" appears on the LCD display while the test run is in progress.
- The temperature cannot be adjusted when in Test Run mode.
  (This mode places a heavy load on the machines.
  Therefore use it only when performing the test run.)

(2) The test run can be performed using the HEAT, COOL, or FAN operation modes.

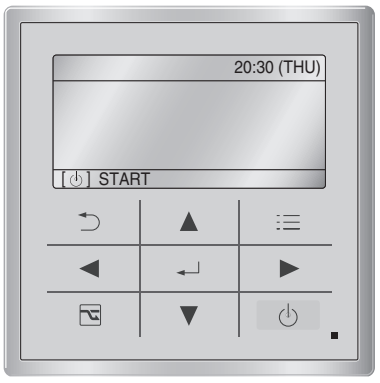
NOTE

The outdoor units will not operate for approximately 3 minutes after the power is turned ON and after operation is stopped.

(3) If correct operation is not possible, a code is displayed on the remote controller LCD display.
(See the section "7. Self-Diagnostic Function Table and Contents of Alarm Display" and correct the problem.)

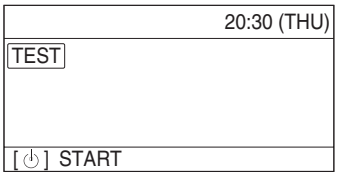
(4) After the test run is completed, press the [⚲] button again.
Check that "TEST" disappears from the LCD display.
(To prevent continuous test runs, this remote controller includes a timer function that cancels the test run after 60 minutes.)

* If the test run is performed using the wired remote controller, operation is possible even if the cassette-type ceiling panel has not been installed. ("P09" display does not occur.)

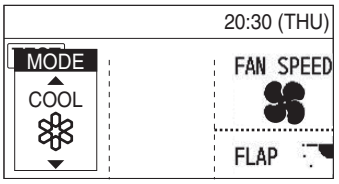


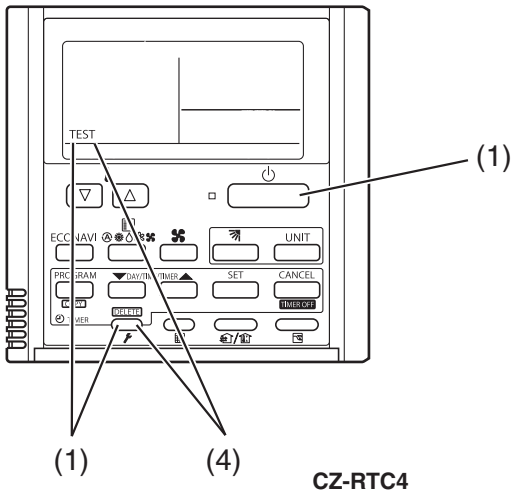
CZ-RTC5A

(3) Press the [↩] button. "TEST" will be displayed on the LCD display.



(4) Press the [⏻] button. Test run will be started.
Test run setting mode screen appears on the LCD display.





CZ-RTC4

2-6. Precautions

- Request that the customer be present when the test run is performed.
  At this time, explain the operation manual and have the customer perform the actual steps.
- Be sure to pass the manuals and warranty certificate to the customer.
- Check that the 230 – 240 V AC power is not connected to the inter-unit control wiring connector terminal.

* If 230 – 240 V AC is accidentally applied, the indoor or outdoor unit control PCB fuse will blow in order to protect the PCB.
Correct the wiring connections, then disconnect the 2P connectors that are connected to the PCB, and replace them with 2P connectors.
If operation is still not possible after changing the brown connectors, try cutting the varistor.
(Be sure to turn the power OFF before performing this work.)

Outdoor unit control PCB

8, 10 HP

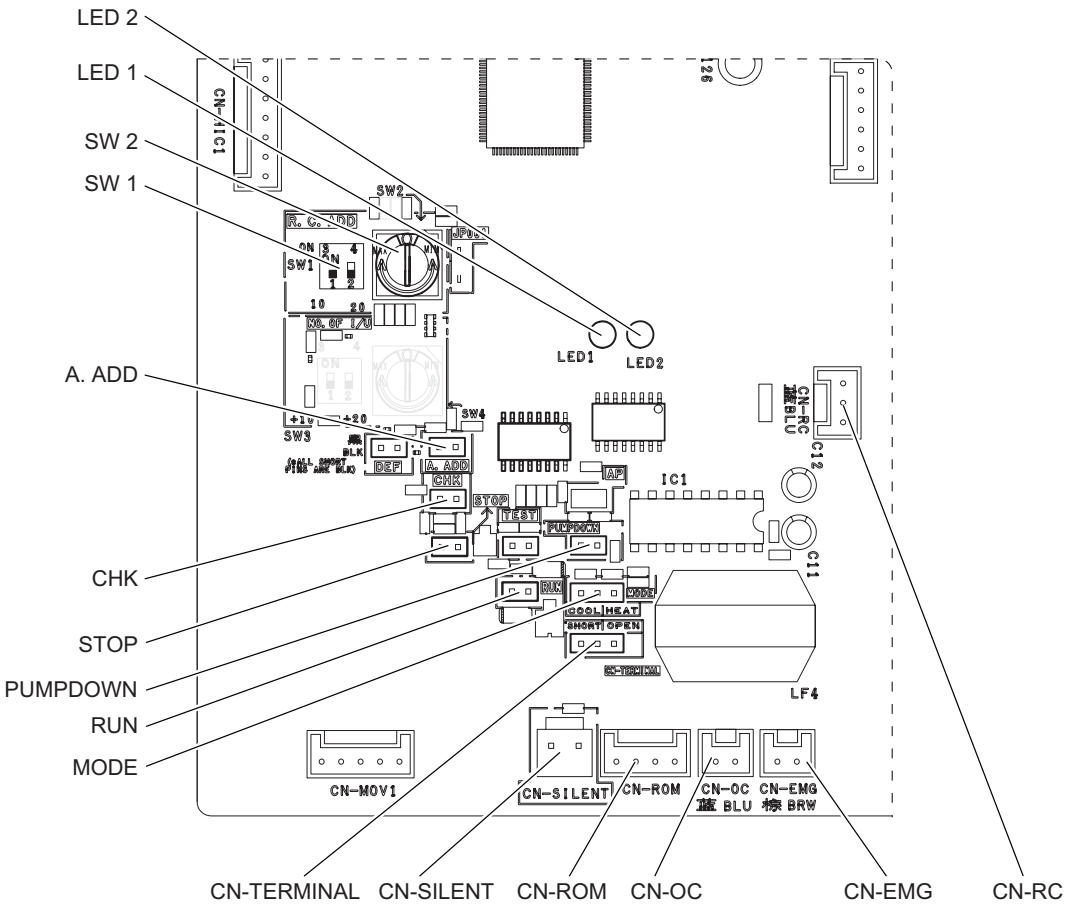


Fig. 2-4

2-7. Table of Self-Diagnostic Functions and Corrections

Wired remote controller display	Indoor unit receiver lamp	Cause				Correction
		1:1 connection (single type)	Group connection	Simultaneous-operation multi system (flexible combination)	Control by main-sub remote controllers	
Nothing is displayed	Nothing is displayed	● Remote controller is not connected correctly. ● Indoor unit power is not ON.	● Remote controller is not connected with indoor unit correctly ● Indoor unit power is not ON.	● Same at left	● Same at left	Connect the remote controller correctly. Turn ON the indoor unit power.
E01 displayed	Operating lamp is blinking.	● Automatic address setting has not been completed. ● Inter-unit control wiring is cut or is not connected correctly. ● Remote controller is not connected correctly (remote controller receiving failure).	● Automatic address setting has not been completed. ● Inter-unit control wiring is cut or is not connected correctly. ● Remote controller is not connected with indoor unit correctly.	● Same at left	● Same at left	Check the remote controller and inter-unit control wiring. Perform automatic address setting(See 2-8-3).
E02 displayed		● Remote controller is not connected correctly (failure in transmission from remote controller to indoor unit).	● Remote controller is not connected with indoor unit correctly.	● Same at left	● Same at left	Connect the remote controller correctly.
E09 displayed		————	————	————	● 2 remote controllers are set as the main remote controller.	Refer to 2-8-4 Main-sub remote Control, and make the correct settings.
E14 displayed		————	————	● Remote controller communication wiring is cut or is not connected correctly.	● Same at left	Check the remote controller communication wiring. Perform automatic address setting again.
E04 displayed	Standby lamp is blinking.	● Indoor-outdoor inter-unit wiring is not connected correctly.	● Same at left	● Same at left	● Same at left	Connect the wiring correctly.
E06 displayed		————	● Indoor-outdoor inter-unit wiring is cut or is not connected correctly.	● Same at left	● Same at left	Refer to 2-8 System Control, and make the correct settings.
E15 displayed		● Indoor unit capacity is too low.	● Same at left	● Same at left	● Same at left	Check that the total capacities of the indoor and outdoor units are appropriate.
E16 displayed		● Indoor unit capacity is too high.				
E20 displayed		● No serial signal is being received at all from the indoor units.				Check that the indoor unit power is ON, and that the inter-unit control wiring is connected correctly.
P05 displayed	Operation lamp and Standby lamp are blinking alternately.	● Reversed phase in the outdoor unit single-phase or open phase in the outdoor unit 3-phase power. ● Insufficient gas	● Reversed phase in the outdoor unit single phase or open phase in the 3-phase power at one of the outdoor units in the group.	● Reversed phase in the outdoor unit single-phase or open phase in the outdoor unit 3-phase power. ● CT sensor is disconnected or there is a problem with the circuit.	● Same at left	Reverse 2 phases of the outdoor unit 3-phase power and connect them correctly. Check that the CT sensor is not disconnected, and make sure it is inserted. Fill up the gas appropriately.
L02 displayed **L13** displayed	Both the Operation lamp and Standby lamp are blinking together.	● Indoor-outdoor unit type mismatch.	● Same at left	● Same at left	————	Check that the indoor and outdoor unit types are correct.
L07 displayed		————	————	● Remote controller communication wiring is connected to the indoor unit, however it is set for individual operation.	● Same at left	Perform automatic address setting (See 2-8-3).
P09 displayed	Timer lamp and Standby lamp are blinking alternately.	● The indoor unit ceiling panel connector is not connected correctly.	● Ceiling panel connector at one of the indoor units in the group is not connected correctly.	● Indoor unit ceiling panel connector is not connected correctly.	● Same at left	Connect the indoor unit ceiling panel connector correctly.
P12 displayed		● Indoor unit DC fan trouble.	● DC fan trouble at one of the indoor units in the group.	● Indoor unit fan trouble.	● Same at left	Check whether the fan holder is loose. Check the wiring between the DC fan and the PCB.
P15 displayed	Operation lamp and Standby lamp are blinking alternately.	● No gas	● Same at left	● Same at left	————	Check the refrigerant cycle (for gas leaks).

2-8. System Control

System control refers to the link wiring connection for control of simultaneous-operation multi systems, group control, and main-sub remote controller control.

2

2-8-1. Basic wiring diagram

Single type

- Be careful to avoid miswiring when connecting the wires.
  (Miswiring will damage the units.)

  (for 3-phase Outdoor unit)

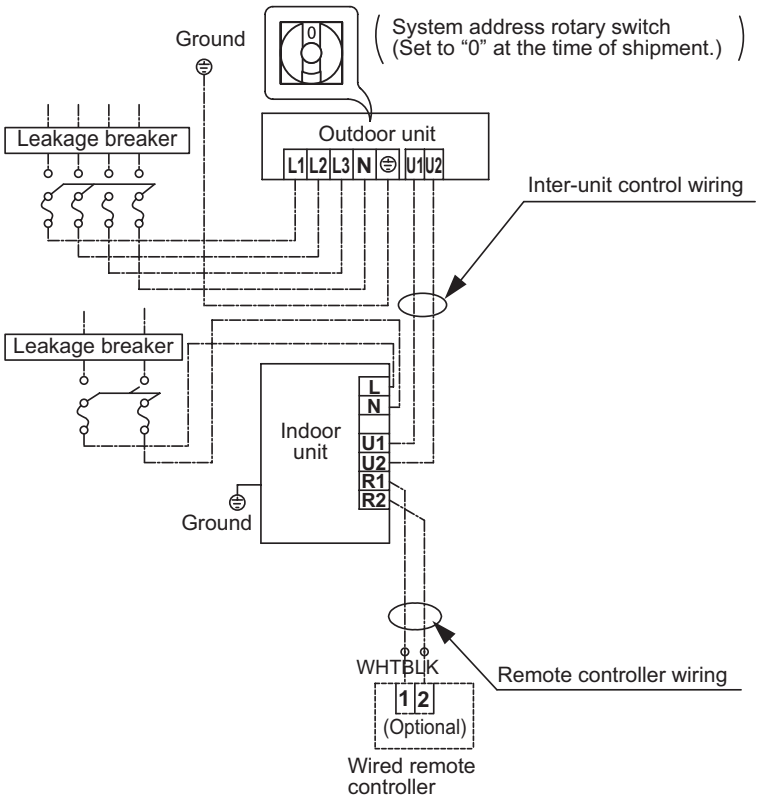


Fig. 2-5

(Wiring procedure)

(1) Connect the remote controller to the indoor unit remote controller wiring terminal plate (1, 2).
(Remote controller wiring)

(2) Connect the indoor units (U1, U2) and the outdoor units (U1, U2). Connect the other outdoor units and indoor units (with different refrigerant systems) in the same way. (Inter-unit control wiring)
Connect the remote controller communication wiring to the indoor units (R1, R2) for each refrigerant system. (Inter-unit control wiring)

(3) Connect the remote controller communication wiring (2 wires) from the remote controller wiring terminal plate (1, 2) on the indoor unit (unit where the remote controller is connected) to the remote controller terminal plates (1, 2) on the other indoor units. (Remote controller communication wiring)

(4) Turn ON both the indoor and outdoor unit power and perform automatic address setting from the remote controller. (For the automatic address setting procedure, refer to 2-8-3.)

NOTE

* Models with auxiliary heaters cannot be used for communication wiring of the indoor unit power wires.
(Use a pull box to divide the wiring.)
Be sure to use the indoor unit temperature sensor (body sensor) when using this control. (Status at shipment.)

2-8-2. Setting the Outdoor unit system addresses

For basic wiring diagram (Set the system address: 1)

Outdoor unit control PCB　8, 10 HP

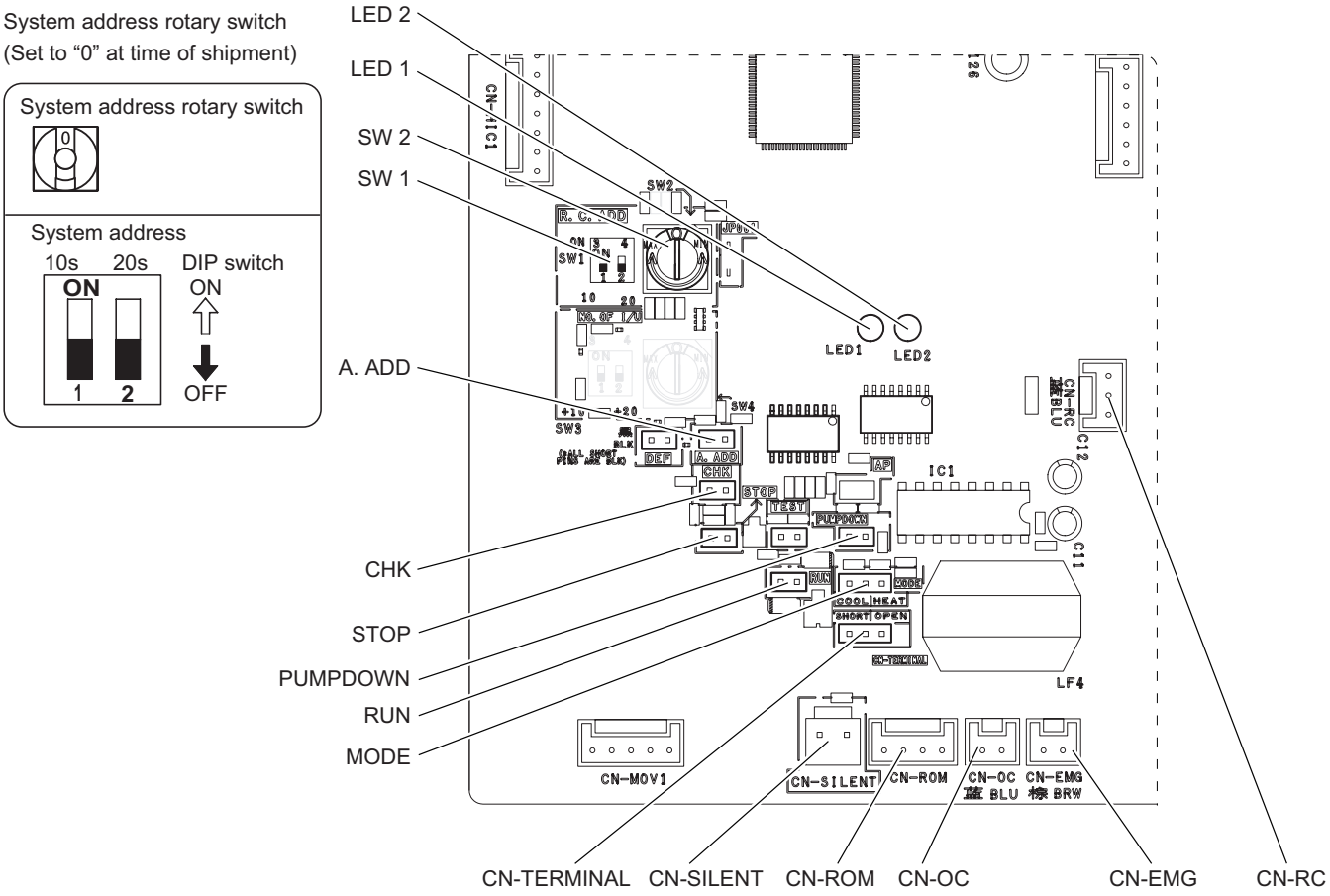


Fig. 2-6

System address No.	System address 10s digit (2P DIP switch)	System address 1s place (Rotary switch)
0 Automatic address (Setting at shipment = "0")	Both OFF ON OFF	"0" setting
1 (If outdoor unit is No. 1)	Both OFF ON OFF	"1" setting

2-8-3. Automatic address setting using the remote controller

Auto Address Setting from the High-spec Wired Remote Controller (CZ-RTC5A)

(1) Keep pressing the ⮌ , ↵ and ▶ buttons simultaneously for 4 or more seconds.
The “Maintenance func” screen appears on the LCD display.

(2) Press the ▼ or ▲ button to see each menu.
If you wish to see the next screen instantly, press the ◀ or ▶ button.
Select “9. Auto address” on the LCD display and press the ↵ button.

Maintenance func 20:30 (THU)
9. Auto address
10. Set elec. consumption
11. Set touch key
12. Check touch key
Sel. Page [↵] Confirm

CZ-RTC5A

(3) The “Auto address” screen appears on the LCD display.
Change the “Code no.” to “A1” by pressing the ▼ or ▲ button.

Auto address	20:30 (THU)
Code no.	O/D unit no.
A1	1
Sel. Next	

(4) Select the “O/D unit no.” by pressing the ◀ or ▶ button.
Select one of the “O/D unit no.” for auto address by pressing the ▼ or ▲ button.
Approximately about 10 minutes are required.
When auto address setting is completed, the units return to normal stopped status.

Auto Address Setting* from the Remote Controller (CZ-RTC4)

* Auto address setting in Cooling mode cannot be done from the remote controller.

NOTE

- Selecting each refrigerant system individually for auto address setting
- Auto address setting for each system
  : Item code “A1”

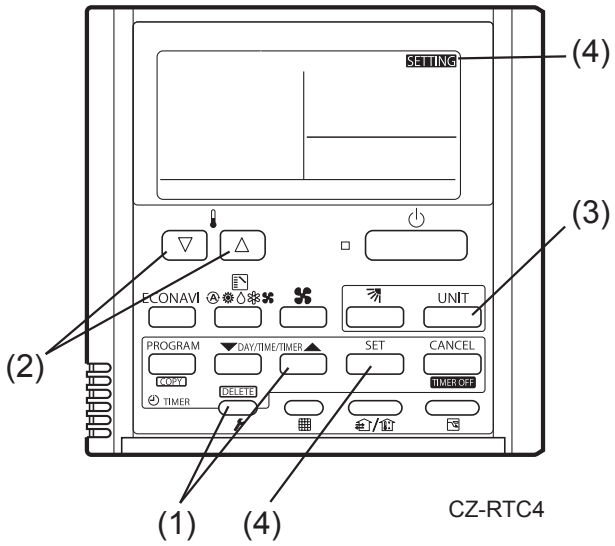
(1) Press the remote controller timer time /TIMER button and button at the same time.
(Press and hold for 4 seconds or longer.)

(2) Next, press either the temperature setting ▽ / △ button. (Check that the item code is “A1”.)

(3) Use either the UNIT button to set the system No. to perform auto address setting.

(4) Then press the SET button.
(Auto address setting for one refrigerant system begins.) (When auto address setting for one system is completed, the system returns to normal stopped status.)
<Approximately 4 – 5 minutes is required.>
(During auto address setting, “ SETTING ” is displayed on the remote controller.
This message disappears when auto address setting is completed.)

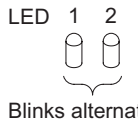
(5) Repeat the same steps to perform auto address setting for each successive system.



CZ-RTC4

Display During Auto Address Setting

● On the surface of outdoor unit control P.C. board



* Do not short circuit the A.ADD pin again during auto address setting.
LEDs 1 and 2 go out and address setting is interrupted.

* When auto address setting is normally completed, both LEDs 1 and 2 go out.
In other cases, correct settings referring to the following table and perform auto address setting again.

● Contents of LEDs 1 and 2 on outdoor unit control P.C. board

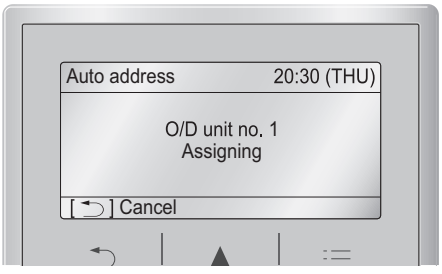
☼ : Illuminating
✷ : Blinking
● : Go out

<table>
<tr><th>LED 1</th><th>LED 2</th><th>Contents of display</th></tr>
<tr><td>☼</td><td>☼</td><td>After turned ON power (not during auto address setting), it is entirely impossible to communicate with the indoor unit in the system.</td></tr>
<tr><td>●</td><td>☼</td><td>After turned ON power (not during auto address setting), although the indoor units more than 1 unit in the system are recognized, there are inconsistencies between the number of indoor units and setting number of indoor units.</td></tr>
<tr><td colspan="2">✷ ✷
Alternately</td><td>Under auto address setting</td></tr>
<tr><td>●</td><td>●</td><td>Auto address setting completed</td></tr>
<tr><td colspan="2">✷ ✷
Simultaneously</td><td>There are inconsistencies between the number of indoor units and setting number of indoor units.
(at the time of auto address setting)</td></tr>
<tr><td colspan="2">✷ ✷
Alternating</td><td>Alarm display
After LED1 blinks M times, LED2 blinks N times.
This will be repeated.
<table>
<tr><th></th><th>Number of blinks</th><th>Type of alarm</th></tr>
<tr><td rowspan="5">M</td><td>2</td><td>Alarm P</td></tr>
<tr><td>3</td><td>Alarm H</td></tr>
<tr><td>4</td><td>Alarm E</td></tr>
<tr><td>5</td><td>Alarm F</td></tr>
<tr><td>6</td><td>Alarm L</td></tr>
</table>
N = number of alarm No.
For example: After LED1 blinks twice, LED2 blinks 16 times. This will be repeated.
The alarm shows “P16”.</td></tr>
</table>

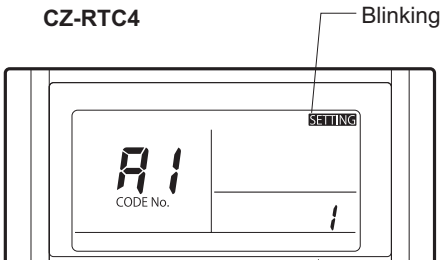
(✷ : Blink) Connect the outdoor unit maintenance remote controller to the RC plug (3P, BLU) on outdoor main unit control P.C. board and make confirmation.

● Display of remote controller

CZ-RTC5A



CZ-RTC4



Request concerning recording the indoor/outdoor unit combination Nos.

After auto address setting has been completed, be sure to record them for future reference.

List the outdoor main unit system address and the addresses of the indoor units in that system in an easily visible location (next to the nameplate), using a permanent marking pen or similar means that cannot be abraded easily.

Example: (Outdoor) 1 - (Indoor) 1-1, 1-2, 1-3… (Outdoor) 2 - (Indoor) 2-1, 2-2, 2-3…

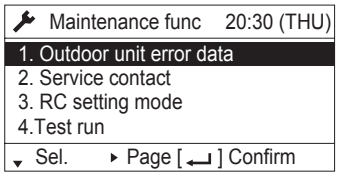
These numbers are necessary for later maintenance. Please be sure to indicate them.

Checking the indoor unit addresses

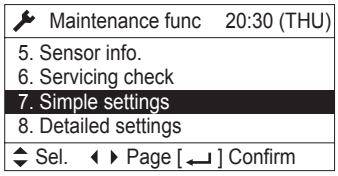
Use the remote controller to check the indoor unit address.

CZ-RTC5A (High-spec wired remote controller)

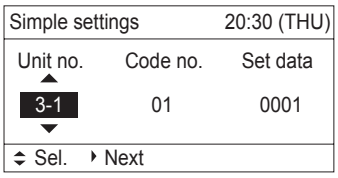
(1) Keep pressing the [↩], [↵] and [▶] buttons simultaneously for 4 or more seconds.
The "Maintenance func" screen appears on the LCD display.



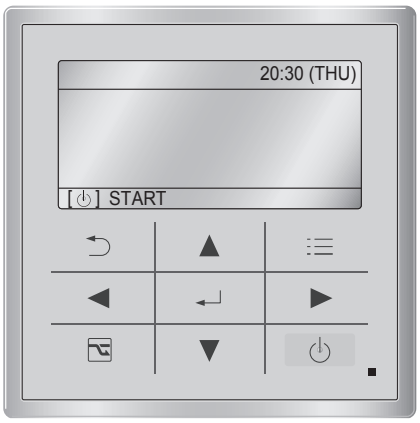
(2) Press the [▼] or [▲] button to see each menu.
If you wish to see the next screen instantly, press the [◀] or [▶] button.
Select "7. Simple settings" on the LCD display and press the [↵] button.



(3) The "Simple settings" screen appears on the LCD display.
Select the "Unit no." by pressing the [▼] or [▲] button for changes.



The indoor unit fan operates only at the selected indoor unit.

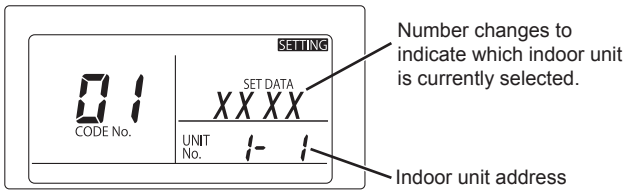


CZ-RTC5A

CZ-RTC4 (Timer remote controller)

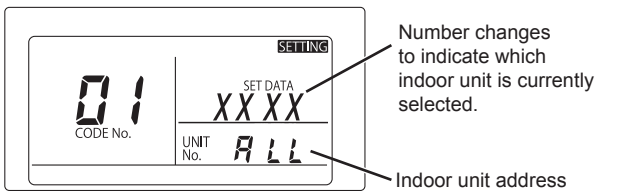
<If 1 indoor unit is connected to 1 remote controller>

(1) Press and hold the [⚡] button and [⌂/☎] button for 4 seconds or longer (simple settings mode).
(2) The address is displayed for the indoor unit that is connected to the remote controller.
(Only the address of the indoor unit that is connected to the remote controller can be checked.)
(3) Press the [⚡] button again to return to normal remote controller mode.



<If multiple indoor units are connected to 1 remote controller (group control)>

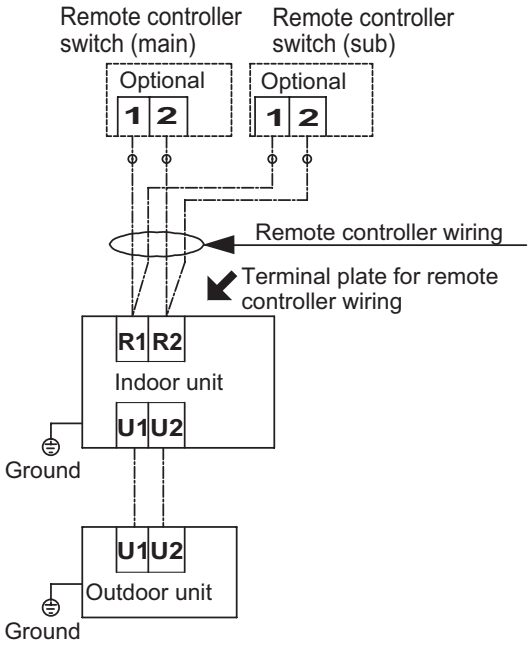
(1) Press and hold the [⚡] button and [⌂/☎] button for 4 seconds or longer (simple settings mode).
(2) "ALL" is displayed on the remote controller.
(3) Next, press the [UNIT] button.
(4) The address is displayed for 1 of the indoor units which is connected to the remote controller. Check that the fan of that indoor unit starts and that air is discharged.
(5) Press the [UNIT] button again and check the address of each indoor unit in sequence.
(6) Press the [⚡] again to return to normal remote controller mode.



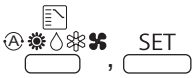
2-8-4. Main-sub remote controller control

Control using 2 remote controller switches Main-sub remote controller control refers to the use of 2 remote controllers to control 1 or multiple indoor units. (A maximum of 2 remote controllers can be connected.)

● **Connecting 2 remote controllers to control 1 Indoor unit**



● **Remote controller setting mode**

(1) Press and hold the 2 buttons for several seconds simultaneously. 

(2) Select the Code no. ▽ △

(3) Select the Set data. ▼DAY/TIME/TIMER▲ → SET The indicator illuminates after blinking. Press  .

Code no.	Item	Set data	
		0000	0001
01	Main/sub	Sub	Main
02	Clock type	24 hours	12 hours (AM/PM)

2-9. Caution for Pump Down

Pump down means refrigerant gas in the system is returned to the outdoor unit.
Pump down is used when the unit is to be moved, or before servicing the refrigerant circuit.

2

CAUTION

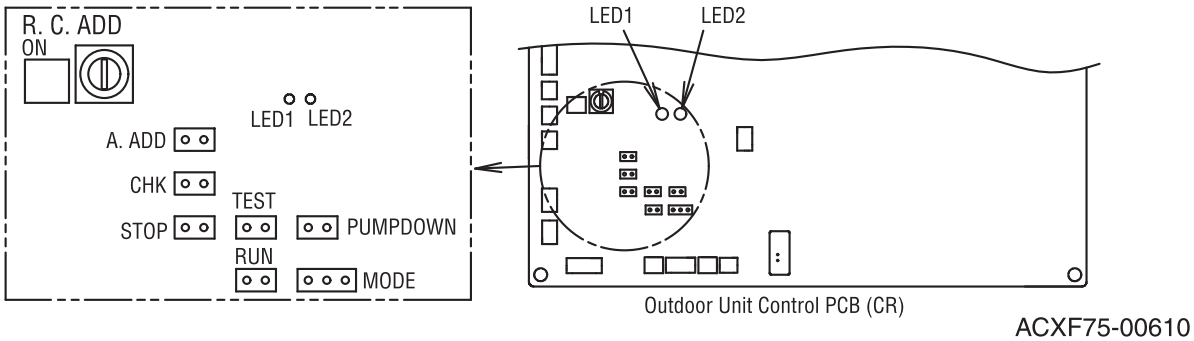
- **This outdoor unit cannot collect more than the rated refrigerant amount as shown by the nameplate on the back.**
- **If the amount of refrigerant is more than that recommended, do not conduct a pump down. In this case use another refrigerant collecting system.**

How to perform Pump-Down (Refrigerant recovery) properly

(1) Stop operation of the unit (cooling, heating etc.).
(2) Connect the pressure gauge to the service port of the gas wiring valve.
(3) Short-circuit the 「PUMPDOWN」 pin on an outdoor unit control PCB (CR) for more than 1 second to release.
  • Pump-Down begins and the unit starts operating.
  • During Pump-Down, LED1 blinks and LED2 is lit on an outdoor unit control PCB (CR).
  • 「CHK」 blinks on the remote controller.
(4) Fully close the liquid wiring valve 2-3 minutes later. The Pump-Down will begin.
(5) When the pressure gauge drops to 0.1-0.2MPa, close the gas wiring valve tightly and short-circuit the 「PUMPDOWN」 pin for more than 1 second to release. That is the end of Pump-Down.
  • When running for more than 10 minutes, it stops even if the Pump-Down is not completed. Check the blocked state of the liquid side valve.
  • It also stops when the 「PUMPDOWN」 pin is short-circuited during the operation.

* **For compressor protection, do not operate to the point where the unit wiring side reaches negative pressure.**

Note : In the case that inter-unit wiring is 30m or longer, you cannot pump-down.
(It may trigger the operation of the overload protection device.)
In this case, perform pump-down with pump-down device.

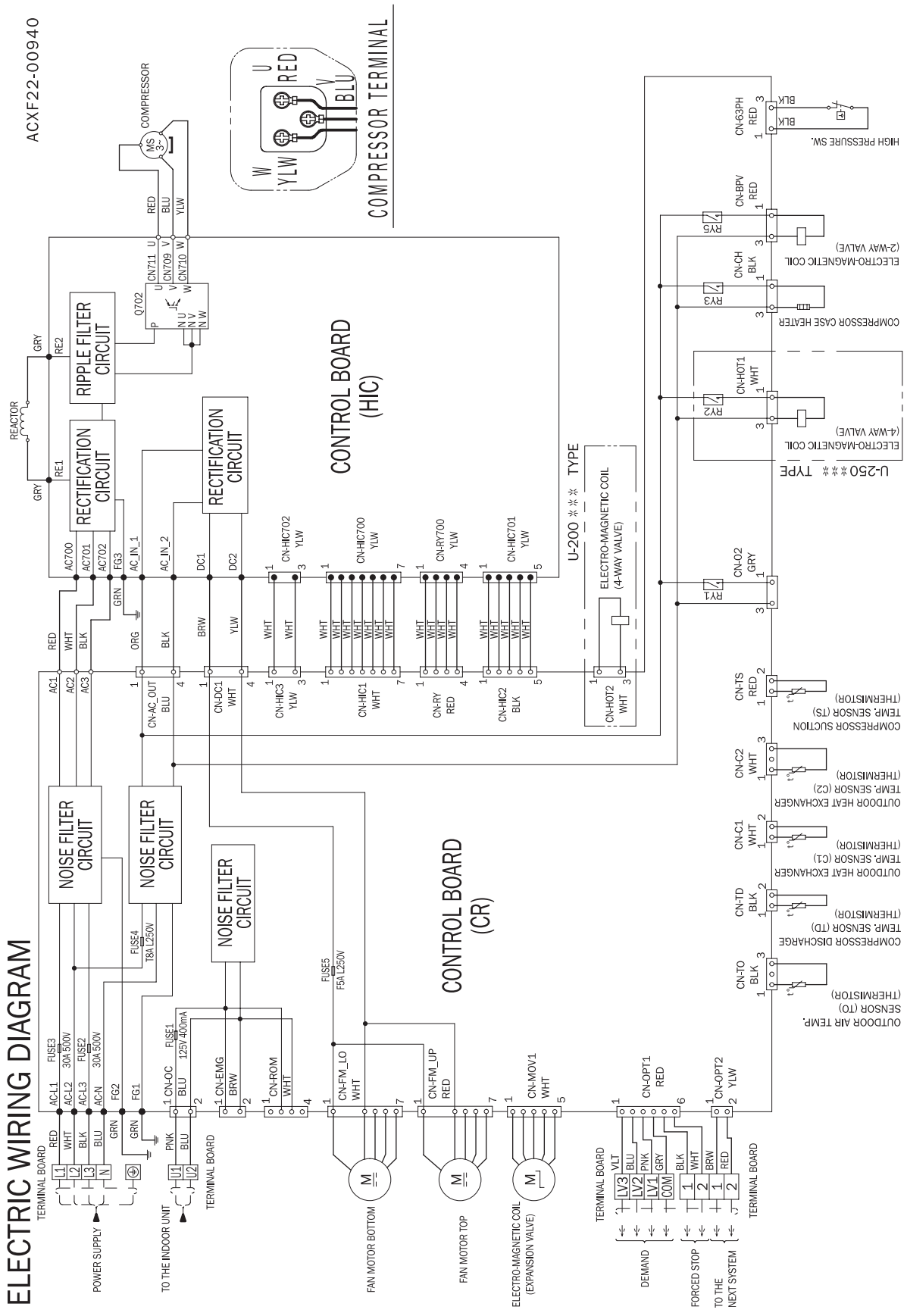


ACXF75-00610

3. ELECTRICAL DATA

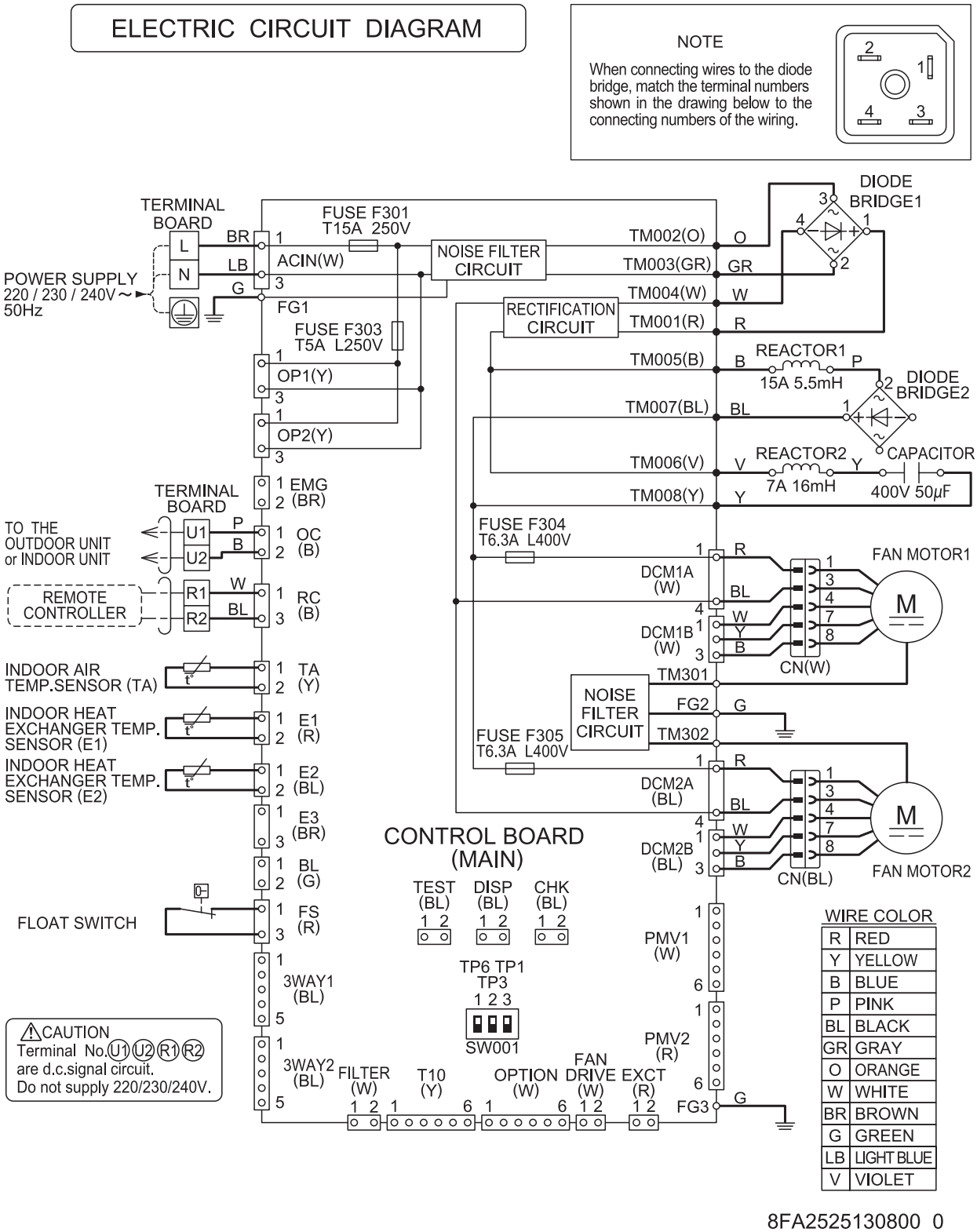
3-1. Outdoor Units

Electric Wiring Diagram U-200PE2E8A / U-250PE2E8A



3-2. Indoor Units

■ High Static Pressure Ducted Type S-200PE2E5, S-250PE2E5
Electric Wiring Diagram



8FA2525130800 0

– MEMO –

4. PROCESS AND FUNCTIONS

4-1. Control Functions

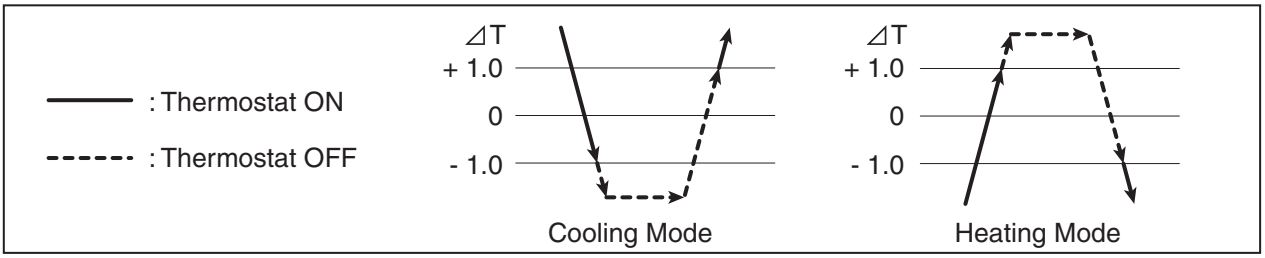
1. Indoor Air Temperature Control

The thermostat is switched on and off in accordance with ⊿ T shown below.

⊿ T= (Indoor air temperature) - (Temperature set with the remote controller)	
In the body thermostat mode (setting at factory shipment)	Indoor air temperature = (Body sensor) - (Shift temperature *)
In the remote controller thermostat mode	Indoor air temperature = (Remote controller sensor)

* Shift Temperature
Only valid during heating operation. Set at 0 °C during cooling operation.
The settings at factory shipment during heating operation are as follows:
Wall-Mounted type : 2°C
Floor Standing type : 0°C
All other types (4-Way types, Concealed types, etc.) : 4°C

This function acts as the coefficient for adjusting differences in temperature caused by the height of the living space from the floor to the ceiling (the temperature at ceiling height is higher) during heating operation.
The setting can be modified between 0°C and 6°C with mode [06] (Simple Settings Function) on the remote controller.



(1) Once the thermostat has been switched on, it cannot be switched off again by indoor air temperature control for a period of 10 minutes.
(2) Once the thermostat has been switched off, it cannot be switched on again for a period of 3 minutes.
(3) When in the test run operation mode, the thermostat will not be switched off by indoor air temperature control and the operation will continue.

2. Compressor Frequency Control

The frequency of the compressor's inverter is limited by either of the following controls depending on whether the cooling or heating mode is in operation.

Cooling Mode :

· Indoor air temperature control
· Maximum and minimum frequency control
· Current release control
· Cooling high-load prevention control
· Cooling freeze prevention control
· Discharge temperature control

Heating Mode :

· Indoor air temperature control
· Maximum and minimum frequency control
· Current release control
· Heating high-load prevention control
· Discharge temperature control

1) Indoor Air Temperature Control

By the control method, not only the thermostat is switched on and off, as explained section “1. Indoor Air Temperature Control ", but also the frequency of the compressor's inverter is controlled in accordance with ⊿ T and fluctuations in indoor air temperature. Inverter frequency is controlled as follows:

When ⊿T is high (not yet reached the temperature set with the remote controller).	Controlled so that the inverter frequency is increased.
When ⊿T is low (approximately +1.0 or less in the cooling mode or approximately -1.0 or more in the heating mode).	Controlled so that the inverter frequency is decreased or kept.

2) Maximum and Minimum Frequency Control

The compressor's inverter frequency is controlled in accordance with the model and operation mode.
The maximum and minimum frequencies for each model are shown in the table below.

* There are cases in which frequency is limited with other control functions depending on operational conditions, so operations are not always carried out in accordance with the maximum frequencies listed below.

· Maximum and Minimum Frequency

		U-200PE2E8A	U-250PE2E8A
Maximum Frequency (Hz)	Cooling	65.0	80.0
	Heating	80.0	95.0
Minimum Frequency (Hz)	Cooling	11	11
	Heating	13	15

* There is a case in which the frequency set at maximum and minimum may sometimes decrease in accordance with ambient temperature and indoor loads.

3) Current Release Control

The inverter frequency is controlled so that the current value for the inverter compressor is less than the figure listed in the table below in order to prevent abnormal increases in the inverter circuit located within the outdoor unit's electrical box.

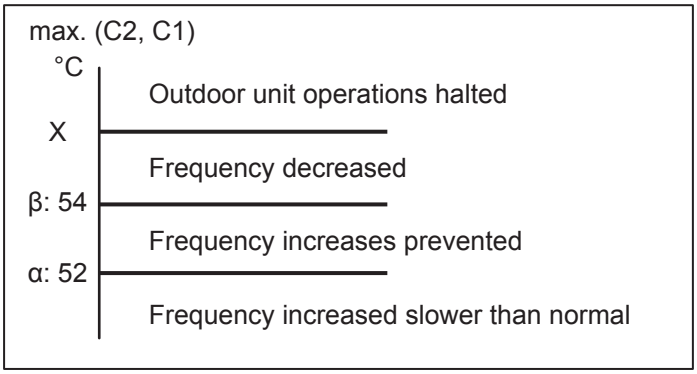
Current release control with primary current : The limited values are modified in accordance with ambient temperature.

		U-200PE2E8A	U-250PE2E8A
Is (A)	Cooling	18.5	18.5
	Heating	20.0	20.0

4) Condensation Temperature Control (cooling)

This system control is performed to limit the inverter frequency in order to restrict high pressure's abnormal increase and high-load operating prevention in the cooling mode.
In accordance with the temperature of the outdoor heat exchanger temperature sensors (C1, C2), such controls are performed as to halting the operations of the indoor unit, decreasing the inverter frequency and restricting its increase, etc.

(a) The threshold value is decreased in accordance with the compressor frequency or indoor load (differences of temperature).
(b) When "X" values are lowered, the results basically become β=X-2, α=X-3.



Outdoor EEPROM : Amendment of X values can be made due to 4B.

EEPROM setting in outdoor unit
CODE: 4B

Setting No.	-2	-1	0 *1	1 *2
X (°C)	52	56.5	58.5	60

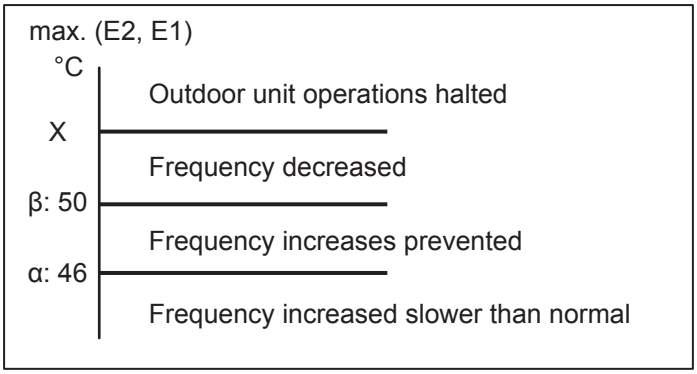
*1 PE type : Setting at factory shipment
*2 PEY type : Setting at factory shipment

4

5) Condensation Temperature Control (heating)

This system control is performed to limit the inverter frequency in order to restrict high pressure's abnormal increase and high-load operating prevention in the heating mode.
In accordance with the temperature of the indoor heat exchanger temperatures sensor (E1, E2), such controls are performed as to halting the operations of the indoor unit, decreasing the inverter frequency and restricting its increase, etc.

(a) The threshold value is decreased in accordance with the compressor frequency or indoor load (differences of temperature).
(b) When "X" values are lowered, the results basically become β=X-2, α=X-3.



Outdoor EEPROM : Amendment of X values can be made due to 4B.

EEPROM setting in outdoor unit
CODE: 4B

Setting No.	-2	-1	0 *1	1 *2
X (°C)	52	56.5	58.5	60

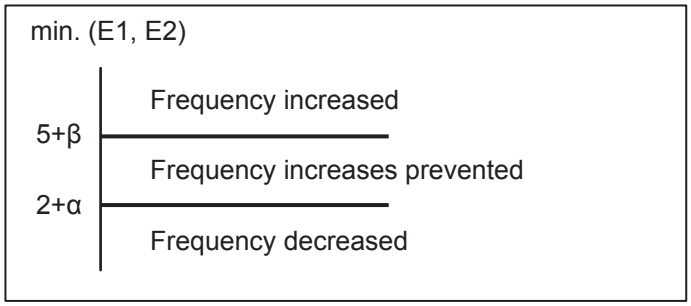
*1 PE type : Setting at factory shipment
*2 PEY type : Setting at factory shipment

6) Cooling Freeze Prevention Control

The following control is performed during cooling operations (including dry mode operation), in accordance with whichever of the indoor heat exchanger temperatures (E1 or E2) is lower. (See the chart below.)

(a) Frequency will not be decreased less than 6 minutes after thermostat ON.

(b) The threshold value is increased in accordance with the indoor load (differences of temperature).



Outdoor EEPROM : Amendment of α and β values can be made due to 3F or 40.

EEPROM setting in outdoor unit

CODE: 3F (for α setting)

Setting No.	-15	.....	0 *	.....	9
α	-15		0		9

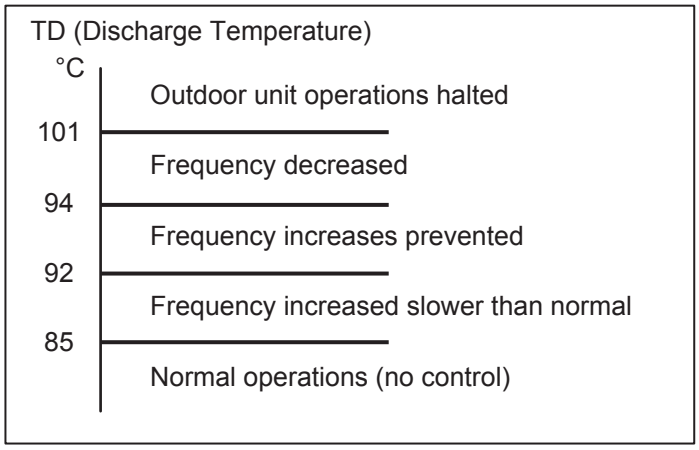
CODE: 40 (for β setting)

Setting No.	-15	.....	0 *	.....	9
β	-15		0		9

* Setting at factory shipment

7) Discharge Temperature Control

The following control is performed to prevent the discharge temperature from rising abnormally in order to protect the inverter compressor.
In accordance with the temperature of the discharge sensor TD, such controls are performed as to limiting the increase of inverter frequency, decreasing it or halting operation of the compressor.

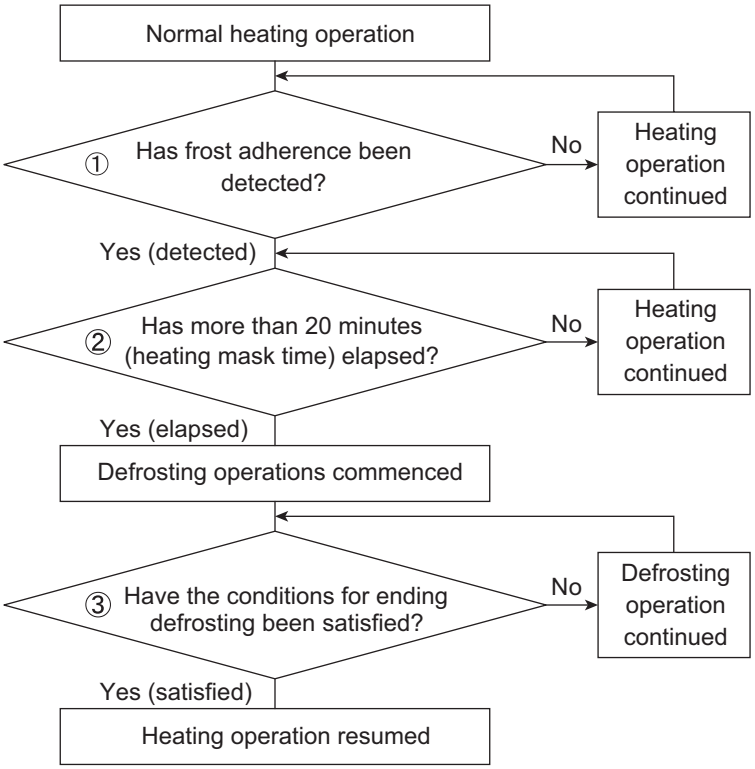


* If the discharge temperature exceeds 101°C, operations of the compressor are halted and restarted after 3 minutes.
If this start/stop activity is repeated 5 times, the alarm "P03" (abnormal discharge temperature) occurs.

8) Defrosting Control

This control function removes frost that has adhered to the outdoor heat exchanger during the heating operation. The control is performed to prevent the deterioration of the heating capabilities attributed to the adherence of frost, and to prevent the crack or crush of pipes attributed to the accretion of ice.
The following control is performed in accordance with the ambient temperature and the outdoor heat exchanger temperature sensor (C1).

Overall Flow Chart of Defrosting Control

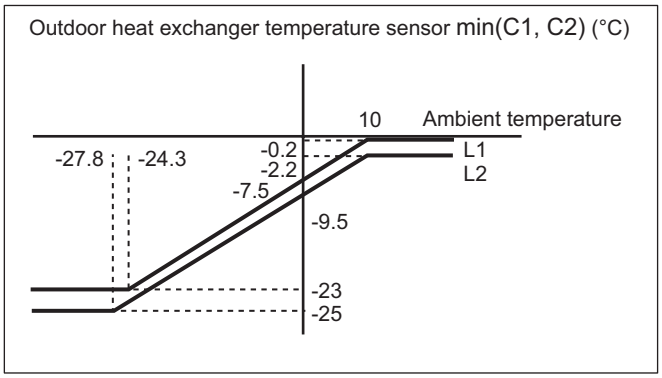


① Frost adherence detection

- If the following conditions are satisfied during heating operations, it is regarded as "frost adherence is detected".
- Frost adherence detection is performed in accordance with the ambient temperature (TO) and the outdoor heat exchanger temperature sensor min(C1, C2).
- Frost adherence detection conditions

(a) Following satisfied condition is detected for accumulation of 60 minutes.
Outdoor heat exchanger temperature sensor min(C1, C2) ≤ L1

(b) Following satisfied condition is detected for consecutive 1 minutes or more, 2 times.
Outdoor heat exchanger temperature sensor min(C1, C2) ≤ L2



(c) Following satisfied condition is detected for accumulation of over 90 minutes.
Outdoor heat exchanger temperature sensor min(C1, C2) < -3 °C

② Heating Mask Time

This refers to the shortest time that heating operations must be performed without defrosting operations being executed. The mask time for this model is 20 minutes.

* Defrosting operations will not be commenced until the defrosting mask time has elapsed, even if frost adherence has been detected.

③ Ending Defrosting

Defrosting operations are ended when the following conditions are satisfied.

- Ending defrosting conditions

(a) When the temperature of the outdoor heat exchanger temperature sensor (C1) is 10°C or higher.

(b) When the temperature of the outdoor heat exchanger temperature sensor (C1) is 6°C or higher for consecutive 60 seconds.

(c) When a maximum of 15 minutes defrosting time has elaped.

9) Outdoor Unit Fan Control

The appropriate rotations per minute for the outdoor unit fan are determined in accordance with the ambient temperature and the frequency of the compressor inverter.
The outdoor unit fan step is controlled between a range of W1 (Step 1) and WF (Step 15).

10) Outdoor Unit's Electrical Expansion Valve Control

The electrical expansion valve controls the amount of refrigerant that is allowed to flow in accordance with the operation status.
The valve is adjusted in accordance with the discharge temperature (TD), the outdoor heat exchanger temperature sensor (C1), the suction temperature sensor (TS), and the indoor unit's heat exchanger temperature sensors (E1 and E2).

(1) Cooling Mode
Controlled so that the suction temperature (TS) - indoor heat exchanger temperature minimum (E1 and E2) is between 0 degree and 2 degrees under normal conditions.
There are cases where the aperture opens wider than normal operation if the discharge temperature increases.

(2) Heating Mode
Controlled so that the suction temperature (TS) - outdoor heat exchanger temperature (C1) is between 0 degree and 2 degrees under normal conditions.
There are cases where the aperture opens wider than normal operation if the discharge temperature increases.

11) Demand Control

There is a demand terminal as normal equipment in the outdoor unit.
Demand control can be selected as the following table.
Input current should be DC24V, 10mA
Connecting wiring must be used "shield wiring".

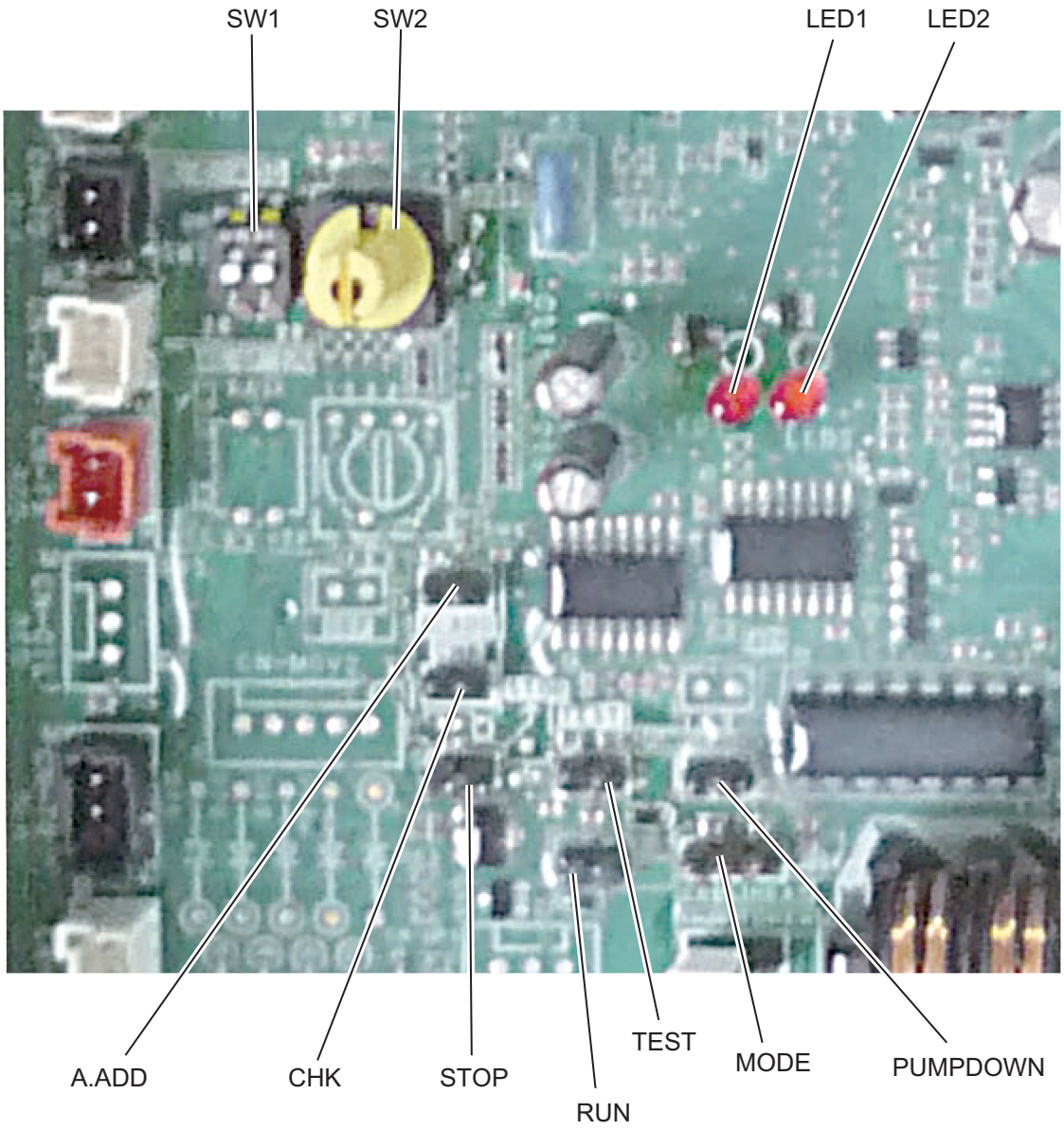
Short-circuit			Control (range of operations)
LV1-COM	LV2-COM	LV3-COM	
0	0	0	No ristricted
1	0	0	Rated current restricted to A% (A% = 75% at factory shipment)
0	1	0	Rated current restricted to B% (B% = 50% at factory shipment)
0	0	1	Control OFF

* The operational current is restricted to either A% or B% as a general indicator during demand input.

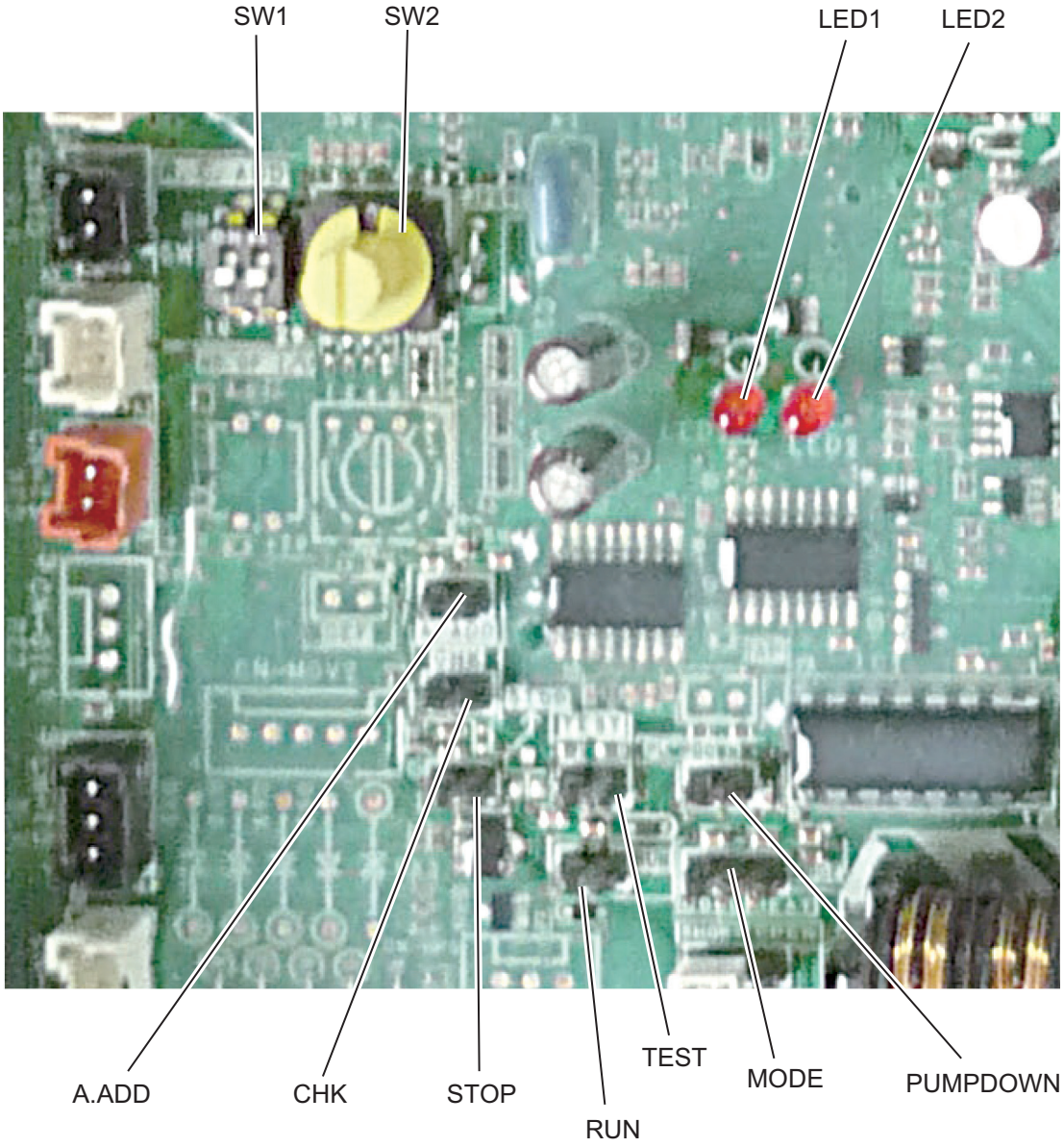
- A% and B% can be amended in calibrations of 5% between 70% and 100% with the outdoor unit's maintenance remote controller.
  For details on how to amend the parameters, see the chapter on the outdoor maintenance remote controller, (refer to the section "6-6. Settings Modes : Setting the Outdoor Unit EEPROM").
- A% value amendments: Parameters are amended with item code "1A" (demand 1).
- B% value amendments: Parameters are amended with item code "1B" (demand 2).

4-2. Outdoor Unit Control PCB

U-200PE2E8A (ACXA73-04770)



U-250PE2E8A (ACXA73-04750)



Outdoor Unit Control PCB (ACXA73-04770, ACXA73-04750)

Explanation of Functions

A. ADD pin	(2P, Black)	Auto address setting pin • Short-circuit this pin for 1 second or longer to automatically set the addresses at the indoor units that are connected to that outdoor unit and are within the same system. • The system address is "0" at the time of shipment. Auto address setting is necessary even for communications lines in a single system where the inter-unit control wiring does not cross to any other systems. • While auto address setting is in progress, the 2 LEDs (LED1, 2: Red) on the outdoor unit control PCB blink alternately. (Short-circuiting this pin while auto address setting is in progress will stop the auto address setting operation.)
SW2 Rotary switch	(10 positions, Yellow)	Outdoor system address setting switch • The setting is "0" at the time of shipment. It is not necessary to change the setting if wiring is connected only to an outdoor unit and indoor units in a single system and the inter-unit control wiring does not cross multiple systems. • If wiring links the inter-unit control wiring for multiple systems to the same communications lines, then a different address must be set for each refrigerant tubing system. • If wiring links multiple systems, a maximum of 30 systems (up to 64 indoor units) can be connected. This setting can be set up to "39," however control will be for 30 systems even if the setting is set to higher than 30. An alarm will be displayed if system addresses are duplicated. (For details, see Table 4-1.)
SW1 DIP switch	(2P, Black)	Switches for setting system address 10s digit and 20s digit • If 10 systems or more are set, the setting is made by a combination of this DIP switch and SW2. • If 10 - 19 systems are set, set switch 1 (10s digit) to ON. • If 20 - 29 systems are set, set switch 2 (20s digit) to ON, and set switch 1 (10s digit) to OFF. • If 30 systems are set, set both switch 1 (10s digit) and switch 2 (20s digit) to ON.(For details, see Table 4-1.)
PUMP DOWN	(2P, Black)	Refrigerant recovery Pin • Short circuit this pin to perform refrigerant recovery control using cooling operation. The indoor unit fan will operate at HIGH and 60Hz for a maximum of 10 minutes When refrigerant recovery is completed, close the valves and open circuit this pin to stop the operation.
LED 1 LED 2	(D302) (D303)	LED (red × 2) • LED 1 and 2 blink alternately while automatic address setting is in progress. • Display the alarm contents for alarms that are detected by the outdoor unit.
RUN	(2P, Black)	Start pin • Short-circuit this pin and apply a pulse signal to start all indoor units in that refrigerant system.
Stop	(2P, Black)	Stop pin • Short-circuit this pin and apply a pulse signal to stop all indoor units in that refrigerant system.
Mode change	(3P, Black)	Indoor unit Heating/Cooling mode change pin • Short-circuiting this pin during ordinary operation changes the mode from Cooling to Heating (if the current mode is Cooling) or from Heating to Cooling (if the current mode is Heating).
Test	(2P, Black)	• This pin is used to test the PCB at the factory. • When the power is turned ON after this pin has been short-circuited, all output signals will be output in sequence. (Sequential output does not occur if this pin is short-circuited when the power is already ON.) Releasing this pin returns the unit to normal control.
CHK	(2P, Black)	• Short-circuit during the test run operation. • Open the circuit after the test run.

Table 4-1. Method of System Address Setting

[SW2 (rotary, yellow), SW1 (2P DIP switch, black)]

	Outdoor system address No.	SW2 setting (system address switch)	SW1 setting	
			1P (10s-digit place)	2P (20s-digit place)
1 system only	1	0	OFF	OFF
Central control	1	1	OFF	OFF
	2	2	OFF	OFF
	3	3	OFF	OFF
	4	4	OFF	OFF
	5	5	OFF	OFF
	6	6	OFF	OFF
	7	7	OFF	OFF
	8	8	OFF	OFF
	9	9	OFF	OFF
	10	0	ON	OFF
	11	1	ON	OFF
	12	2	ON	OFF
	13	3	ON	OFF
	14	4	ON	OFF
	15	5	ON	OFF
	16	6	ON	OFF
	17	7	ON	OFF
	18	8	ON	OFF
	19	9	ON	OFF
	20	0	OFF	ON
	21	1	OFF	ON
	22	2	OFF	ON
	23	3	OFF	ON
	24	4	OFF	ON
	25	5	OFF	ON
	26	6	OFF	ON
	27	7	OFF	ON
	28	8	OFF	ON
	29	9	OFF	ON
	30	0	ON	ON

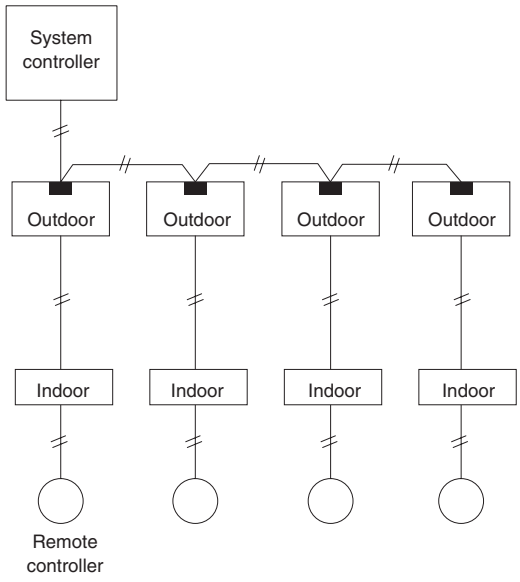
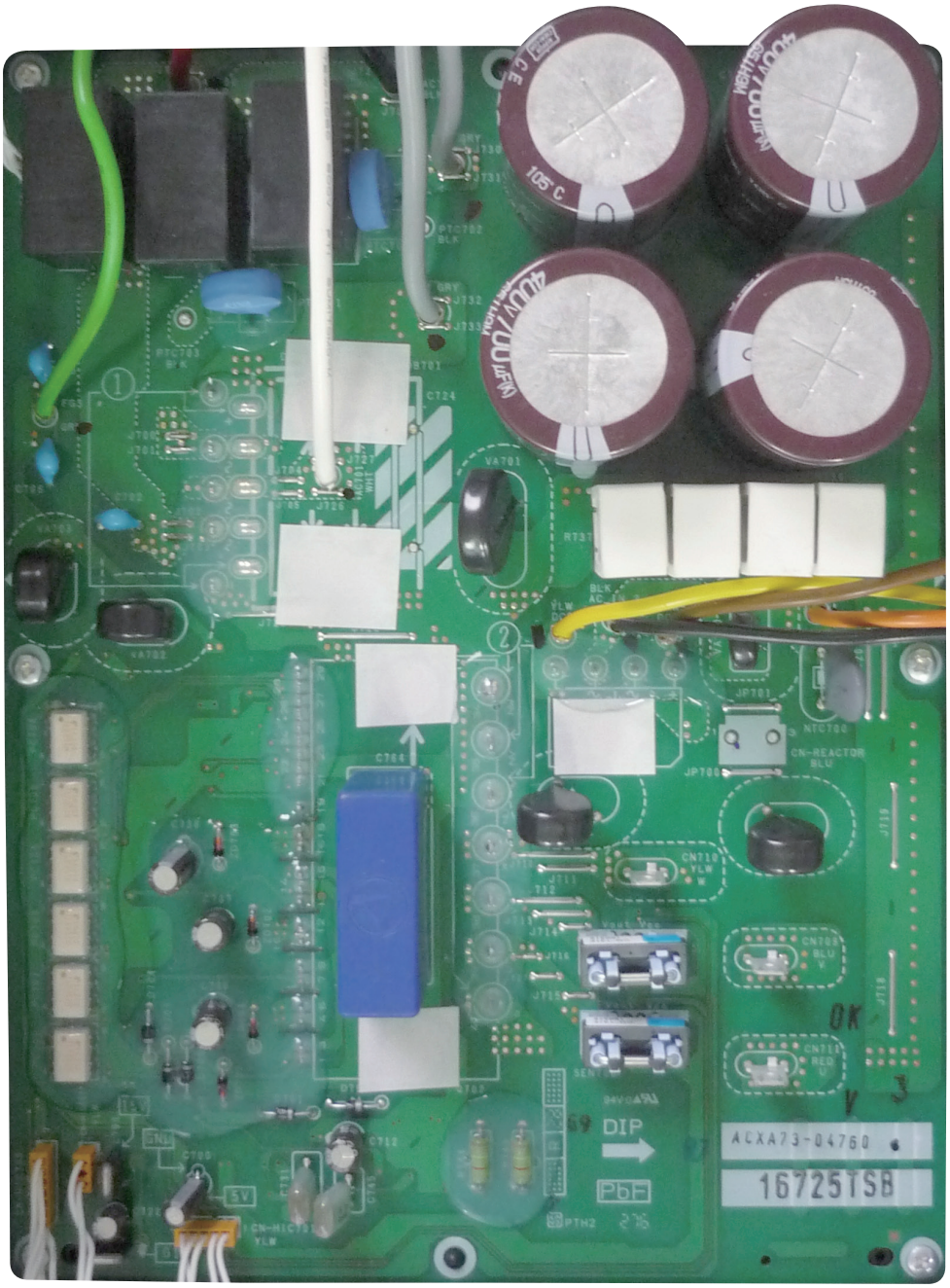


Fig. 1

4

4-3. Outdoor Unit HIC Board

U-200PE2E8A, U-250PE2E8A (ACXA73-04760)



4-4. Indoor Unit Control PCB Switches and Functions

[Indoor unit control PCB]

T10 (CN061): **6P plug (YEL)** / Used for remote control operation. (Refer to the Remote Control Section.)

Control items: (1) Start/stop input (2) Remote controller prohibit input
(3) Start signal output (4) Alarm signal output

EXCT (CN073): **2P plug (RED)** / Can be used for demand control. When input is present, forces the unit to operate with the thermostat OFF.

DISP (CN063): **2P plug (WHT)** / Short-circuiting this plug allows operation to be controlled by the remote controller even when an outdoor unit is not connected. (In this case, alarm "E04," which indicates trouble in the serial communication between the indoor and outdoor unit, does not occur.)

CHK (CN062): **2P plug (WHT)** / Test pin. Short-circuiting this pin allows the indoor FM (H fan speed), drain pump, flap motor (F1 position), and electronic expansion valve full-open position to be checked.
However this function turns OFF if the indoor unit protection mechanism is activated.
The components will operate even if the remote controller and outdoor unit are not connected, however the remote control cannot be used for control even if it is connected.
This plug can be used for short-term tests.

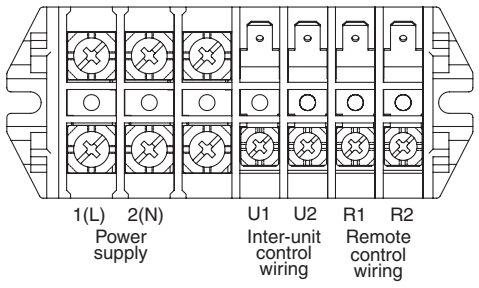
JP1 (JP001): **Jumper wire** / Allows selection of the T10 terminal start/stop signal. (Refer to the Remote Control Section.)
Setting at time of shipment: Pulse signal
Jumper wire cut: Static signal (continuous signal)

Fan drive (CN032): **2P plug (WHT)** / This terminal sends the signal to the ventilation fan when a commercially available ventilation fan is operated by the FAN button on the wired remote controller. (Refer to the Remote Control Section.)
Use a ventilation fan which can accept the no-voltage contact A signal as the external input signal.

Power LED: **LED (RED)** / Illuminates when the power is ON. Flashes when there is trouble with the EEPROM (IC10, IC010: nonvolatile memory).

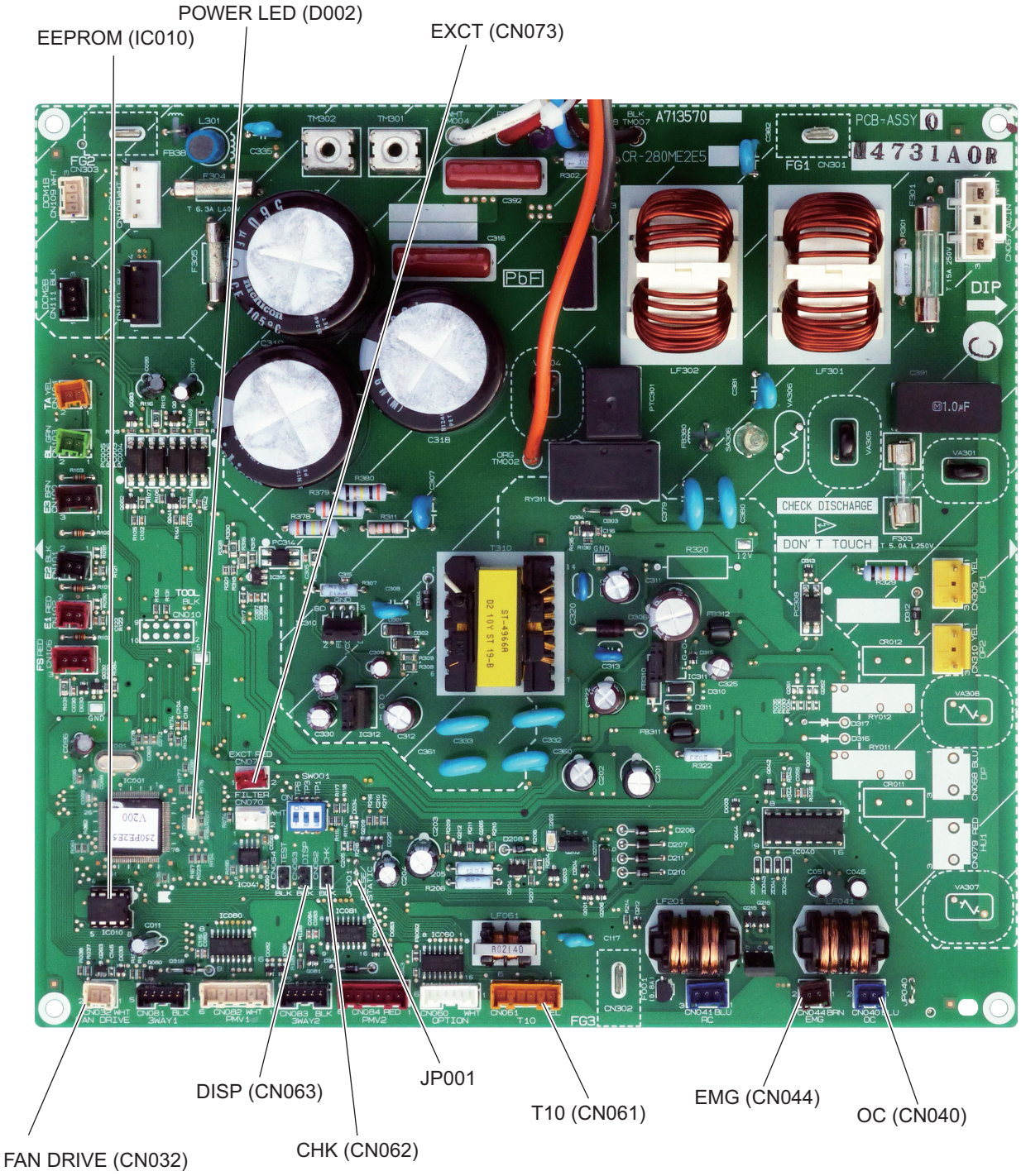
EEPROM (IC010): **Nonvolatile memory** / Used to store model information and other data. When replacing the PCB, remove the EEPROM from the old PCB and install it onto the new PCB. If there is IC trouble, replace with a new IC (provided with the servicing PCB), and set the necessary information using the wired remote controller. (For the setting procedure, refer to the servicing technical materials.)

7P terminal board



Indoor Unit

■ Indoor Unit Control PCB (A747661) : S-200PE2E5, S-250PE2E5



5. TROUBLE DIAGNOSIS

5-1. Contents of Remote Controller Switch Alarm Display

ON: ○ Blinking: ☼ OFF: ●

Possible cause of malfunction			Wired remote control display	Wireless remote controller receiver display: Operation	Timer	Standby
Serial communication errors Missetting	Failure in receiving serial signal from remote controller's indoor unit	Faulty remote controller	E01	Operating lamp blinking	●	●
		Disconnection/Contact failure of remote controller wiring				
		CHK(check) pins on the indoor unit control PCB are short circuited				
	Settings of system address, indoor unit address and group control are not made	In the case of non-group control: ・Power supply OFF of outdoor unit ・Disconnection / Contact failure of inter-unit wiring In the case of group control: Automatic address operation was not carried out.				
	Setting failure of nonvolatile memory IC	Faulty setting of EEPROM (IC010) on indoor unit				
	Failure in indoor unit serial signal from remote controller	Faulty remote controller	E02			
		Wrong wiring of remote controller				
	Error in indoor unit receiving signal from remote controller (central)		E03			
	Failure in indoor unit receiving serial signal from outdoor unit	Disconnection / Contact failure of inter-unit wiring	E04	Standby lamp blinking	●	●
		・Faulty indoor unit control PCB ・Faulty outdoor unit control PCB ・Communication circuit fuse (F302) on indoor unit control PCB opened				
		・Fuse on outdoor unit control PCB opened Since failure of an outdoor fan motor is considered as a cause, both outdoor unit control PCB and outdoor unit fan motor are exchanged simultaneously.				
	Failure in outdoor unit receiving serial signal from indoor unit	・Disconnection / Contact failure of inter-unit wiring	E06			
		・Disconnection of inter-unit wiring ・Communication circuit fuse (F302) on indoor unit control PCB opened				
		Indoor unit control PCB address setting error				
	Duplication of indoor unit address	Duplication of indoor unit address setting	E08	Operating lamp blinking	●	●
	Duplication of main remote controller setting	Error because of more than one remote controller setting to main	E09			
	Improper setting	Automatic address setting start is prohibited	E12			
		Duplication of main unit in group control	E14			
	Communication error between main and sub indoor units	・Disconnection of wiring between main unit and additional units ・Contact failure of wiring ・Faulty indoor unit control PCB (Main or Addition)	E18			
	Automatic address settings failure	Automatic Address Alarm The total capacity of indoor units is too low	E15	Standby lamp blinking	●	●
		Automatic Address Alarm The total capacity of indoor units is too high	E16			
		Automatic Address Alarm No indoor unit connected	E20			
	Outdoor unit Communication error		E24			
	Outdoor unit Communication error		E29			
	Indoor & outdoor unit type miss-matched	Setting error, indoor/outdoor unit type/model miss-matched	L02	Operating and standby lamps blinking simultaneously	☼	●
	Duplication of group control's main indoor unit	Duplication of main indoor unit address in group control	L03			
	Group control wiring is connected to individual control indoor unit	Group control wiring is connected to individual control indoor unit	L07			
	Indoor unit address is not set		L08			
	Indoor unit capacity is not set		L09			
	Duplication of outdoor unit address		L04	Operating and standby lamps blinking simultaneously	☼	○
	Outdoor unit capacity is not set or setting error		L10			
	Indoor unit type setting error		L13			
	4-way valve locked trouble / operation failure		L18			

Continued

ON: ○ Blinking: ☼ OFF: ●

Possible cause of malfunction			Wired remote control display	Wireless remote controller receiver display: Operation / Timer / Standby
Activation of protective device	Faulty wiring connections of (ceiling) indoor unit panel		P09	Timer and standby lamp blinking alternately: ● ☼ ☼
	Indoor unit fan motor trouoble	Indoor unit fan motor locked	P01	
		Indoor unit fan motor layer short		
		Contact failure in thermostat protector circuit		
	Activation of float switch wiring	Faulty drain pump	P10	
		Drainage failure		
		Contact failure of float switch wiring		
	Faulty drain pump	Faulty drain pump	P11	
		Drain pump locked		
	Indoor unit fan motor trouble	Indoor unit fan motor locked Faulty wiring connections of indoor unit fan motor	P12	
	Valve error	Valve error	P13	
	O_2 sensor error	O_2 sensor detected	P14	
	Discharge temperature protective alarm	Compressor discharge temperature trouble	P03	Operating and standby lamp blinking alternately: ☼ ● ☼
	Activation of high pressure switch	Compressor discharge pressure trouble	P04	
	Power supply failure	Open phase detected AC power supply trouble	P05	
	Insufficient gas	Insufficient gas level detected	P15	
	Compressor overcurrent trouble		P16	
	Fan motor locked/reversed airflow detected	Outdoor unit fan motor trouble Outdoor unit fan trouble	P22	
	Inverter compressor trouble		P29	
	Group control trouble	Indoor unit in group control trouble	P31	
	Activation of current control compressor's protective device	Primary (input) overcurrent detected	H01	Timer lamp blinking: ● ☼ ●
	PAM trouble (overcurrent/over-voltage), Activation of compressor's protective device	PAM trouble	H02	
	Primary current control, Activation of compressor's protective device	Primary current CT sensor failure	H03	
	HIC trouble	HIC trouble DC voltage not detected	H31	
Thermistor fault	Indoor unit thermistor open/short	Indoor heat exchanger temperature sensor (E1) trouble	F01	Operating and timer lamp blinking alternately: ☼ ☼ ●
		Indoor heat exchanger temperature sensor (E2) trouble	F02	
		Indoor air temperature sensor (TA) trouble	F10	
	Outdoor unit thermistor open/short	Compressor discharge temperature sensor (TD) trouble	F04	Operating and timer lamp blinking alternately: ☼ ☼ ○
		Outdoor heat exchanger temperature sensor (C1) trouble	F06	
		Outdoor heat exchanger temperature sensor (C2) trouble	F07	
		Outdoor air temperature sensor (TO) trouble	F08	
		Compressor suction temperature sensor (TS) trouble	F12	
Monvolatile memory failure		Indoor unit EEPROM trouble	F29	Operating and timer lamp blinking simultaneously: ☼ ☼ ●
		Outdoor unit EEPROM trouble	F31	Operating and timer lamp blinking simultaneously: ☼ ☼ ○

5

5-2. Outdoor Unit Control Panel LED Display

(○ : ON ☼ : Blinking ● : OFF)

LED1	LED2	Display meaning
○	○	After the power is turned ON (and automatic address setting is not in progress), no communication with the indoor units in that system is possible.
(Both ON)		
●	○	After power is turned ON (and automatic address setting is not in progress), 1 or more indoor units are confirmed in that system; however, the number of indoor units does not match the number that was set.
(OFF)	(ON)	
●	●	Automatic address setting was completed successfully. (After the power is turned ON, the number of detected indoor units connected to that system matches the number that was set, and regular communications are occurring.)
(Both OFF)		
☼	☼	Automatic address setting is in progress.
(Blinking alternately)		
☼	☼	Alarm display LED 1 blinks M times, then LED 2 blinks N times. The cycle then repeats. M = 2: P alarm 3: H alarm 4: E alarm 5: F alarm 6: L alarm N = Alarm No. Example: LED 1 blinks 2 times, then LED 2 blinks 16 times. The cycle then repeats. Alarm is “P16.”
(Blinking alternately)		
☼	○	PUMP DOWN is in progress.
LED 1 : Blinking LED 2 : ON		
☼ (0.8 / 0.3) *	●	P04 (High pressure trouble) Pre-trip display
LED 1 : Blinking LED 2 : OFF		
☼ (0.5 / 0.5)	●	Other Pre-trip display
LED 1 : Blinking LED 2 : OFF		

* Blinking (0.8 / 0.3) indicates that the lamp illuminates for 0.8 seconds, and then is OFF 0.3 seconds.

5-3. PAC System Alarm Codes

Alarms for outdoor units

Alarm Code	Alarm Meaning
E01	Remote Controller Reception Error
E02	Remote Controller Transmission Error
E03	Error in Indoor Unit Receiving Signal from Remote Controller (central)
E04	Error in Indoor Unit Receiving Signal from the Outdoor Unit
E05	Error in Indoor Unit Transmitting Signal to the Outdoor Unit
E06	Outdoor Unit Failed to Receive Serial Communication Signals from Indoor Unit
E08	Duplicate Indoor Unit Address Settings Error
E09	More Than One Remote Controller Set to Main Error
E12	Automatic Address Setting Start is Prohibited while Auto-address Setting in Progress.
E14	Main Unit duplication in Simultaneous-operation Multi Control (detected outdoor unit)
E15	Automatic Address Alarm (The total capacity of indoor units is too low.)
E16	Automatic Address Alarm (The total capacity of indoor units is too high or the total number of indoor units is too many.)
E18	Faulty Communication in Group Control Wiring
E20	Connection Problem of Indoor/Outdoor Units.
F04	Compressor Discharge Temperature Sensor (TD) Trouble
F06	Inlet Temperature Sensor (C1) in Heat Exchanger Trouble
F07	Intermediate Temperature Sensor (C2) in Heat Exchanger Trouble
F08	Outdoor Air Temperature Sensor (TO) Trouble
F12	Compressor Inlet Suction Temperature Sensor (TS) Trouble
F31	Outdoor Unit Nonvolatile Memory (EEPROM) Trouble
H01	Primary (input) Overcurrent Detected
H02	PAM Trouble
H03	Primary Current CT Sensor (current sensor) Failure
H31	HIC Trouble
L04	Outdoor Unit Address Duplication
L10	Outdoor Unit Capacity not Set or Invalid
L13	Indoor Unit Type Setting Error
L18	4-way Valve Operation Failure
P03	Compressor Discharge Temperature Trouble
P04	High Pressure Trouble
P05	AC Power Supply Trouble
P13	Alarm Valve Open
P14	O_2 Sensor Detect
P15	Insufficient Gas Level Detected
P16	Compressor Overcurrent Trouble
P22	Outdoor Unit Fan Motor Trouble
P29	Lack of INV compressor wiring, INV compressor actuation failure (including locked), DCCT failure
P31	Group Control Error

Symptoms and Parts to Inspect

Remote controller alarm display	Alarm contents	Judgement conditions	Eliminating condition of alarm	Judgement and correction
P03	Abnormal discharge temperature error • Discharge temp. detected at or above the specified value	Stops when temp. exceeds 101 ℃. Alarm output on 5 pre-trips	Recovery at restart	1. Check refrigerant cycle (gas leak). 2.Trouble with electronic expansion valve 3.Check discharge temperature sensor (TD).
P05	CT disconnected or AC power supply error	The current value transmitted from the microcomputer on the outdoor unit control substrate is low. When no AC power input for more than 30 seconds to 5 minutes : Single alarm	Recovery at restart	1. Check outdoor unit control PCB. 2. Lack of reactor wire
P15	Insufficient gas level detected.	• Discharge temperature is 95 ℃ or higher. • Electronic expansion valve is at Step 480. When the above has continued for 1 minute. Indoor air sucking due to body thermostat max (E1 or E2) - TA ≤ 4 ℃	Recovery at restart	1.Check refrigerant cycle (gas leak). 2.Trouble with electronic expansion valve 3.Check outdoor unit valve opening.
L18	4-way valve operation failure • Judged after heating operating for 5 minutes consecutively.	The indoor unit heat exchanger temperature drops even though the compressor is switched on during the heating mode: To +20 ℃ ≤ C1 Pre-trip 1 time	Recovery at restart	1. Check 4-way valve. 2. Check 4-way valve wiring. 3. Check outdoor unit control PCB.
P04	High-pressure protection error	High pressure switched ON → OFF (Alarm is output when switch opened.) Pre-trip 4 times.	Recovery at restart	Overload operation of refrigerant cycle
P22	Outdoor unit fan motor trouble • Inverter protection circuit was activated, or lock was detected at outdoor unit fan motor.	Inverter stops after alarm is detected. Pre-trip 10 times	Recovery at restart	1.Position detection trouble. 2.Outdoor unit fan motor over-current Protection circuit is activated. • Check outdoor unit control PCB. • Refer to outdoor unit fan judgement methods.
P29	Lack of INV compressor wiring, INV compressor actuation failure, DCCT failure	Inverter stops after alarm is detected. Alarm is output when inverter stops (pre-trip) consecutively 10 times.	Recovery at restart	1.Stops immediately even when operations restarted. • Layer short on the compressor 2.Check HIC circuit. • Wiring trouble
H31	HIC trouble	Pre-trip consecutively 10 times	Temperature dropped	Heat sink and PCB (HIC) • Contact trouble

Check Prior to Auto Address Setting

* If an outdoor unit displays an alarm, conduct this process after diagnosing the problem.

1 Auto Address	1-1	Is the power of the indoor unit(s) and outdoor unit(s) on?	Yes	2-1
			No	Power on
2 Indoor/ outdoor control line	2-1	Has the wiring of the indoor/outdoor control line been completed? Is it all connected?	Yes	2-2
			No	Connect the wiring
	2-2	Has high voltage (over AC200V) been applied to the control line circuit? Has the fuse on the control PC board blown? (Check each board of the indoor unit(s) and outdoor unit(s).)	Yes	2-3
			No	3-1
	2-3	The power line and indoor/outdoor control line are miswired. Turn off the power, check & correct the miswiring and then make connections of the indoor/outdoor control lines to the emergency side of all the control PC boards and controllers.		
3 Installation or setting related	3-1	Be sure that the indoor and outdoor units are connected with correct combination written in catalog.	Yes	3-2
			No	Correct the connection
	3-2	Is the indoor/outdoor control line connected to more than one outdoor unit? (Network wired?)	Yes	3-3
			No	3-6
	3-3	Is the Terminal resistor select switch (CN-TERMINAL) on the outdoor control PC board set to just one unit?	Yes	3-4
			No	Correct the setting
	3-4	Are other outdoor units using a duplicate setting?	Yes	3-5
			No	3-6
	3-5	When units are networked, first set the system address for each outdoor unit in the order 1-2-3 and then run auto address setting.		
	3-6	Run the auto address setting.		

E04 Error in Indoor Unit Receiving Signal from the Outdoor unit

1. Error Detection Method

When there is no communication within a 3-minute period from the outdoor unit. Or, judged an error when no reply comes from the outdoor unit.

- The outdoor unit is not turned on.
- When the network of indoor/outdoor operation line was wired, the (SHORT) setting of the terminal resistor switch on the outdoor control PC board was set on multiple units (four or more).
- When the power was turned on after auto address setting was completed, the number of indoor units had been changed.
- Forgot to turn on the indoor unit.
- The CHK pin and/or TEST pin on the indoor unit's control PC board are shorted.
- Forgot to install the nonvolatile memory (EEPROM) when replacing the indoor unit control PC board.
- Mistakenly set the indoor unit address to Not Set in the remote control's detailed settings mode.
- When indoor unit addresses are duplicated.
- There is a short, open, wrong contact or grounding of the indoor/outdoor operation line.
- There is an error in the receiving circuit on the signal output PC board (optional control PC board).
- Malfunctions of the outdoor unit
- High voltage was applied (over AC200V) in the indoor/outdoor operations line circuit.
- The thermistor inside the indoor unit is grounded.

2. Error Diagnosis

1 Power Source	1-1	Is/was the power to the outdoor unit cut off?	Yes	After turning the power on, wait three minutes	
			No	1-2	
	1-2	Is the indoor unit powered off?		Yes	Power on
				No	2-1
2 Indoor/ outdoor control line	2-1	Is the indoor/outdoor operation line shorted, opened, grounded or has a wrong contact?		Yes	Correct the wiring
				No	2-2
	2-2	When the network of indoor/outdoor operation line was wired, was the (SHORT) setting of the terminal resistor switch (CN-TERMINAL) on the outdoor control PC board set on multiple units (four or more)?	Yes	Normally the (SHORT) setting is just one unit.	
			No	2-3	
	2-3	Was a high voltage (over AC200V) applied in the indoor/outdoor operations line circuit?		Yes	3-2
				No	3-1
3 No. of Indoor Units	3-1	Was the number of indoor units increased or decreased after auto address setting was complete?		Yes	3-2
				No	3-3
	3-2	Conduct checks prior to auto address setting.			
	3-3	Check the indoor unit addresses from the remote control's detailed settings mode. Is it Not Set (99), or is the indoor unit's address duplicated?		Yes	3-2
				No	4-1
4 Indoor unit control PC board	4-1	Are the CHK pin and/or TEST pin on the indoor unit control PC board short-circuited?		Yes	Remove the short
				No	4-2
	4-2	Is the wireless remote controller connected to on the indoor unit's control PC board?		Yes	4-3
				No	4-5
	4-3	Disconnect the connector mentioned above on the control PC board of the indoor unit control PC board, and see whether the E04 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)		Yes	4-4
				No	4-5
	4-4	Replace wireless remote control parts including wiring.			
	4-5	Is the LED on the indoor unit control PC board blinking?		Yes	4-6
				No	4-7
	4-6	The nonvolatile memory (EEPROM) on the indoor unit's control PC board is either not installed, improperly installed or the nonvolatile memory is faulty. Correct this or after replacing the nonvolatile memory, write model data to it in the remote control detailed settings mode.			
	4-7	Are all the remote controllers of the other indoor units connected to that outdoor unit displaying E04?	Yes	Replace the outdoor unit control board	
			No	Replace the indoor unit control board	

E06 Outdoor Unit Failed to Receive Serial Communication Signals from Indoor Unit

(When indoor unit(s) are connected)

1. Error Detection Method

It is judged an error when there is no transmission (reply) from the indoor unit to the outdoor unit for a period of three minutes.

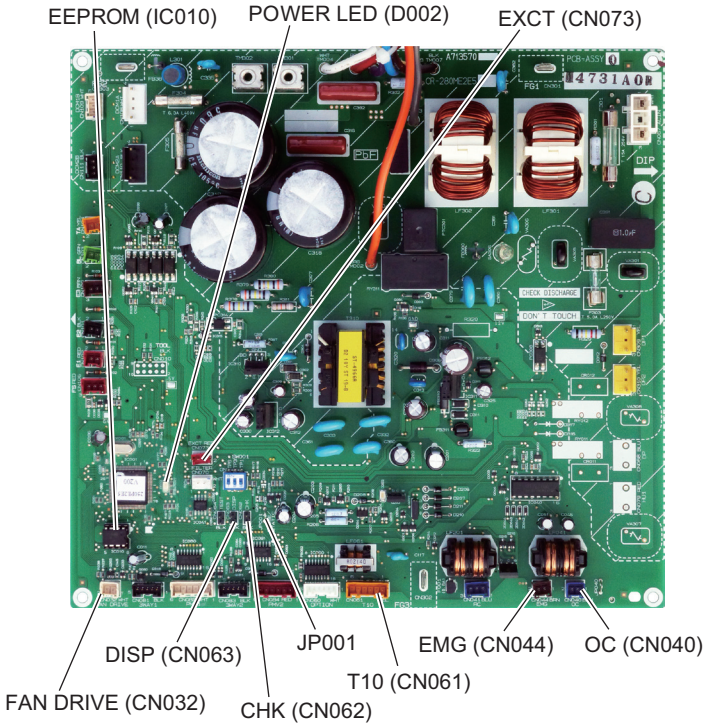
- The indoor unit is not turned on.
- The DISP pin of the indoor unit is shorted.
- There is a short, open, wrong contact or grounding of the indoor/outdoor operation line.
- The signal output control PC board (optional control PC board) inside the indoor unit has failed.
- The thermistor inside the indoor unit is grounded.

2. Error Diagnosis

1 Indoor unit power	1-1	Is the indoor unit powered off?	Yes	Power on
			No	2-1
2 Indoor/ outdoor operation line	2-1	Is the indoor/outdoor operation line shorted, opened, grounded or has a wrong contact?	Yes	Correct the wiring
			No	3-1
3 Indoor units control PC board	3-1	Are the DISP pin and CHK pin on the indoor unit control PC board short-circuited?	Yes	Remove the short
			No	3-2
	3-2	Is the wireless remote controller connected to on the indoor unit's control PC board?	Yes	3-3
			No	3-5
	3-3	Disconnect the connector mentioned above on the control PC board of the indoor unit control PC board, and see whether the E06 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)	Yes	3-4
			No	3-5
	3-4	Replace wireless remote control parts including wiring.		
	3-5	Indoor unit control PC board failure → Replace board.		

- For information on the procedures for replacing the indoor unit's control board, refer to the manual that is packaged with the indoor unit control PCB.

Indoor Unit Control PCB (A747661) : S-200PE2E5, S-250PE2E5



5

E15 Automatic Address Alarm (The total capacity of indoor units is too low.)

1. Error Detection Method

Connecting indoor unit
It is judged an error the total capacity of indoor units replied by communication is lower than that of outdoor unit.

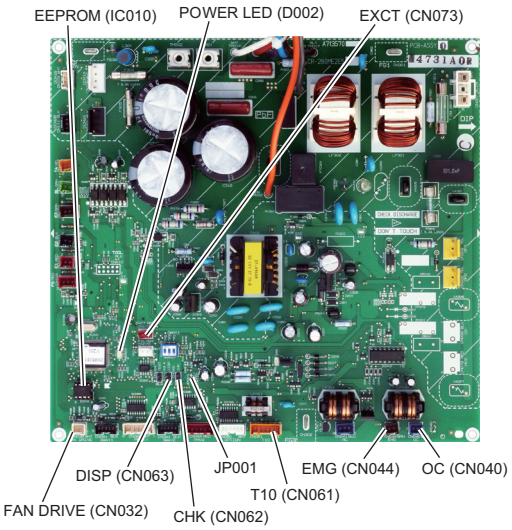
- The total capacity of indoor units is lower than that of outdoor unit.
- Some indoor unit(s) are connected but power is not turned on.
- The CHK pin (CN062/CN071) and/or TEST pin (CN064) of the indoor unit is shorted when its power is turned on.
- High voltage was applied (over AC200V) in the indoor/outdoor operations line circuit.

2. Error Diagnosis

1 Power Source	1-1	Is the indoor unit powered off?	Yes	Power on
			No	2-1
2 Indoor/ outdoor control line	2-1	Is the indoor/outdoor control line opened or shorted?	Yes	Correct the wiring
			No	2-2
	2-2	Was a high voltage (over AC200V) applied in the indoor/outdoor operations line circuit?	Yes	3-2
			No	3-1
3 No. of Indoor Units	3-1	Was the number of indoor units changed after auto address setting finished?	Yes	3-2
			No	4-1
	3-2	Conduct checks prior to auto address setting.		
4 Indoor unit control PC board	4-1	Are the CHK pin and TEST pin on the indoor unit control board short-circuited?	Yes	Remove the short
			No	4-2
	4-2	Is the wireless remote controller connected to on the indoor unit's control PC board?	Yes	4-3
			No	4-5
	4-3	Disconnect the connector mentioned above on the control PC board of the indoor unit control PC board and see whether the E15 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)	Yes	4-4
			No	4-5
	4-4	Replace wireless remote control parts including wiring.		
	4-5	Is the LED blinking on the indoor unit's control PC board?	Yes	4-6
			No	5-1
	4-6	The nonvolatile memory (EEPROM) on the indoor unit's control board is either not installed, improperly installed or the nonvolatile memory is faulty. Correct this or after replacing the nonvolatile memory, write model data to it in the remote control detailed settings mode.		
5 Outdoor unit control PC board	5-1	Check all items under the section "Check Prior to Auto Address Setting".		

- For information on the procedures for replacing the nonvolatile memory (EEPROM) of the indoor unit, refer to the manual that is packaged with the indoor unit service board.
- For information on the remote control's detailed settings, refer to the Reference Materials.

Indoor Unit Control PCB (A747661) : S-200PE2E5, S-250PE2E5



E16 Automatic Address Alarm (The total capacity of indoor units is too high.)

1. Error Detection Method

It is judged an error the total capacity of indoor units is too high or the total number of indoor units is too many.

- The total capacity of indoor units is too high.
- The total number of indoor units is too many.

2. Error Diagnosis

1 Auto Address	1-1	Check all items under the section “Check Prior to Auto Address Setting”.		

F04 Compressor Discharge Temperature Sensor (TD) Trouble

1. Error Detection Method

It is judged an error based on the criteria listed below.

- Open circuit or Short circuit

2. Error Diagnosis

1 Sensor	1-1	Sensor connector is connected to PC board properly.	Yes	1-2
			No	Reconnect and check
	1-2	Sensor is correctly installed at holder side.	Yes	Replace sensor
			No	Correct and see what happens. 1-3
	1-3	Abnormal temperature exists even after replacing sensor.	Yes	2-1
			No	See what happens.
2 PC board	2-1	Resistance between connector pins on PC board is less than 1 k ohm	Yes	Replace PC board
			No	2-2
	2-2	Abnormal temperature exists even after replacing PC board.	Yes	3-1
			No	See what happens.
3 Operating status	3-1	Peripheral temperature of outdoor unit is over 46°C.	Yes	Correct
			No	3-2
	3-2	Tends to have insufficient refrigerant charge in the system.	Yes	Adjust the amount of refrigerant
			No	3-3
	3-3	Check noise.		

F06 Inlet Temperature Sensor (C1) in Heat Exchanger Trouble

1. Error Detection Method

- In case of open or short

2. Error Diagnosis

1 Sensor Trouble	1-1	Is the connector properly connected to PCB?	Yes	1-2
			No	Reconnect & check
	1-2	Is the resistor between the sockets infinity or 0Ω?	Yes	Replace sensor.
			No	2-1
2 Control PCB Failure	2-1	Outdoor unit control PCB failure Replace PCB with a new one.		

F07 Intermediate Temperature Sensor (C2) in Heat Exchanger Trouble

1. Error Detection Method

It is judged an error when open circuit or short circuit.

2. Error Diagnosis

1 Sensor	1-1	Sensor connector is connected to PC board properly.	Yes	1-2
			No	Reconnect and check
	1-2	Resistance between sockets is infinity or 0 ohm.	Yes	Replace sensor
			No	2-1
2 PC board	2-1	Replace PC board because of outdoor control PC board failure.		

F08 Outdoor Air Temperature Sensor (TO) Trouble

1. Error Detection Method

It is judged an error when open circuit or short circuit.

2. Error Diagnosis

1 Sensor	1-1	Sensor connector is connected to PC board properly.	Yes	1-2
			No	Reconnect and check
	1-2	Resistance between sockets is infinity or 0 ohm.	Yes	Replace sensor
			No	2-1
2 PC board	2-1	Replace PC board because of outdoor control PC board failure.		

F12 Compressor inlet Suction Temperature Sensor (TS) Trouble

1. Error Detection Method

It is judged an error when open circuit or short circuit.

2. Error Diagnosis

1 Sensor	1-1	Sensor connector is connected to PC board properly.	Yes	1-2
			No	Reconnect and check
	1-2	Resistance between sockets is infinity or 0 ohm.	Yes	Replace sensor
			No	2-1
2 Outdoor control PC board	2-1	Replace PC board because of outdoor control PC board failure.		

F31 Outdoor Unit Nonvolatile Memory (EEPROM) Trouble

1. Error Detection Method

It is judged an error based on the criteria listed below.

- When power initially turned ON for the first time, nonvolatile memory (EEPROM) is not installed.
- Read values after writing onto nonvolatile memory (EEPROM) is inconsistent.

2. Error Diagnosis

1 PC board	1-1	Does EEPROM exist on the control PC board?	Yes	1-2
			No	Install EEPROM
	1-2	Is EEPROM installed properly? (Check: Bent IC pin or incorrect installation, etc.)	Yes	1-3
			No	Correct
	1-3	Incorrect EEPROM Replace with correct EEPROM.		

H01 Primary (input) Overcurrent Detected

1. Error Detection Method

- Primary current effective value detected overcurrent (trip current value).

Trip current value HP = horse power

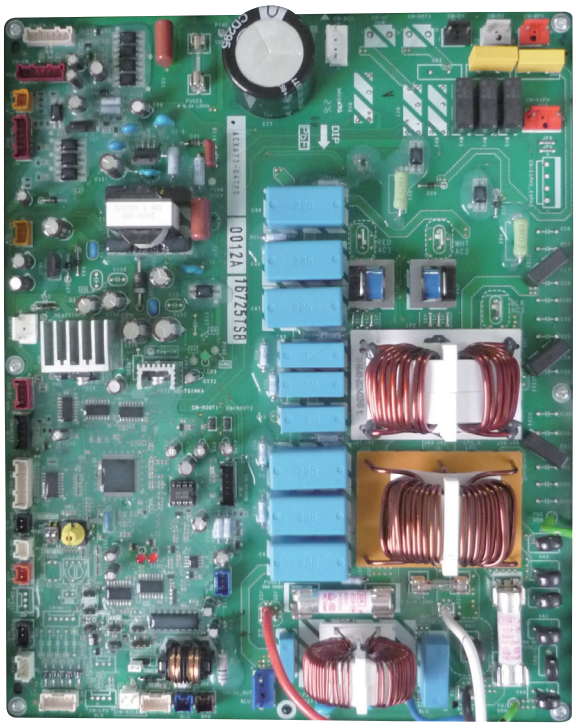
3-phase model	8 HP	10 HP
Heating	23.0A	23.0A
Cooling	21.5A	21.5A

2. Error Diagnosis

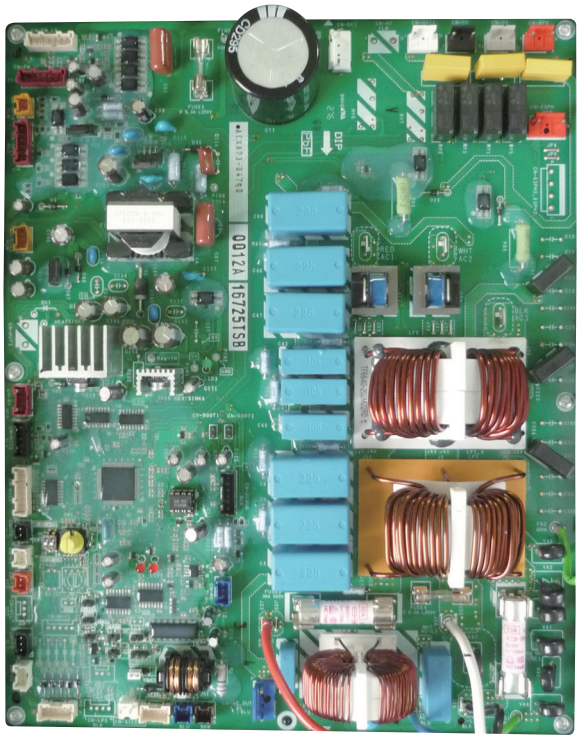
1 Power supply*	1-1	Not satisfied with ±10% rated supply voltage	Yes	Check power supply
			No	1-2
	1-2	Extreme voltage fluctuations	Yes	Check power supply
			No	1-3
	1-3	Extreme distortion of voltage waveform	Yes	Check power supply
			No	1-4
	1-4	Instantaneous blackout may sometimes occur.	Yes	Check power supply
			No	2-1
2 PC board wiring	2-1	Has FUSE 1/FUSE 2 blown? Check the electrical conduction with tester.	Yes	2-3
			No	2-2
	2-2	Loose electrical wire connection	Yes	Correct wiring
			No	2-3
	2-3	Replace CR board.		

* Check not only in the outdoor unit stop mode but in the drive mode.

ACXA73-04770 (U-200PE2E8A)
(for 3-phase outdoor Unit PCB)



ACXA73-04750 (U-250PE2E8A)
(for 3-phase outdoor Unit PCB)



H03 Primary Current CT Sensor (current sensor) Failure

1. Error Detection Method

It is judged an error based on the criteria listed below.

- If 18A or greater is detected when the compressor is stopped (alarm triggered even if the connector is unplugged).
- If no current is detected even though a compressor is running.

2. Error Diagnosis

1 Check the control PC board	1-1	Turn the power on again and run the outdoor unit. Is alarm occurred after operation?	Yes	Replace CR board.
			No	See what happens.

H05 Sensor Failure, Compressor Discharge Temperature Sensor (TD) Disconnected

1. Error Detection Method

- (In case of outdoor temperature over 5°C) For 10 minutes since started, variation of discharge temperature is always detected within 2°C comparing with the temperature just before starting.
- (In case of outdoor temperature less than 5°C) For 30 minutes since started, variation of discharge temperature is always detected within 2°C comparing with the temperature just before starting.

1 Sensor Trouble	1-1	Is the sensor properly installed at the holder side?	Yes	1-2
			No	Reinstall correctly.
	1-2	Replace the sensor with a new one.		

H31 HIC Trouble

1. Error Detection Method

It is judged an error if the computer detects an error signal from the HIC.
An error signal is issued by the HIC if abnormal heat occurs inside the HIC or if there is an overcurrent.
However, it is judged an error in the same way if the signal line from the HIC is not connected properly or opened.

- HIC overcurrent due to HIC fault
- HIC abnormal heat caused by defective HIC or HIC radiation error
- Signal line is not connected properly or opened between the HIC and the outdoor CR board.

2. Error Diagnosis

1 Wiring between HIC & outdoor control PC board	1-1	The wiring (power cord and signal line) between the HIC and the outdoor CR board is connected properly.	Yes	1-2
			No	Correct wiring (connector)
	1-2	Everything is normal in the wiring (power cord & signal line) between the HIC and the outdoor CR board. Check the wiring one by one with a tester if there is opened and grounding.	Yes	3-1 : Single-phase model 2-1 : 3-phase model
			No	Replace wiring
2 Check the outdoor unit CR PC board	2-1	The connector CN-RY on the CR PC board is connected properly (locked). (3-phase only)	Yes	3-1
			No	Correct wiring (connector)
3 HIC poor radiation	3-1	The heat dissipating surface on the back of the HIC is in good contact with the heat sink (heat dissipating fins) of the electrical box. Check for looseness in the fastening screws and the condition of the heat-conducting putty.	Yes	3-2
			No	Tighten screw(s), add putty
	3-2	A good flow of cooling air passes through the heat sink (heat dissipating fins) of the electrical box. Check for debris blocking the fins.	Yes	4-1
			No	Remove foreign matter
4 HIC overcurrent	4-1	The results of the pass/fail tests for the following HIC board IPM show it to be outside the range of the resistance of a conforming part.	Yes	Replace the HIC PC board
			No	4-2
	4-2	The inverter compressor was stopped/started more than 10 times and it triggered H31 at a high rate. If alarm code P16 occurs at times, refer to the alarm code P16.	Yes	Replace the HIC PC board
			No	Refer to alarm code P16

• HIC board IPM Pass/Fail Tests

- Measure with an analog tester. (Set to the k ohm range)
- Measure the board by itself. (Remove wires connected from other parts.)
- Measure using IPM terminals.

★ Conforming part resistance value (measure with an analog tester)

Tester terminals								
+	P				NU			
-	U	V	W	NU	U	V	W	P
Resistance value (ohm)	1 k to 5 k	1 k to 5 k	1 k to 5 k	5 k to 10 k	100 k to ∞	100 k to ∞	100 k to ∞	100 k to ∞

Tester terminals								
-	P				NU			
+	U	V	W		U	V	W	
Resistance value (ohm)	100 k to ∞	100 k to ∞	100 k to ∞		1 k to 5 k	1 k to 5 k	1 k to 5 k	

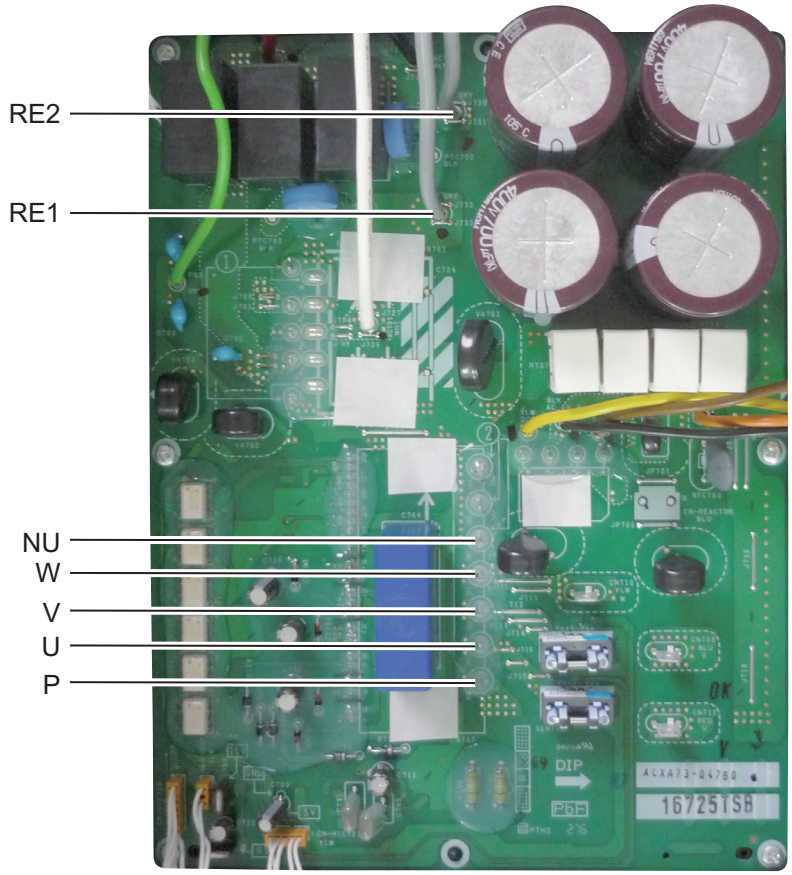
- Excepting the parts of " 100 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

Tester terminals								
+	HIC+				HIC-			
-	U	V	W	HIC-	U	V	W	HIC+
Resistance value (ohm)	1 k to 10 k	1 k to 10 k	1 k to 10 k	5 k to 20 k	20 k to ∞	20 k to ∞	20 k to ∞	20 k to ∞

Tester terminals								
-	HIC+				HIC-			
+	U	V	W		U	V	W	
Resistance value (ohm)	20 k to ∞	20 k to ∞	20 k to ∞		1 k to 10 k	1 k to 10 k	1 k to 10 k	

- Excepting the parts of " 20 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

■ Outdoor Unit Control HIC PCB
ACXA73-04760 : (U-200PE2E8A, U-250PE2E8A)
(3-phase outdoor unit HIC PC board)



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L04 Outdoor Unit Address Duplication

1. Error Detection Method

It is judged an error when the identical self-address communication on the indoor and outdoor wirings is received over 5 times within 3 minutes.

2. Error Diagnosis

1 System address	1-1	Are other outdoor units using a duplicate setting?	Yes	2-1
			No	2-2
2 Installation or setting related	2-1	When units are networked, first set the system address for each outdoor unit in the order 1-2-3 and then run auto address setting.		
	2-2	Run the auto address setting.		

L10 Outdoor Unit Capacity not Set or Invalid

1. Error Detection Method

It is judged an error when outdoor unit capacity not yet setup or systematically unauthorized setting.

2. Error Diagnosis

1 Check the control PC board	1-1	Was EEPROM replaced when PC board was replaced?	Yes	2-1
			No	Replace EEPROM
2 Installation or setting related	2-1	Set an applicable capacity value on the item code 81 display of maintenance remote controller.		

- Check : Connect the outdoor maintenance remote controller and check whether item code 81 outdoor capacity value shows “0” or unauthorized capacity is set on the detailed settings mode display of the outdoor EEPROM.
  If the capacity value of the item code 81 with the outdoor maintenance remote controller is incorrect, recorrect and set it again.
  * After setting the capacity value, be sure to reset the power supply switches of both indoor and outdoor units.

L13 Indoor Unit Type Setting Error

1. Error Detection method

- Discordance model(s) between outdoor and indoor units are detected.

1 Discordance Unit	1-1	Are models for outdoor and indoor units matched respectively? (Ex: Are multiple indoor units connected to commercial outdoor units?)	Yes	2-1
			No	Replace indoor units.
2 Installation Failure	2-1	Check the indoor unit’s motor valve with the remote control detailed settings mode (2C code) and commercial indoor unit is set to “2” and multiple indoor unit is “0”.	Yes	3-1
			No	Change installation.
3 Operating Wires for Indoor & Outdoor Units	3-1	Check whether or not indoor and outdoor unit operating wires are short circuit, disconnection, loose connection or earth fault.		

L18 4-way Valve Operation Failure

1. Error Detection Method

It is judged an error when during heating operation (Comp. ON), the highest detected temperature at an outdoor unit heat exchanger (C1) was 20°C or more above the outdoor air temperature (Air Temp.) continuously for 5 minutes or longer.

2. Error Diagnosis

1 PC board wiring	1-1	Is the connector wired from the 4-way valve plugged in the CN-HOT1 or CN-HOT2 connector on the HIC PC board properly?	Yes	1-2
			No	Correct connector
	1-2	Has the 4-way valve wiring become opened?	Yes	Correct wiring
			No	1-3
	1-3	Is the wire from the coil for controlling the 4-way valve firmly connected to the 4-way valve?	Yes	2-1
			No	Correct connector
2 4-way valve	2-1	During heating mode (Comp. ON), insert and remove the connector wired from the 4-way valve into or from CN-HOT1 or CN-HOT2 connector on the HIC PC board. At the same time, does the ON & OFF sounds occur from the 4-way valve?	Yes	2-2
			No	Replace HIC PC board
	2-2	During heating mode (Comp. ON), does the alarm code L18 reproduce for 5 minutes or longer after insertion and removal of CN-HOT1 or CN-HOT2 connector wired from the 4-way valve connector on the HIC PC board?	Yes	2-3
			No	See what happens
	2-3	The parts inside the 4-way valve might have fixed at the cooling side. Replace the 4-way valve		

P03 Compressor Discharge Temperature Trouble

1. Error Detection Method

- When the discharge temperature is over 106°C.

2. Error Diagnosis

1 Adjustment to refrigerant charge	1-1	Not additional refrigerant charged	Yes	Additional refrigerant charge
			No	2-2
	1-2	Tends to have insufficient refrigerant charge in the system.	Yes	Adjust the refrigerant amount
			No	Replace CR board
2 Blockage in refrigerant circuit	2-1	Service valve inside the outdoor unit closed	Yes	Open service valve
			No	2-2
	2-2	Are the tubes clogged?	Yes	Avoid clogging
			No	2-3
	2-3	Is the outdoor unit's electronic control valve operating correctly? (Check for debris clogging the electronic control valve, a problem with the electronical coil and/or the control PC board.)	Yes	2-4
			No	Replace the electronic control valve
	2-4	Is it observable difference in status of the dew or frost between the strainer's primary and secondary sides?	Yes	Replace the strainer
			No	Replace CR board

P04 High Pressure Trouble

1. Error Detection Method

It is judged an error if the internal circuit of the high pressure switch is dead.
The electronic circuitry of the high pressure switch is cut off if the pressure at the pressure sensor port of the high pressure switch reaches 3.80 MPa. Once it is cut off, it remains cut off until the pressure drops to 3.15 MPa.

- The high pressure switch is malfunctioning.
- Service valve inside the outdoor unit closed
- There is a short air circuit through the outdoor unit's heat exchanger. (when cooling)
- The outdoor unit's fan is broken. (when cooling)
- The outdoor unit's heat exchanger is clogged. (when cooling)
- There is a short air circuit at the indoor unit. (when heating)
- The filter of the indoor unit is clogged. (when heating)
- The fan of the indoor unit is broken or the fan motor is malfunctioning. (when heating)
- The refrigerant circuit is closed and the high pressure is increasing abnormally high. (solenoid valve or expansion valve not activated, a stuck check valve, etc.)
- Refrigerant overcharged.
- Nitrogen or air contaminated in the refrigerant system

2. Error Diagnosis

1 High pressure switch	1-1	The socket of the high pressure switch is securely inserted in the PC board. The wiring is not opened.	Yes	1-2
			No	Correct connection and/or wiring
	1-2	Even if parts near the high pressure switch are shaken quite a lot, the high pressure cutoff will be activated. Even if the covering is in good condition, in several cases vibration has caused wiring inside to open.	Yes	Replace the high pressure switch (wiring)
			No	2-1
2 Service valve	2-1	Service valve inside the outdoor unit closed	Yes	Open the service valve
			No	2-2
	2-2	There is an extreme difference in temperature in/out of the service valve.	Yes	2-3
			No	3-1
	2-3	Check the flare connection, someone may have forgotten to remove the bonnet. If there is a problem within the service valve, replace the valve.		
3 Problem around the heat exchanger	3-1	While cooling is operating an alarm is occurred.	Yes	3-2
			No	3-5
	3-2	The intake temperature (ambient temperature) of the outdoor unit's heat exchanger is above 46°C.	Yes	Prevent air short circuit
			No	3-3
	3-3	The outdoor unit's heat exchanger is clogged.	Yes	Clean the heat exchanger
			No	3-4
	3-4	Check whether the outdoor unit fan is normal or if the sockets are firmly pressed onto the plugs on the outdoor PC board, as well as if any wiring is opened. Are these checking finished without fail?	Yes	4-1
			No	Replace the outdoor unit fan. Correct connection and/or wiring
	3-5	While heating is operating an alarm is occurred.	Yes	3-6
			No	4-1

3 Problem around the heat exchanger	3-6	The intake temperature (ambient temperature) of the indoor unit is above 36°C.	Yes	Prevent air short circuit
			No	3-7
	3-7	The filter of the indoor unit is clogged.	Yes	Clean the filter
			No	3-8
	3-8	The fan of the indoor unit is broken or the fan motor is faulty.	Yes	Replace the indoor fan (motor)
			No	4-1
4 Blockage in the refrigerant circuit	4-1	Is the outdoor unit's electronic control valve operating correctly? (Check for debris clogging the electronic control valve, a problem with the electronical coil and/or the control PC board.)	Yes	4-3
			No	Repair the electronic control valve of the outdoor unit
	4-2	The indoor unit's expansion valve is operating correctly. (check for debris clogging the valve, a problem with the electronical coil and/or the control PC board)	Yes	4-3
			No	Repair the expansion valve of the indoor unit
	4-3	If an alarm is occurred with the high pressure below 3.80 MPa, with the pressure measured as displayed by the manifold gauge, check the check valve in the compressor discharge line. Are these checking finished without fail?	Yes	4-4
			No	Replace the check valve in the compressor discharge line
	4-4	The electronic control valve is faulty. In systems where the solenoid valve kits and the ice thermal storage tank are connected, check these solenoid valves.	Yes	Replace the electronic control valve and/or solenoid valve.
			No	5-1
5 Overcharging	5-1	Error occurs when the system is operating in cooling mode.	Yes	5-3
			No	5-2
	5-2	Error occurs when the system is operating in heating mode.	Yes	5-4
			No	5-5
	5-3	An alarm is occurred with the high pressure at 3.80 MPa, with the pressure measured either as displayed by the monitoring software or with a manifold gauge, at which time the temperature of liquid in the outdoor unit's heat exchanger is detected to be at the temperature of the outside air.	Yes	5-5
			No	Contact the service representative
	5-4	An alarm is occurred with the high pressure at 3.80 MPa, with the pressure measured either as displayed by the monitoring software or with a manifold gauge, at which time the temperature of liquid in the indoor heat exchanger is detected to be at room temperature (intake temperature).	Yes	5-5
			No	Contact the service representative
	5-5	The system may be overcharged. Check how much refrigerant was added during installation. When a system is inspected for airtightness, it is seldom that enough nitrogen has been expelled, so some remains in the circuit. In this case, it is necessary to collect the refrigerant and then recharge the system.		

P05 AC Power Supply Trouble

1. Error Detection Method

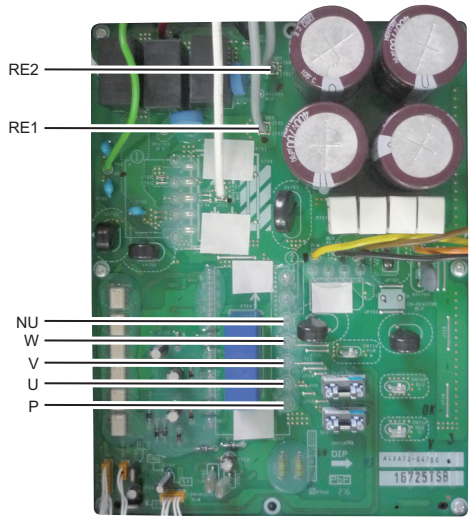
- Instantaneous blackout
- Zero-cross (waveform input of power supply) error
- DC voltage charge failure

2. Error Diagnosis

Note : The work involved in diagnosing each of the items is extremely dangerous, so turn the power off at the breaker before performing the tests.

1 Check the power supply & the wiring	1-1	Is the voltage on each of the terminal boards within ±10% of the rated voltage?	Yes	1-4 : Single-phase model 1-2 : 3-phase model	
			No	Check for open circuit and the voltage at the breaker. if a problem is found, fix it and check again.	
	1-2	Power wiring N-phase is connected.		Yes	Correct wiring
				No	1-3
	1-3	Power wiring L2 and N are reverse connected. (3-phase only)		Yes	Correct wiring
				No	1-4
	1-4	Turn the power back on and check again. Is the alarm triggered again?		Yes	3-1 : Single-phase model 2-1 : 3-phase model
				No	4-1
2 Check the outdoor unit CR PC board	2-1	The connector CN-RY on the outdoor CR PC board is connected properly (locked). (3-phase only)		Yes	3-1
				No	Correct wiring (connector)
3 Check the outdoor unit HIC PC board	3-1	Are the wires (RE1, RE2) from the reactor firmly installed?		Yes	3-2
				No	Correct wiring
	3-2	Turn the power back on and check again. Is the alarm triggered again?		Yes	Replace the outdoor unit HIC PC board.
				No	4-1
4 Final check	4-1	There may be a instantaneous blackout failure. If there is nothing abnormal, see what happens.			

■ Outdoor Unit Control HIC PCB
ACXA73-04760 : (U-200PE2E8A, U-250PE2E8A)
(3-phase outdoor unit HIC PC board)



P13 Alarm Valve Open

1. Error Detection Method

Detection is performed only in the test run. When once detected or the test run finished without any error, the second detection will not be done.
In case of forgetting to open a valve, P04 (high-pressure switch operational alarm) is occasionally preceded due to the following conditions.

- The status of small temperature change of the operating indoor unit continues for the first 7 minutes since the cooling test run has started.

2. Error Diagnosis

1 Service valve	1-1	Service valve inside the outdoor unit closed	Yes	Open the service valve
			No	2-1
2 Adjustment to refrigerant change	2-1	Not additional refrigerant charged	Yes	Additional refrigerant charge
			No	3-1
3 Blockage in refrigerant circuit	3-1	Are the tubes clogged?	Yes	Avoid clogging
			No	3-2
	3-2	Is the outdoor unit's electronic control valve operating correctly? (Check for debris clogging the electronic control valve, a problem with the electronical coil and/or the control PC board.)	Yes	3-3
			No	Replace the electronic control valve
	3-3	As the second detection is not done, restart and see what happens if there is no error.		

P14 O_2 Sensor Detect

1. Error Detection Method

- It is judged an error whenever the outdoor unit receives the signal "O_2 Alarm Occurred" from the indoor unit.
- With the indoor unit's EEPROM setting (item code 0B) set to 0001, the EXCT input was shorted.

2. Error Diagnosis

1 System configuration	1-1	Is an O_2 sensor being used?	Yes	3-1
			No	2-1
2 Indoor unit's EEPROM setting	2-1	Is the indoor EEPROM setting, item code 0B, on the indoor unit's control PC board set to 0001?	Yes	After correcting the setting, 3-1
			No	4-1
3 Indoor EXCT wiring	3-1	Is the indoor EXCT socket (wire) shorted?	Yes	Correct wiring
			No	4-1
4 Indoor unit's control PC board	4-1	Is the alarm triggered if the indoor EXCT socket (wire) is disconnected, and the power is reset?	Yes	4-3
			No	4-2
	4-2	Since there is no error, see what happens.		
	4-3	Indoor unit control PC board error → replace PC board.		

P15 Insufficient Gas Level Detected

1. Abnormal Detection Method

Alarm occurs in the following cases:

- Compressor's current value shows lower than a certain value.
- Compressor's discharge temperature exceeds 95°C.
- Electronic expansion valve is fully opened.
- The difference between indoor unit heat exchanger temperature and intake temperature is less than 4K.

2. Error Diagnosis

1 Adjustment of refrigerant amount	1-1	Insufficient gas level (Check whether or not pressure level is normal.)	Yes	Recharge with additional refrigerant.
			No	1-2
	1-2	Check leakage of refrigeration (leak test)	Yes	Replace leaking part with a new one.
			No	See what happens.

P16 Compressor Overcurrent Trouble

1. Meaning of Alarm

- Secondary current effective value detected the overcurrent (trip current value).
  3-phase model (8, 10HP) : Trip current = 24.3 A
- Secondary current instantly detected overcurrent (trip current value).
  3-phase model (8, 10HP) : Trip current = 50.0 A_{peak}

2. Check of content

0 Multiple factors	0-1	Replaced the compressor (added oil, if it was necessary) but it occurred again immediately.	Yes	7-1
			No	-
	0-2	Replaced the board, but it occurred again immediately.	Yes	Replace compressor along with adding oil, then recheck from 1-1
			No	-
1 Power Source	1-1	Power cord connections are loose.	Yes	Correct the wiring
			No	1-2
	1-2	Rated power voltage is not within ±10%.	Yes	Test the power supply
			No	1-3
	1-3	Extreme fluctuations in voltage.	Yes	Test the power supply
			No	1-4
	1-4	An open phase state is observed.	Yes	Test the power supply
			No	2-1
2 Board wiring	2-1	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections on the CR board and/or in the connections of components that are connected by wiring from the CR board.	Yes	Correct
			No	2-2
	2-2	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of outdoor board(s) that are connected by wiring from the CR board.	Yes	Correct
			No	2-3
	2-3	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of outdoor board(s) that are connected by wiring from the HIC board.	Yes	Correct
			No	2-4
	2-4	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of HIC boards connected by wiring from the CR board.	Yes	Correct
			No	2-5
	2-5	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of HIC board(s) that are connected by wiring from the outdoor board.	Yes	Correct
			No	2-6
	2-6	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of HIC board(s) that are connected by wiring to a compressor.	Yes	Correct
			No	3-1
3 Compressor wiring	3-1	Disconnections and/or miswiring are observed in the connecting location of the compressor terminals.	Yes	Correct
			No	3-2
	3-2	Conditions such as burned terminal covers and/or discolored terminals are observed in the connecting location of the compressor terminals.	Yes	Eliminate looseness by changing the terminals, or crimping the terminals again.
			No	4-1

4 Check the situation	4-1	Outdoor air intake temperature is high.	Yes	Take measures
			No	4-2
	4-2	May be caused by poor outdoor unit air flow (dirty or clogged heat exchanger, blocked discharge port, etc.)	Yes	Correct
			No	4-3
	4-3	Air short circuit has occurred. This is a phenomenon when discharged air (exhaust heat) from the outdoor unit is drawn back into the suction vent.	Yes	Prevent air short circuit
			No	4-4
	4-4	Indoor air intake temperature is high.	Yes	Take measures
			No	4-5
	4-5	The filter of the indoor unit is clogged.	Yes	Clean the filter
			No	4-6
	4-6	Air short circuit has occurred. This is a phenomenon when discharged air (exhaust heat) from the indoor unit is drawn back into the suction vent.	Yes	Prevent air short circuit
			No	5-1
5 Check operation	5-1	Possible to operate.	Yes	5-2
			No	6-1
	5-2	Operating pressure is affected by pressure overload.	Yes	5-3
			No	5-4
	5-3	Tends to have an overcharge of refrigerant in the system.	Yes	Adjust the amount of refrigerant
			No	5-4
	5-4	Tends to operate for a long time turning gas back into liquid.	Yes	Check the operation of functional parts
			No	5-5
	5-5	Tends to have insufficient refrigerant charge in the system.	Yes	Adjust the amount of refrigerant
			No	5-6
	5-6	Even though the high pressure saturation temperature is 43°C or less, the secondary current of the inverter is high. (The frequency (Hz) ends up dropping due to the current.)	Yes	Replace the compressor
			No	See what happens.
6 Check history	6-1	Dividing the outdoor EEPROM INV operation time by the number of times oil was supplied to the system yields 3 hours or less.	Yes	6-2
			No	6-2
	6-2	There is a history of H31 in the pre-trip counter of the outdoor EEPROM alarm history.	Yes	Replace the compressor and add oil. However if 6-1 was “no,” it is not necessary to add oil.
			No	7-1
7 Check the HIC boards	7-1	The results of HIC board IPM Pass/Fail Tests show the outside the range of the resistance of a conforming part listed in the next page.	Yes	Replace HIC board
			No	8-1
8 Check the compressor	8-1	The compressor is causing a failure in the insulation.	Yes	Replace the compressor
			No	8-2
	8-2	The winding resistance of the compressor is abnormal. Standard winding resistance HP: horse power 3-phase model (8HP, 10HP) U-V : 0.678 ohm U-W : 0.700 ohm V-W : 0.691 ohm	Yes	Replace the compressor
			No	9-1

9 Check the HIC PC boards	9-1	Replace the HIC PC board and operate the unit. (Apply putty and screws must not be loose) Does it operate normally?	Yes	See what happens.
			No	10-1
10 Check the outdoor unit main PC board	10-1	Replace the control PC board and operate the unit.	See what happens.	

- (Check content of 7) The test check of the HIC board is only a check on the output level, so the input stage may not be working.
- With the filter board broken, alarm P16 may not be triggered.

● HIC board IPM Pass/Fail Tests

- Measure with an analog tester. (Set to the k ohm range.)
- Measure the board by itself. (Remove wires connected from other parts.)
- Measure using IPM terminals.

★ Conforming part resistance value (measure with an analog tester)

Tester terminals								
+	P				NU			
-	U	V	W	NU	U	V	W	P
Resistance value (ohm)	1 k to 5 k	1 k to 5 k	1 k to 5 k	5 k to 10 k	100 k to ∞	100 k to ∞	100 k to ∞	100 k to ∞

Tester terminals								
-	P				NU			
+	U	V	W		U	V	W	
Resistance value (ohm)	100 k to ∞	100 k to ∞	100 k to ∞		1 k to 5 k	1 k to 5 k	1 k to 5 k	

- Excepting the parts of " 100 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

Tester terminals								
+	HIC+				HIC-			
-	U	V	W	HIC-	U	V	W	HIC+
Resistance value (ohm)	1 k to 10 k	1 k to 10 k	1 k to 10 k	5 k to 20 k	20 k to ∞	20 k to ∞	20 k to ∞	20 k to ∞

Tester terminals								
-	HIC+				HIC-			
+	U	V	W		U	V	W	
Resistance value (ohm)	20 k to ∞	20 k to ∞	20 k to ∞		1 k to 10 k	1 k to 10 k	1 k to 10 k	

- Excepting the parts of "20 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

P22 Outdoor Unit Fan Motor Trouble

1. Error Detection Method

- It is judged an error when the outdoor fan motor's rotating signal cannot be detected normally.

2. Error Diagnosis

1 Wiring	1-1	Are the connectors "CN-FM_UP" and "CN-FM_LO" firmly connected to the outdoor control PC board (lock engaged)?	Yes	2-1
			No	Correct the connector connections
2 Outdoor fan motor	2-1	Disconnect the connectors "CN-FM_UP" and "CN-FM_LO" from the outdoor control PC board and rotate the outdoor fan by hand; does it rotate freely? (Check the outdoor fan motor lock)	Yes	3-1
			No	Replace the outdoor fan motor
3 Outdoor control PC board	3-1	Turn the power on and run the unit again; is P22 triggered again? Or can you see or hear anything that is obviously wrong in its rotation?	Yes	3-2
			No	3-3
	3-2	Replace the outdoor control PC board. (If it fails to operate normally even after replacing the outdoor control PC board, replace the outdoor fan motor.)		
	3-3	If there is nothing particularly out of the ordinary, see what happens.		

P29 Lack of INV compressor wiring, INV compressor actuation failure (including locked), DCCT failure

1. Error Detection Method

- Abnormal current is detected at DCCT before start-up.
- Start-up failed during overcurrent and/or step-out detected.
- Open-wire of compressor and/or backspin detected.
- Secondary current is not detected during INV compressor is running.

2. Error Diagnosis

1 Wiring	1-1	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of HIC PC board(s) that are connected by wiring to a compressor. *1	Yes	Correct wiring connections
			No	1-2
	1-2	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of outdoor board(s) that are connected by wiring from the HIC PC board. *1	Yes	Correct wiring connections
			No	2-1
2 Compressor wiring	2-1	Disconnections and/or miswiring is observed in the connections of the compressor terminals. *1	Yes	Correct
			No	2-2
	2-2	Conditions such as burned terminal covers and/or discolored terminals are observed at the connectors of the compressor terminals. *1	Yes	Eliminate looseness by changing the terminals, or crimping the terminals again.
			No	3-1
3 Check the HIC PC boards	3-1	The results of the pass/fail tests for the following HIC PC board IPM show it to be outside the range of the resistance of a conforming part.	Yes	Replace the HIC board
			No	3-2
	3-2	Replace the HIC PC board and operate the unit. (Apply putty and screws must not be loose) Does it operate normally?	Yes	See what happens.
			No	4-1
4 Check the outdoor control PC board	4-1	Replace the control PC board and operate the unit.	See what happens.	

*1 Checking for looseness of compressor terminals by wiggling them has the adverse effect of loosening them, so do not do it. Evaluate them by discoloration of wire insulation near the terminal.

• HIC board IPM Pass/Fail Tests

- Measure with an analog tester. (Set to the k ohm range)
- Measure the board by itself. (Remove wires connected from other parts.)
- Measure using IPM terminals.

★ Conforming part resistance value (measure with an analog tester)

Tester terminals								
+	P				NU			
-	U	V	W	NU	U	V	W	P
Resistance value (ohm)	1 k to 5 k	1 k to 5 k	1 k to 5 k	5 k to 10 k	100 k to ∞	100 k to ∞	100 k to ∞	100 k to ∞

Tester terminals								
-	P				NU			
+	U	V	W		U	V	W	
Resistance value (ohm)	100 k to ∞	100 k to ∞	100 k to ∞		1 k to 5 k	1 k to 5 k	1 k to 5 k	

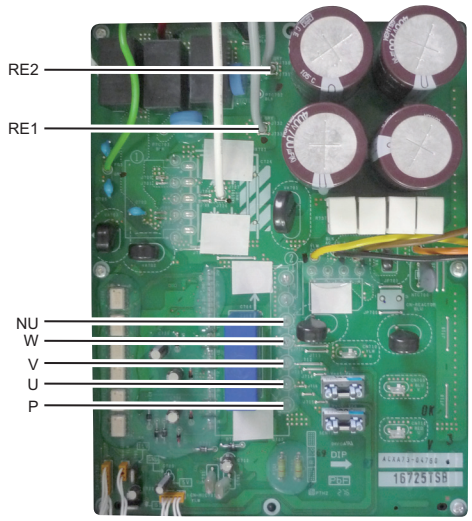
- Excepting the parts of " 100 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

Tester terminals								
+	HIC+				HIC-			
-	U	V	W	HIC-	U	V	W	HIC+
Resistance value (ohm)	1 k to 10 k	1 k to 10 k	1 k to 10 k	5 k to 20 k	20 k to ∞	20 k to ∞	20 k to ∞	20 k to ∞

Tester terminals								
-	HIC+				HIC-			
+	U	V	W		U	V	W	
Resistance value (ohm)	20 k to ∞	20 k to ∞	20 k to ∞		1 k to 10 k	1 k to 10 k	1 k to 10 k	

- Excepting the parts of " 20 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

■ **Outdoor Unit Control HIC PCB**
ACXA73-04760 : (U-200PE2E8A, U-250PE2E8A)
(3-phase outdoor unit HIC PC board)



5

P31 Group Control Error

1. Error Detection Method

- Other indoor unit alarms within the group.

1 Other indoor unit	1-1	Survey the indoor unit that alarms other than “P31” in the indoor unit group and specify the causes of failure.

5-4. Inspection of Parts (Outdoor Unit)

(1) Electronic control valve (MOV1)

- MOV1: Measure the voltage between plug pin 5 and pins 1 through 4 at the CN-MOV1 connector (5P, white) on the outdoor unit control PCB. (Because of the pulse output, a simplified measurement method is used. Set the tester to the 12 V range; if the value displayed is approximately 4 V, then the voltage is normal.)

  If the voltage is normal, measure the resistance between connector pin 5 and pins 1 through 4.

  Resistance between pin 5 and pins 1 through 4 should be approximately 46 Ω for all. (If the result is 0 Ω or, ∞ then replace the coil.)

5-5. Symptom: Thermostat in OFF continues or cycles OFF & ON too frequently

1. How to detect abnormality

- Abnormality does not occur. Protective function can be checked when the outdoor maintenance remote controller is connected.

2. Error Diagnosis

1 Indoor control PC board	1-1	Setting temperature reaches the level set ON thermostat. Setting temperature is too low in heating mode and too high in cooling and dry mode.	Yes	Adjust setting temperature
			No	1-2
	1-2	Check if the sensors are connected correctly. Are all connection made properly? Room temp. (TA) in yellow, heat exchanger (E1) in red, heat exchanger (E2) in black.	Yes	Connect correctly
			No	1-3
	1-3	DISP (display mode) is applied.	Yes	Turn OFF(OPEN)
			No	1-4
	1-4	With a thermostat OFF in heating mode, wind speed (item code 05) is out of range 0 - 6. (Use Simple Setting Function on standard timer remote controller.)	Yes	Choose one of 0 to 6
			No	1-5
	1-5	DEMAND is applied.	Yes	Turn OFF(OPEN)
			No	2-1
2 Outdoor control PC board	2-1	Outdoor unit and protective function of a system are operating. (Connect outdoor maintenance remote controller to RC socket on outdoor unit main control PC board and check alarm messages.)	Yes	See operational status
			No	2-2
	2-2	Discharge temperature is over 80°C in stop mode and does not decrease. (Connect outdoor maintenance remote controller to RC socket on outdoor unit main control PC board and check alarm messages.)	Yes	Replace discharge temperature sensor
			No	2-3
	2-3	Demand value always stays low. (The value is lower than 70. Excluding -1 (unlimited))(Connect outdoor maintenance remote controller to RC socket on outdoor unit main control PC board and check alarm messages.)	Yes	Increase values (over 70)
			No	2-4
	2-4	DEMAND is applied.	Yes	Turn OFF(OPEN)
			No	3-1
3 Control equipment	3-1	Demand setting is made by control units (P-AIMS, Seri-Para I/O unit for outdoor unit, Seri-Para I/O each indoor unit.)	Yes	Turn OFF
			No	4-1
4 System	4-1	When operating in cooling (including auto cooling & heating) and dry mode, lowest temp. of indoor E1 and E2 sensor is less than 2°C (under anti-freeze control).	Yes	Wait until more than 2°C reaches
			No	4-2
	4-2	During defrosting operation	Yes	Wait for a few minutes to 10 minutes or so
			No	4-3
	4-3	Outdoor unit PC board failure → Replacement		

- According to a type of model, the indoor sensors will not be supplied in some cases.
- According to a type of model, the outdoor DEMAND will not be supplied in some cases.
- When LINE Checker is used, the temperature sensors can be observed (display, record) simultaneously.
- According to some areas, some of the models are unreleased.

5-6. Sensor Temperature Display Function
(Displayed regardless of operation and stop)

The procedure below displays the sensor temperatures from the remote controller, indoor unit, and outdoor unit on the remote controller.

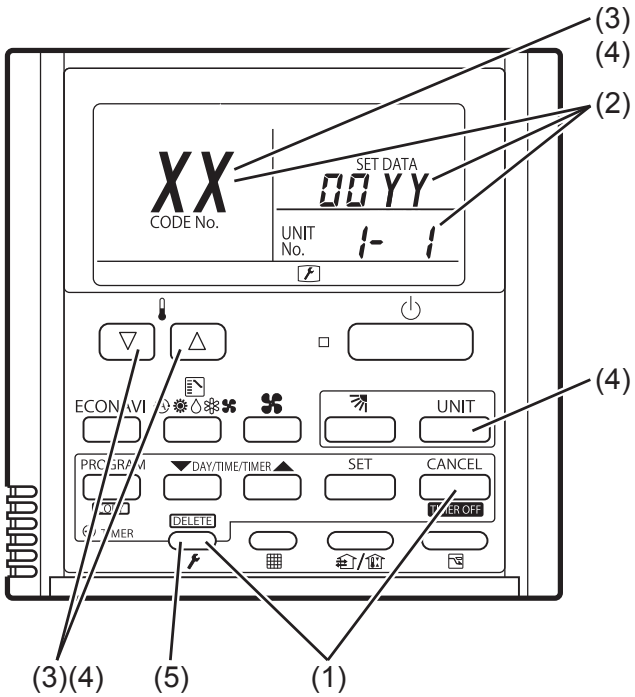
(1) Press and hold the and CANCEL buttons simultaneously for 4 seconds or longer.

(2) The unit No. "X-X" (main unit No.), item code "XX" (sensor address), and servicing monitor "00 YY" (sensor temperature) are displayed on the remote controller LCD display.

(3) Press the temperature setting ▽ / △ buttons and select the item code to the address of the sensor to monitor.

(4) If group control is in effect, press the UNIT button to select the unit to monitor.
Press the temperature setting buttons to select the item code to change.

(5) Press the button to return to normal remote controller display.



NOTE

The temperature display appears as "- - - -" for units that are not connected.

* If monitor mode is engaged while normal operation is in progress, only the parts of the LCD display shown in the figure will change. Other parts continue to display the same information as during normal operation.

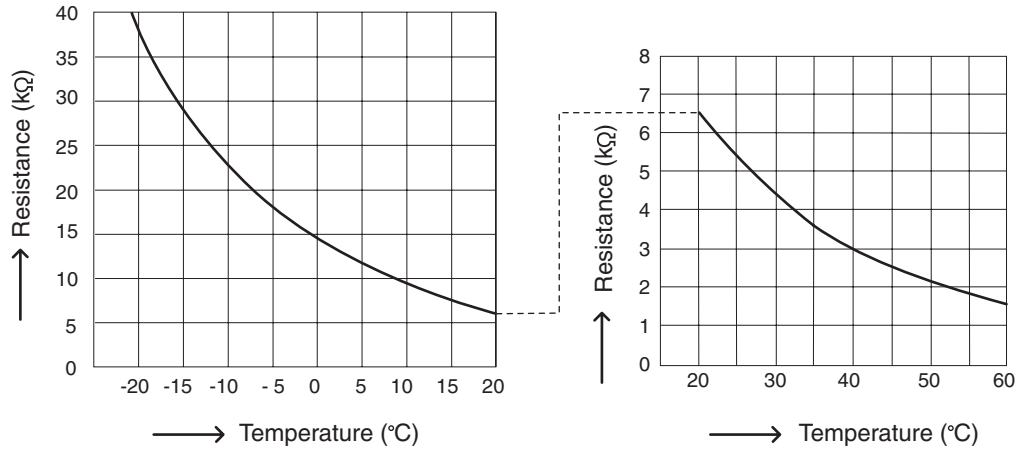
Sensor Temperature Correlation Table

	Item code	Meaning of Code
Indoor unit data	02	Indoor unit intake temp.
	03	Indoor unit heat exchanger temp. (E1)
	04	Indoor unit heat exchanger temp. (E2)
	05	–
	06	–
	07	–
	08	–
	09	–
Outdoor unit data	0A	Discharge temp. (TD)
	0b	–
	0C	–
	0d	Intake temp. (TS)
	0E	Outdoor unit heat exchanger temp. (C1)
	0F	Outdoor unit heat exchanger temp. (C2)
	10	–
	11	Outdoor air temp. (TO)
	12	–
	13	Current value (CTL2)
	14	Current value (CTL1)
	15	Outdoor MV value (MOV1)
	16	–
	19	Frequency

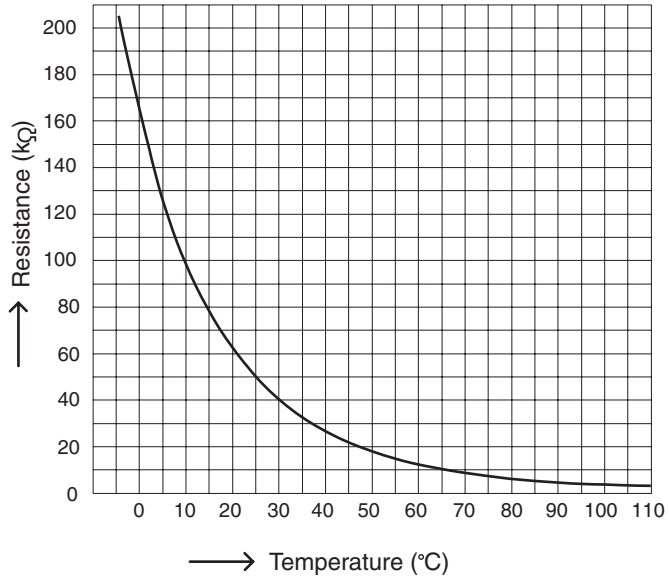
* Depending on the model, some items may not be displayed.

5-7. Table of Thermistor Characteristics

(1) Outdoor Air Temp. (TO) Sensor,
Intake Temp. (TS) Sensor,
Heat Exchanger Temp. (C1) Sensor,
Heat Exchanger Temp. (C2) Sensor



(2) Discharge Temp. (TD) Sensor



5

5-8. How to Remove the Compressor

Pay careful attention to prevent water or foreign objects from entering into the refrigerant tubing when removing or installing the compressor.

Removing

1.After collecting the refrigerant in the system, replace nitrogen gas from the service port of the gas tubing valve.

2.Remove the sound absorbing material protecting the compressor.

3.Remove the cap of the compressor's terminal and then remove the power source terminal and TD sensor.

4.Remove the crank case heater.

5.Remove the bolts (×3) and then remove the washer and rubber spacer.

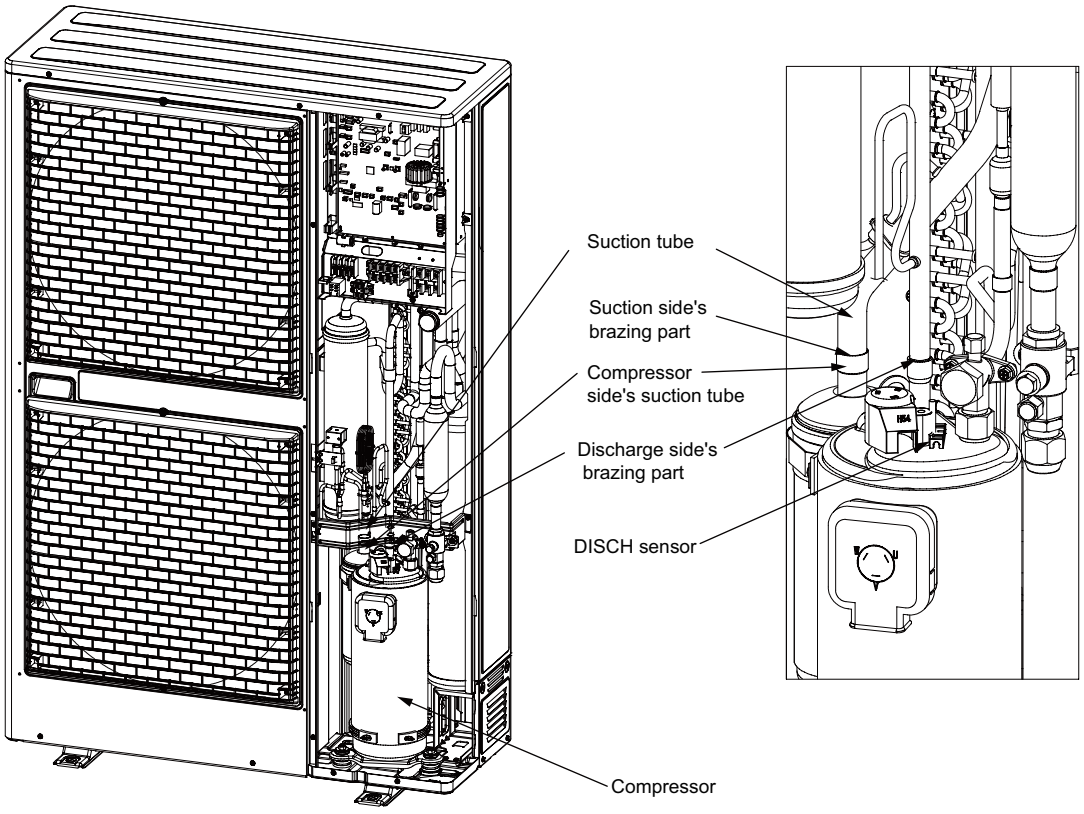
6.Cut off the compressor side's suction tube because the suction tube is solid and unmovable. See the diagram below.

7.Remove the discharge side's brazing part (×1). See the diagram below.

NOTE: Protect the sensor part, sheet metal, rubber, lead wire and clamper.

8.Pull the compressor toward you.

9.Remove the suction side's brazing part (×1) of the cut-off compressor side's suction tube connected to the suction tube.



5-9 How to Remove the Electrical Component Box

Removing

1.Remove the front panel and inspection panel from the outdoor unit.

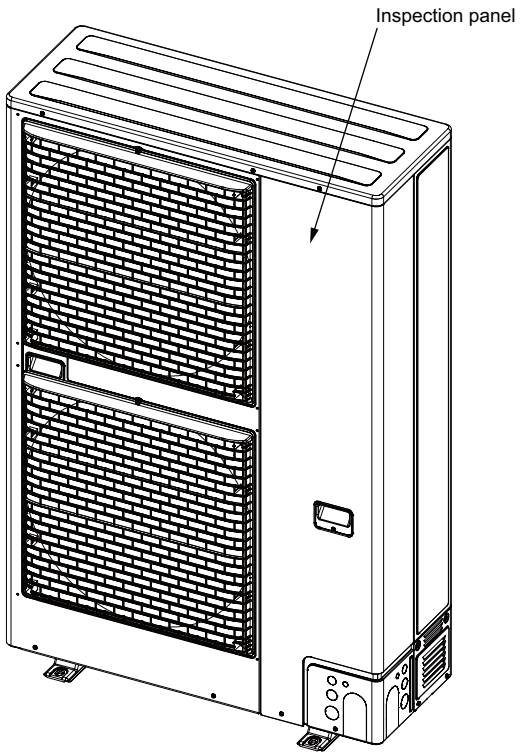
2.Remove all local wires connected to the electrical component box.

3.Remove the wires (temperature sensor, coils of every sort of valve, pressure switch, fan motor and wires for connecting compressor) connected to the electrical component box in the unit.

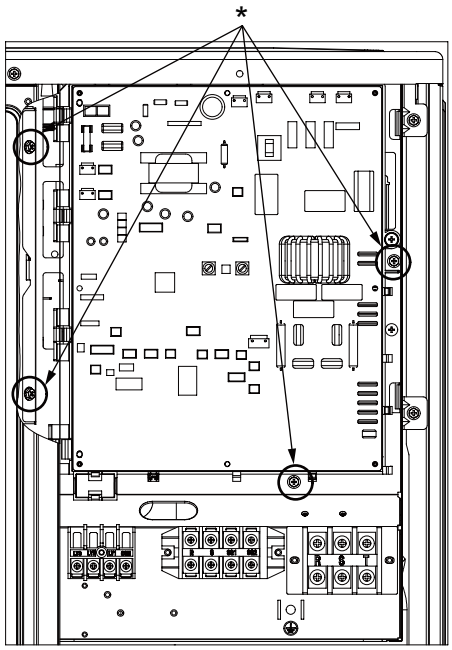
4.Remove the fixture screws (×4) as shown in the diagram and remove the electrical component box.

NOTE:

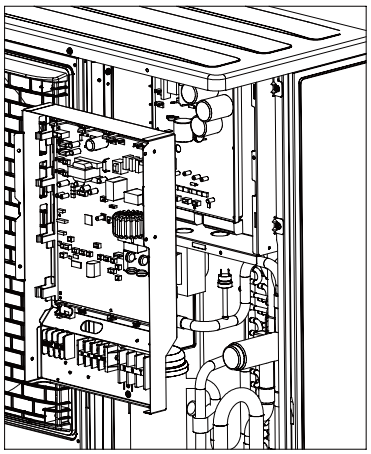
Be sure to remove the upper left side screw marked by * in the diagram because that screw cannot be seen from the front side.



Outdoor unit before removal of front panel



Fixture screws (×4) for electrical component box



Electrical component box after removal

5-10. Symptom: Thermostat in OFF continues or cycles OFF & ON too frequently

1. How to detect abnormality

- Abnormality does not occur. Protective function can be checked when the outdoor maintenance remote controller is connected.

2. Error Diagnosis

1 Indoor control PC board	1-1	Setting temperature reaches the level set ON thermostat. Setting temperature is too low in heating mode and too high in cooling and dry mode.	Yes	Adjust setting temperature
			No	1-2
	1-2	Check if the sensors are connected correctly. Are all connection made properly? Room temp. (TA) in yellow, heat exchanger (E1) in red, heat exchanger (E2) in black.	Yes	Connect correctly
			No	1-3
	1-3	DISP (display mode) is applied.	Yes	Turn OFF(OPEN)
			No	1-4
	1-4	With a thermostat OFF in heating mode, wind speed (item code 05) is out of range 0 - 6. (Use Simple Setting Function on standard timer remote controller.)	Yes	Choose one of 0 to 6
			No	1-5
	1-5	EXCT(demand control) is applied.	Yes	Turn OFF(OPEN)
			No	2-1
2 Outdoor control PC board	2-1	Outdoor unit and protective function of a system are operating. (Connect outdoor maintenance remote controller to RC socket on outdoor unit main control PC board and check alarm messages.)	Yes	See operational status
			No	2-2
	2-2	Discharge temperature is over 80°C in stop mode and does not decrease. (Connect outdoor maintenance remote controller to RC socket on outdoor unit main control PC board and check alarm messages.)	Yes	Replace discharge temperature sensor
			No	2-3
	2-3	Demand value always stays low. (The value is lower than 70. Excluding -1 (unlimited))(Connect outdoor maintenance remote controller to RC socket on outdoor unit main control PC board and check alarm messages.)	Yes	Increase values (over 70)
			No	2-4
	2-4	DEMAND or EXCT(demand control) is applied.	Yes	Turn OFF(OPEN)
			No	3-1
3 Control equipment	3-1	Demand setting is made by control units (P-AIMS, Seri-Para I/O unit for outdoor unit, Seri-Para I/O each indoor unit.)	Yes	Turn OFF
			No	4-1
4 System	4-1	When operating in cooling (including auto cooling & heating) and dry mode, lowest temp. of indoor E1 and E2 sensor is less than 2°C (under anti-freeze control).	Yes	Wait until more than 2°C reaches
			No	4-2
	4-2	During defrosting operation	Yes	Wait for a few minutes to 10 minutes or so
			No	4-3
	4-3	Outdoor unit PC board failure → Replacement		

- According to the type of models, the indoor sensors will not be supplied in some cases.
- According to the type of models, the outdoor DEMAND or EXCT will not be supplied in some cases.
- When LINE Checker is used, the temperature sensors can be observed (display, record) simultaneously.
- According to some areas, some of the models are unreleased.

6. OUTDOOR UNIT MAINTENANCE REMOTE CONTROLLER

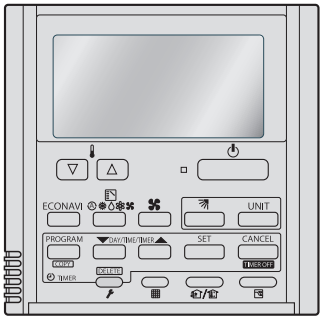
In the case of CZ-RTC4

6-1. Overview

What is the outdoor unit maintenance remote controller?

Beginning with the DC-INV series of outdoor units, nonvolatile memory (EEPROM) is used in the outdoor unit PCB. In this way, the setting switches that were located on earlier PCBs have been converted to EEPROM data. This remote controller is an outdoor unit maintenance tool that is used to make and change the EEPROM settings.

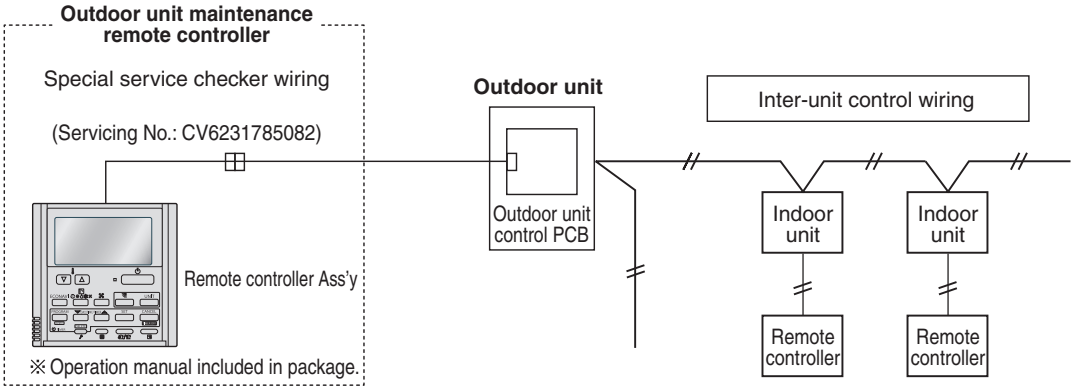
This remote controller can be used for checking the outdoor unit EEPROM settings and contents, and also can be used to monitor the outdoor unit alarm history and indoor/outdoor unit temperatures, and to check the status of the indoor unit connections (No. of units, operating status, etc.).



CZ-RTC4

Note: Because this tool does not function as a remote controller, it is used only during test runs and servicing.

System diagram



* The special service checker wiring is required in order to connect the outdoor unit maintenance remote controller to the outdoor unit PCB.

* Even when the outdoor unit maintenance remote controller is connected, a separate remote controller or other control device must be connected to the indoor unit.

6-2. Functions

■ **Normal display functions**

(1) Functions: Button operations can be used to perform the following functions.

- Start/stop of all indoor units
- Switching between cooling and heating
- Test run of all indoor units
- High-speed operation of indoor units (Do not use with actual units. This may damage the devices.)

(2) Display: The following can be displayed.

- Alarm details display
- No. of indoor/outdoor units
- Unit Nos. of connected indoor/outdoor units
- Indoor/outdoor unit operating status (blinks when an alarm occurs)
- Indoor unit thermostat ON
- Individual display of outdoor unit alarms
- Outdoor unit compressor total operating time
- Outdoor unit total power ON time
- Outdoor unit microcomputer version
- Other

■ **Temperature monitor**

- Displays the indoor/outdoor unit sensor temperatures.

■ **Outdoor unit alarm history monitor**

- Displays the outdoor unit alarm history.

■ **Setting modes**

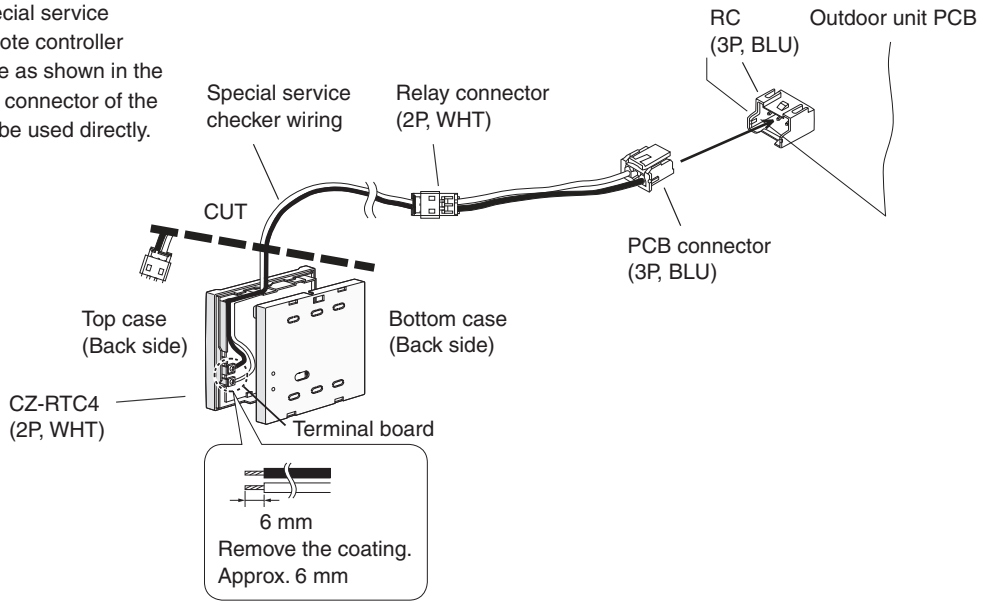
- Setting mode 1 and setting mode 2 are used to make the outdoor EEPROM setting.

6-3. Normal Display Operations and Functions

■ Normal display functions

- Connect the special service checker wiring to the outdoor unit PCB.
  The connection is shown in the figure below.

When connecting the special service checker wiring to the remote controller CZ-RTC4, cut out the wire as shown in the figure below because the connector of the remote controller cannot be used directly.



* It is not necessary to disconnect the communications line in the inter-unit control wiring if it has already been connected at this time.

* Setting modes 1 and 2 can be used even when the outdoor unit is independent (when 1 maintenance remote controller is connected to 1 outdoor unit and automatic address setting for the indoor units has not been completed).

* Displays the overall system status for that refrigerant system.

- **All units start/stop (Fig. 6-1)**

<Operation>

The (Start/Stop operation) button can be used to start and stop all the indoor units.

- The LED illuminates if any indoor units is operating.
- The LED blinks if an alarm at any of the operating indoor units occurs.

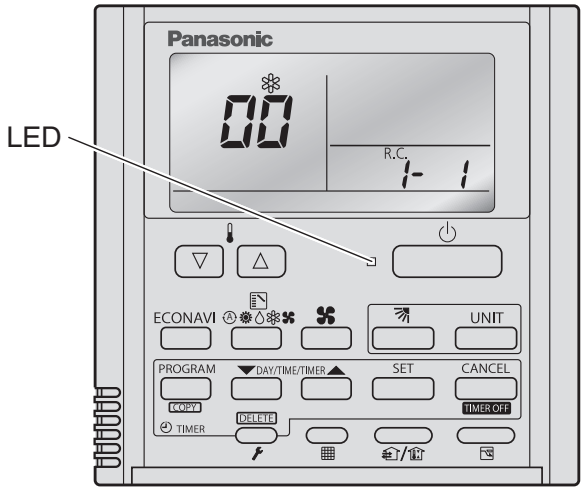


Fig. 6-1

- **Cooling/heating change (Fig. 6-1)**

NOTE

Cooling and heating mode changes are only available when all indoor units are stopped.

<Operation>

The (Mode) button can be used to change between heating and cooling operation.

- The display indicates the operating mode of the indoor unit with the lowest unit No.

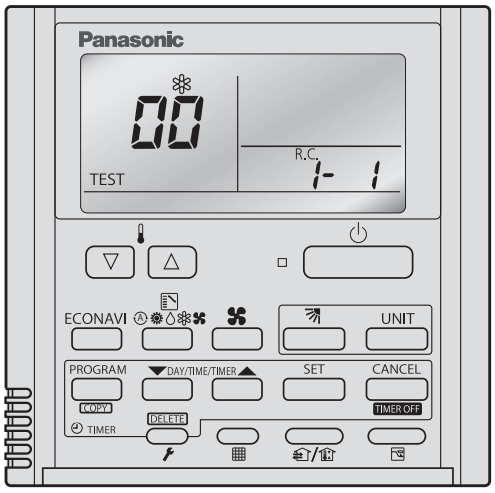


Fig. 6-2

- **All units test run (Fig. 6-2)**

<Operation>

The (Check) button can be used to start and stop a test run for all indoor units.

- Press and hold for 4 seconds to turn ON. During the test run "TEST" is displayed.
- The status of test runs performed from the indoor unit remote controller is not displayed on the outdoor unit maintenance remote controller.

6

- **Double-speed (Fig. 6-3)**
  - Do not use for actual operation. (Doing so may damage the devices.)

<Operation>

The timer button can be used to change between double-speed and normal operation.

- During double-speed operation, the Sleeping Mode mark is displayed.

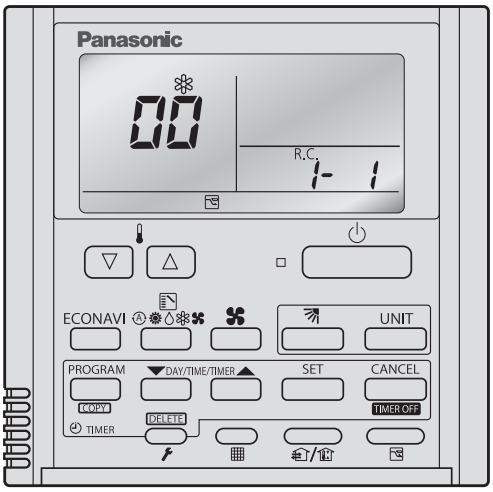


Fig. 6-3

■ Display (functions)

- Use the temperature setting [△] and [▽] buttons to change the item code.

(1) Item code	(2) Item	Remarks
00	Outdoor unit alarm	Alarm code display
01	No. of connected indoor units	Quantity
02	Unit Nos. of connected indoor unit	7-segment display
03	Operating status of indoor unit	7-segment display
04	Thermostat ON status of indoor unit	7-segment display
05	No. of connected outdoor units	1 – 4
06	Unit Nos. of connected outdoor units	7-segment display
07	Operating status of outdoor unit compressor	7-segment display
08		
09		
10	Compressor 1 operating time	0 – 99999999 hours
11		
13		
14		
16	Outdoor unit power ON time	0 – 99999999 hours
17	Compressor 1 operation count	0 – 65535 times
18		
F0	Alarm history 1 (most recent)	Display only. Alarm code and unit No. of unit where alarm occurred are displayed alternately. 0 = CCU 1 – 4 = Outdoor unit
F1	Alarm history 2	
F2	Alarm history 3	
F3	Alarm history 4	
F4	Alarm history 5	
F5	Alarm history 6	
F6	Alarm history 7	
F7	Alarm history 8 (oldest)	
FE	Firmware version	Display the version No. × 100.
FF	Program version	Display the version No. × 100.

(1) and (2) correspond to Fig. 6-4 on the next page.

(3) XX-YY R.C.
Displays the outdoor unit sub-bus address which is currently selected.
XX = Outdoor system address on main bus line (1 – 30)
YY = Outdoor unit sub-bus address (1 – 8)
“1” appears when there is only 1 outdoor unit.

Locations where (1), (2), and (3) are displayed as shown in Fig. 6-4.

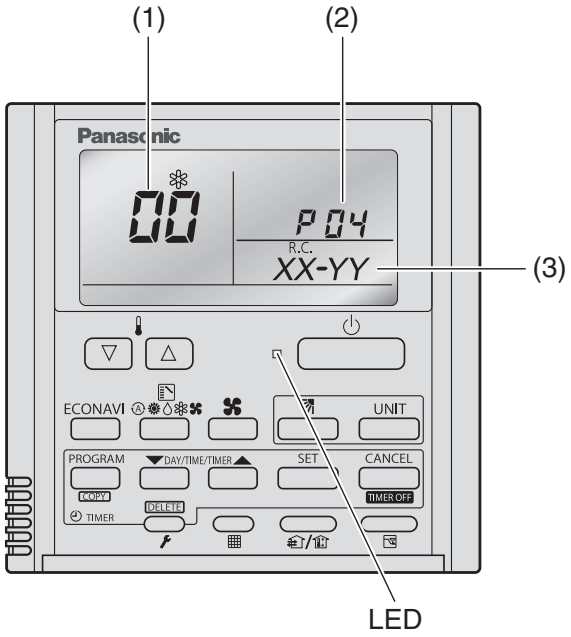
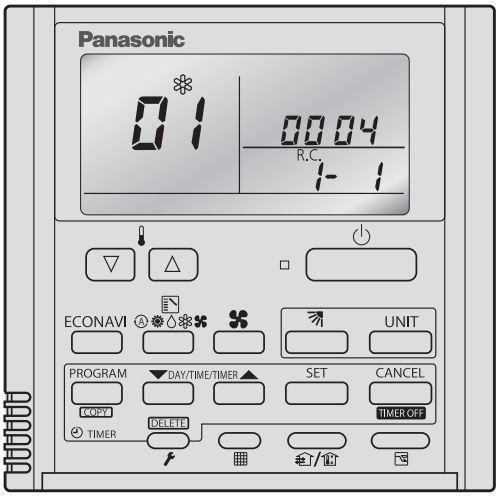


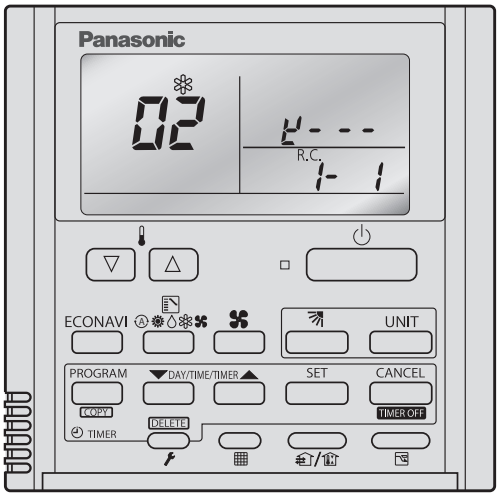
Fig. 6-4

<Sample displays>



01: <No. of connected indoor units>
4 units connected

Fig. 6-5



02: <Unit Nos. 1, 2, 3, and 4 are connected>

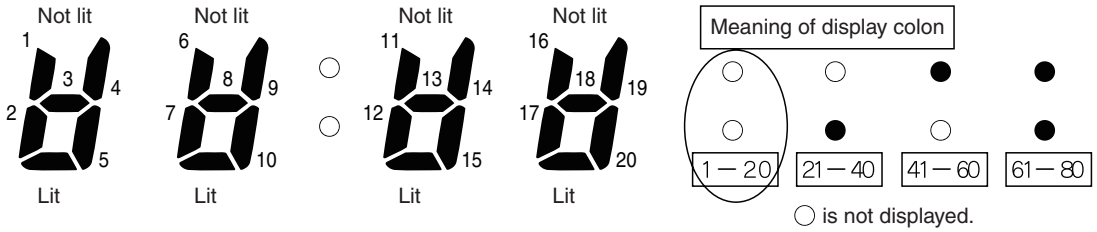
Fig. 6-6

6

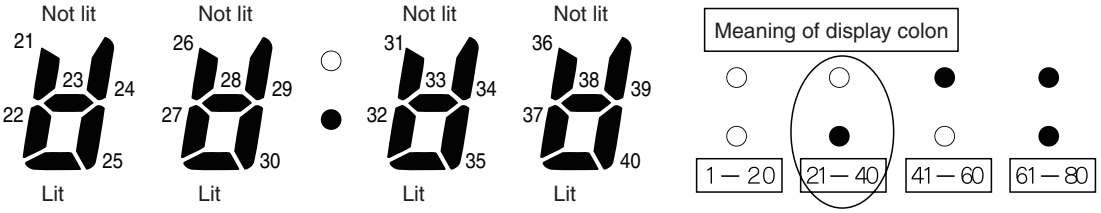
■ **7-segment, 4-digit display for remote controller timer display**

The connected unit Nos. are displayed as shown below, using the 7-segment 4-digit (88:88) display and the colon.

- Display for unit Nos. 1 – 20



- Display for unit Nos. 21 – 40



- The meaning of the colon display changes in the same way, allowing unit Nos. up to 80 to be displayed.
- Sample displays of the unit Nos. of connected indoor units

• Display of unit No. 1

• Display of unit Nos. 1 and 2

• Display of unit Nos. 1, 2, and 3

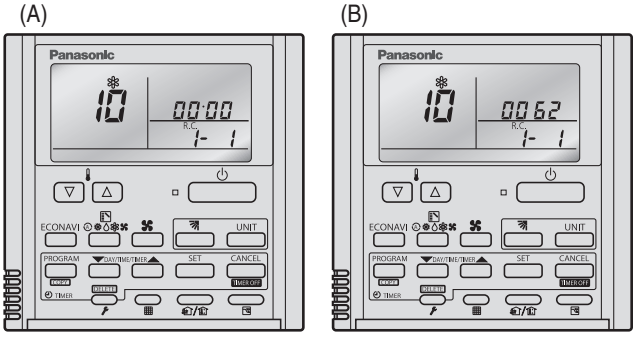
• Display of unit Nos. 1, 2, 3, and 4

NOTE

The change of the colon display (between unit Nos. 1-20 to unit Nos. 21-40) occurs automatically every 10 seconds. (However the display does not change if there are no higher-number units connected.)
To change the display to the higher-number units before 10 seconds have passed, press the (Flap) button.

■ **The total compressor operating time is displayed (in 1-hour units) using 8 digits.**

- When the first 4 digits are displayed, the top dot of the colon is illuminated. (Figure (A))
- When the last 4 digits are displayed, the colon dot is OFF. (Figure (B))
- The display of the first 4 digits and last 4 digits changes automatically after 10 seconds. The display can also be changed by pressing the (Flap) button.



10: <Compressor's total operating time>
(A) and (B) are displayed alternately.
(The example here (0000, 0062) indicates 62 hours.)

NOTE

With the outdoor unit maintenance remote controller (when connected to the outdoor unit), the unit remote controller check functions will not operate.

6

6-4. Monitoring Operations: Display of Indoor Unit and Outdoor Unit Sensor Temperatures

<Operating procedure>

(1) Press and hold the (Check) button and CANCEL buttons simultaneously for 4 seconds or longer to engage temperature monitor mode.

During temperature monitoring, is illuminates.

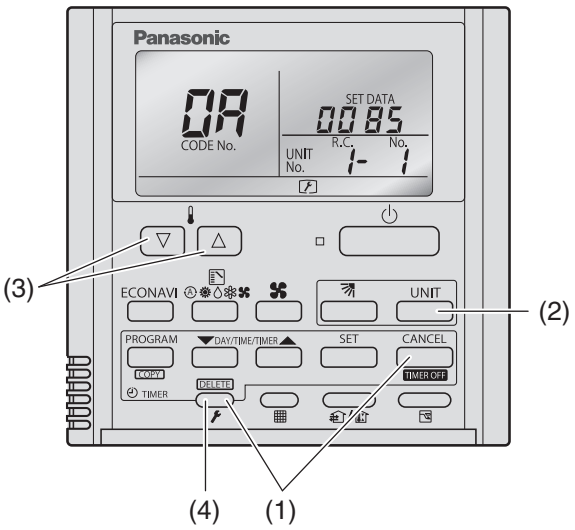
(The display and operations are the same as for monitor mode using the indoor unit remote controller.)

(2) Press the UNIT button and select the indoor unit to monitor.

(3) Press the temperature setting △ and ▽ buttons and select the item code of the temperature to monitor.

The unit No. of the selected indoor unit, and the temperature data, are displayed.

(4) To end monitoring, press the (Check) button. The display returns to the normal display.



NOTE The display does not blink.

6

■ **Display of unit No. 1 (main unit)**

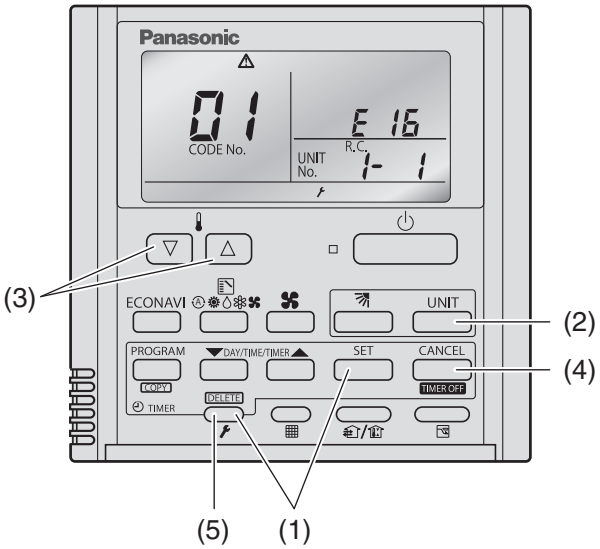
	Item code	Meaning of Code
Indoor unit data	02	Indoor unit intake temp.
	03	Indoor unit heat exchanger temp. (E1)
	04	Indoor unit heat exchanger temp. (E2)
	05	–
	06	–
	07	–
	08	–
	09	
Outdoor unit data	0A	Discharge temp. (TD)
	0b	–
	0C	–
	0d	Intake temp. (TS)
	0E	Outdoor unit heat exchanger temp. (C1)
	0F	Outdoor unit heat exchanger temp. (C2)
	10	–
	11	Outdoor air temp. (TO)
	12	–
	13	Current value (CTL2)
	14	Current value (CTL1)
	15	Outdoor MV value (MOV1)
	16	–
	19	Frequency

* Depending on the model, some items may not be displayed.

6-5. Monitoring the Outdoor Unit Alarm History: Display of Outdoor Unit Alarm History

* Displays outdoor unit alarms only. Does not display indoor unit alarms.
* Check the indoor unit alarm histories separately using the indoor unit remote controllers or other control device.

<Operating procedure>



(1) Press and hold the (Check) button and SET button simultaneously for 4 seconds or longer to engage outdoor unit alarm history mode.

During temperature monitoring, illuminates.

The display and operations are the same as for the alarm history monitor performed from the indoor unit remote controller. However the “UNIT No.” display shows the outdoor unit address.

(2) Press the UNIT button and select the outdoor unit for which to monitor the alarm history.

(3) Press the temperature setting △ and ▽ buttons and select the item code for the alarm history.

The select outdoor unit address, the item code, and the alarm history (alarm data) are displayed.

The outdoor unit address is displayed as R.C. XX-YY.
System XX = Outdoor unit system address
R.C. XX = Outdoor unit system address
YY = Outdoor unit sub-bus address

Item codes 01-08 are displayed. 01 indicates the most recent alarm.

The alarm history displays the alarm code. (If no alarm are present, then -- -- is displayed.)

(4) To clear the alarm history, press the CANCEL button. (The outdoor unit alarm history will be cleared.)

(5) To exit, press the (Check) button. The display returns to the normal display.

6

6-6. Settings Modes: Setting the Outdoor Unit EEPROM

- Setting mode 1

<Operating procedure>

(1) Press and hold the (Check) button and (Ventilation) button simultaneously for 4 seconds or longer.

(2) Press the temperature setting △ and ▽ buttons to change the item code. The item codes and setting data are shown in the table below.

(3) Press the timer time DAY and TIMER buttons to change the setting data.

To confirm the changed setting data, press the SET button.

(At this time, " SETTING " display stops blinking and remains lit.)

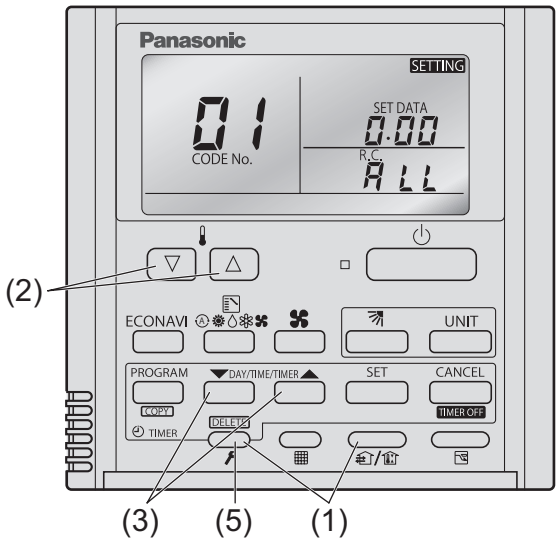
(4) During this mode, " SETTING " is displayed, blinking. The outdoor unit address display section displays "ALL," the item code and number (DN value in the table), and the setting data (6 digits).

(The setting data is displayed in 6 digits. The display changes between the first 3 digits (Fig. (C)). and the last 3 digits (Fig. (D)).

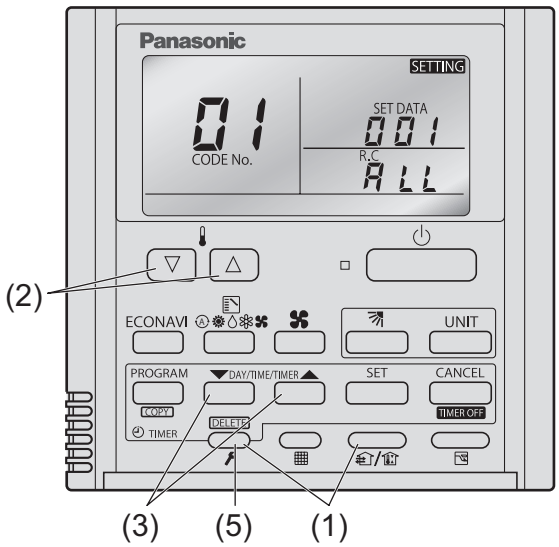
When the first 3 digits are displayed, the bottom dot of the colon is illuminated.)

(5) To exit the setting mode, press the (Check) button.

(C) **Display of first 3 digits**



(D) **Display of last 3 digits**



(C) and (D) are displayed alternately.
(Example shows display of 000 001.)

6

Never use the DN code unlisted in the following table. (P) : Factory preset mode

DN	Item	Setting No.
05	Outdoor fan silent mode	1=Silent mode 1 (P) 2=Silent mode 2,,,,, 3=Silent mode 3
07	Capacity matching ignored	0=Invalid (P) 1=Valid
0C	Indoor unit drain pump forced operation	0=Invalid 1=stop for 2 hours and drive for 20 minutes constantly 2=stop for 20 minutes and drive for 20 minutes constantly 3=Drive constantly 4-6=delay drive when thermostat OFF 7=delay drive when thermostat OFF (P)
0D	Measures against smell when indoor unit cooling thermostat OFF	0=Invalid (P) 1=Measures against smell
1A	Demand 1 current (%)	0=0% 40=40% 45=45%,,,,, 75=75% (P) ,,,,, 130=130% -1=No control
1B	Demand 2 current (%)	0=0% 40=40% 45=45%,,,,, 50=50% (P) ,,,,, 130=130% -1=No control
1D	Current control level	0=40% 1=45%,,,,, 12=100%,,,,, 16=120%,,,,, 18=130,,,,, 19=-1(Invalid)(P)
2B	DP operation time for slime measures	20=20 minutes 30=30 minutes (P) 40=40 minutes 50=50 minutes 60=60 minutes (For details, see "5. Outdoor Unit CCU Control (4)")
80	Refrigerant Type	410=R410A(P), 22=R22, 407=R407C, 32=R32
81	Outdoor unit capacity (Setting when the data is not stored in the EEPROM. Do not change under normal conditions.)	0=Invalid 21=224 23=280

7. REMOTE CONTROLLER FUNCTIONS SECTION

7-1. Simple Settings Function

- This allows the filter lifetime, operating mode priority change, central control address, and other settings to be made for an individual or group-control indoor unit to which the remote controller used for simple settings is connected.

  When simple settings mode is engaged, operation stops at the individual or group-control indoor unit to which the remote controller for simple settings is connected.

(1) Press and hold the and buttons simultaneously for 4 seconds or longer.

(2) "SETTING", unit No. "1- 1" (or "ALL" in the case of group control), item code "01," and settings data "00 XX" are displayed blinking on the remote controller LCD display (Fig. 7-1). At this time, the indoor unit fan (or all indoor unit fans in the case of group control) begins operating.

(3) If group control is in effect, press the UNIT button and select the address (unit No.) of the indoor unit to set. At this time, the fan at the indoor unit begins operating.

* If unit No."ALL" is displayed, the same setting will be made for all indoor units.

(4) Press the temperature setting ▽ / △ buttons to select the item code to change.

(5) Press the timer time DAY/ ▽ / /TIMER △ buttons to select the desired setting data.

* For item codes and setting data, refer to the following page.

(6) Press the SET button. (The display stops blinking and remains lit, and setting is completed.)

(7) Press the button to return to normal remote controller display.

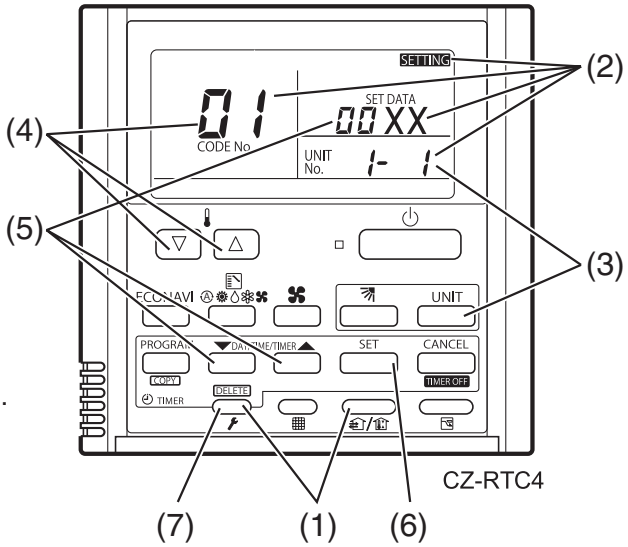


Fig. 7-1

7

7-2. List of Simple Setting Items

Item code	Item	Setting data		
		No.	Description	
01	Filter sign ON time (filter life time)	0000	Not displayed	
		0001	150 hours	
		0002	2,500 hours	
		0003	5,000 hours	
		0004	10,000 hours	
		0005	Use the filter clogging sensor.	
02	Degree of filter fouling	0000	Standard (setting at time of shipping)	
		0001	Highly fouled (Filter sign ON time is reduced to one-half the set time.)	
03	Central control address	0001	Central control address 1	
		0002	Central control address 2	
		0003	Central control address 3	
		≀	≀	
		0064	Central control address 64	
		0099	No central control address set (setting at time of shipping)	
04	Operating mode priority change	0000	Normal (setting at time of shipping)	
		0001	Priority	
05	Fan speed when heating thermostat is OFF		Compressor ON	Compressor OFF
		0000	Lo 1 min., LL 3 min.	LL
		0001	Lo	LL
		0002	LL	LL
		0004	Lo 1 min., LL 3 min.	Lo
		0005	Lo	Lo
		0006	LL	Lo
06	Heating intake temperature shift	0000	No shift	
		0001	Shifts intake temperature 1 °C down.	
		0002	Shifts intake temperature 2 °C down.	
		0003	Shifts intake temperature 3 °C down.	
		0004	Shifts intake temperature 4 °C down.	
		0005	Shifts intake temperature 5 °C down.	
		0006	Shifts intake temperature 6 °C down.	
07	Electric heater installation	0000	No heater	
		0001	Heater installed	
08	Humidifying when heater thermostat is OFF	0000	No (setting at time of shipping)	
		0001	Yes	
0d	Permit/prohibit automatic heating/cooling	0000	Permit	
		0001	Prohibit	
0F	Cool-only	0000	Normal	
		0001	Cool only (Set “1” for item code 0D.)	

NOTE

- In order to avoid water leakage and damage to the fan, do not set for humidifying when the thermostat is OFF unless a vaporizing humidifier is used.
- Consider the device purpose and type when changing the settings. Incorrect settings may result in malfunction.
- Do not change any setting data that does not appear in this list.

7-3. Detailed Settings Function

- This allows the system address, indoor unit address, and other settings to be made for the individual or group-control indoor unit to which the remote controller used for detailed settings is connected.
  When detailed settings mode is engaged, operation stops at the individual or group-control indoor unit where the remote controller used for detailed settings is connected. Simple settings items can also be set at this time.

(1) Press and hold the , CANCEL and SET buttons simultaneously for 4 seconds or longer.

(2) "SETTING", unit No. "1- 1", item code "10," and settings data "00 XX" are displayed blinking on the remote controller LCD display (Fig. 7-2). At this time, the indoor unit fan begins operating.

(3) If group control is in effect, press the UNIT button and select the address (unit No.) of the indoor unit to set. At this time, the fan at the indoor unit begins operating.

*If unit No. "ALL" is displayed, the same setting will be made for all indoor units.

(4) Press the temperature setting ▽ / △ buttons to select the item code to change.

(5) Press the timer time DAY/ / /TIMER buttons to select the desired setting data.

*For item codes and setting data, refer to the following page.

(6) Press the SET button. (The display stops blinking and remains lit, and setting is completed.)

(7) Press the button to return to normal remote controller display.

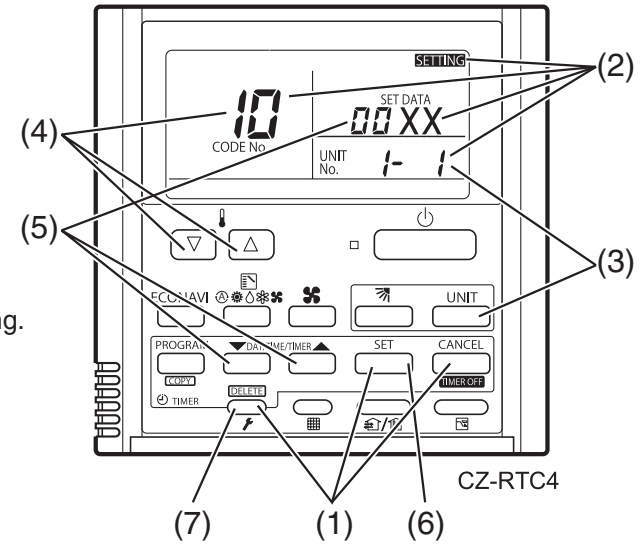


Fig. 7-2

7

7-4. List of Detailed Setting Items

Item code	Item	Setting data					
		No.	Description	No.	Description	No.	Description
10	Type	0000	———	0001	———	0002	———
		0003	———	0005	———	0006	High Static Pressure Ducted (E2)
		0007	———	0008	———	0010	———
		0011	———		———		———
11	Indoor unit capacity	0001	———	0003	———	0005	———
		0007	———	0009	———	0011	———
		0012	———	0015	———	0017	———
		0020	———	0021	224	0023	280
12	System address	0001	Unit No. 1				
		0002	Unit No. 2				
		0003	Unit No. 3				
		)	)				
		0030	Unit No. 30				
		0099	Not set				
13	Indoor unit address	0001	Unit No. 1				
		0002	Unit No. 2				
		0003	Unit No. 3				
		)	)				
		0064	Unit No. 64				
		0099	Not set				
14	Group control address	0000	Individual (1:1 = Indoor unit with no group wiring)				
		0001	Main unit (One of the group-control indoor units)				
		0002	Sub unit (All group-control indoor units except for main unit)				
		0099	Not set				
17	Cooling intake temperature shift	–010	Shifts intake temperature 10°C down.				
		–009	Shifts intake temperature 9°C down.				
		)	)				
		–001	Shifts intake temperature 1°C down.				
		0000	No intake temperature shift				
		0001	Shifts intake temperature 1°C up.				
		)	)				
		0009	Shifts intake temperature 9°C up.				
		0010	Shifts intake temperature 10°C up.				
18	Automatic stop time after operation start * Can be set in 5-minute units.	0000	Function disabled				
		0001	Stops automatically 5 minutes after operation starts.				
		0002	Stops automatically 10 minutes after operation starts.				
		)	)				
		0123	Stops automatically 615 minutes after operation starts.				
		0124	Stops automatically 620 minutes after operation starts.				
		0125	Stops automatically 625 minutes after operation starts.				

Item code	Item		Setting data	
			No.	Description
1b (1B)	Forced thermostat ON		0000	5 minutes
			0001	4 minutes
1C	Cooling discharge temperature shift		–010	–10°C
			–009	–9°C
			–008	–8°C
			)	)
			0010	10°C
1d	Heating discharge temperature shift		–010	–10°C
			–009	–9°C
			–008	–8°C
			)	)
			0010	10°C
1E	Temperature shift for cooling/heating change in auto heat/cool mode		0001	± 1°C
			0002	± 2°C
			0003	± 3°C
			)	)
			0007	± 7°C
1F (Upper limit) 20 (Lower limit)	Change to remote control temperature setting range	Cooling	0018	18°C (Lower limit at shipment)
			0019	19°C
			)	)
			0029	29°C
			0030	30°C (Upper limit at shipment)
21 (Upper limit) 22 (Lower limit)		Heating	0016	16°C (Lower limit at shipment)
			0017	17°C
			)	)
			0029	29°C
			0030	30°C (Upper limit at shipment)
23 (Upper limit) 24 (Lower limit)		Drying	0018	18°C (Lower limit at shipment)
			0019	19°C
			)	)
			0029	29°C
			0030	30°C (Upper limit at shipment)
25 (Upper limit) 26 (Lower limit)		Auto heat/cool	0017	17°C (Lower limit at shipment)
			0018	18°C
			)	)
			0026	26°C
			0027	27°C (Upper limit at shipment)
29	Humidifier operation		0000	Normal
			0001	Ignore heat exchanger temperature conditions.
2A	Filter (CN70) input switching		0000	Filter input (differential pressure switch input)
			0001	Alarm input (for trouble input about air cleaner or similar device)
			0002	Humidifier input (Operates linked with drain pump when humidifier is ON.)
2C	Indoor unit electronic control valve		0000	Present (Setting at shipment)
			0002	None
2E	T10 terminal switching		0000	Normal (Used as optional relay PCB or JEMA standard HA terminal.)
			0001	Used for OFF reminder
			0002	Fire prevention input

7

Item code	Item	Setting data	
		No.	Description
2F	Automatic drain pump operation	0000	No forced operation
		0001	Forced operation for 1 minute
		〜	〜
		0060	Continuous operation
31	Ventilation fan operation	0000	None
		0001	Ventilation fan operated by remote controller.
32	Wired remote controller sensor	0000	Not used. (Body sensor is used.)
		0001	Remote controller sensor is used.
34	“Operation change control in progress” display	0000	Normal (displayed)
		0001	Not displayed
35	OFF reminder function for when weekly timer is used	0000	None
		0001	Only stop time setting is enabled.
3C	Heat exchanger temperature for cold air discharge (Heat exchanger control point for control to prevent cold air)	0013	Control temperature 13°C
		0014	Control temperature 14°C
		〜	〜
		0025	Control temperature 25°C
		0026	Control temperature 26°C
3d	Fan output switching	0000	Output linked with fan. (ON when indoor unit fan is operating.)
		0001	Fan mode operation output
3E	Drain pump delayed start time	0000	No delayed start
		0001	1 min. delayed start (Indoor unit Type E2)
		0002	2 min. delayed start
		〜	〜
		0058	58 min. delayed start
		0059	59 min. delayed start
		0060	60 min. delayed start
45	Flap operation mode	0000	Standard setting
		0001	Draft reduction mode (Flap lower-limit position is shifted upwards.)
46	Flap swing mode	0000	Smudging reduction mode (Flap swing upper-limit position is shifted downwards.)
		0001	Normal mode
		0002	Draft reduction mode (Flap swing lower-limit position is shifted upwards.)
5d	Fan tap setting (External static pressure of the rated air flow volume)	0001	Type 200: 60Pa, Type 250: 72Pa (Setting at shipment)
		0002	140Pa
		0003	270Pa
5F	Repeat timer switching	0000	Function disabled
		0001	Function enabled
60	Timer function change prohibit	0000	Function disabled
		0001	Function enabled
62	Smudging control	0000	No smudging control

7-5. Simple Setting Items

Item code	Item	Description
01	Filter sign ON time setting (filter lifetime)	Changes the indoor unit filter lifetime when a high-performance filter or other optional product is installed.
02	Degree of filter fouling	Reduces the filter sign ON time to 1/2 of the standard time (setting at the time of shipping) for cases when filter fouling is more severe than normal.

Filter sign ON times for each model

Model data	Model	Filter sign ON time			
		Standard		Long-life	
		Standard	High fouling	Standard	High fouling
0006	High Static Pressure Ducted (E2)	×	×	×	×

NOTE

- × indicates that there is no corresponding filter.

Item code	Item	Description
03	Central control address	Set when using a central control device. Used when setting the central control address manually from the remote controller.

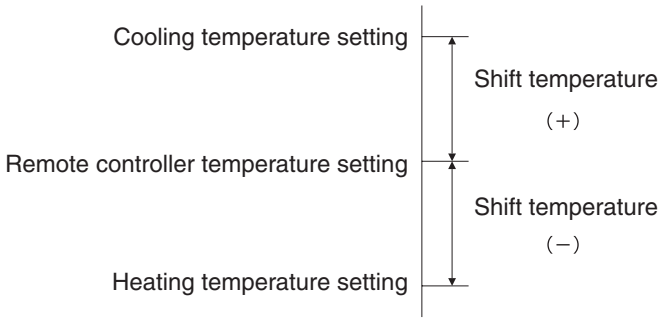
When the operating mode at the priority remote controller is changed, the operating modes of other remote controllers change as shown below.

Mode change at priority remote controller		Operating modes at other remote controllers	
Current mode	**New mode**	**Current mode**	**New mode**
Cooling or dry	Heating	Cooling or dry	Heating
		Fan	Fan (not changed)
Heating	Cooling	Heating	Cooling
		Fan	Fan (not changed)
Cooling	Dry	Cooling	Cooling (not changed)
		Dry	Dry (not changed)
Heating	Dry	Heating	Cooling
		Fan	Fan (not changed)
Cooling or dry	Fan	Cooling	Cooling (not changed)
		Dry	Dry (not changed)
		Fan	Fan (not changed)
Heating	Fan	Heating	Heating (not changed)
		Fan	Fan (not changed)

Item code	Item	Description
05	Fan speed setting when heating thermostat is OFF	Changes the fan speed setting when the heating thermostat is OFF.
06	Heating intake temperature shift	Shifts the intake temperature during heating. Can be set when the body thermostat is used.
07	Electric heater installation	Set when cost distribution is performed using an AMY central control system or similar system, and when an optional electric heater is installed. (This is unrelated to control of the electric heater.)
08	Humidifying when heater thermostat is OFF	Normally humidifying does not occur when the thermostat is OFF during heating operation. However, this setting can be changed in order to increase the amount of humidifying. Caution: In order to avoid water leakage and damage to the fan, do not use this setting unless a vaporizing humidifier is used.
0D	Permit/prohibit automatic heating/cooling	This setting can be used to prevent the automatic heating/cooling display on the remote controller if the unit configuration permits automatic heating/cooling operation.
0F	Cooling-only	This setting allows a heat pump indoor unit to be operated as a cooling-only unit.

7-6. Detailed Setting Items

Item code	Item	Description
10	Unit type	Set when the indoor unit EEPROM memory is replaced during servicing.
11	Indoor unit capacity	
12	System (outdoor unit) address	These are not set at the time of shipping from the factory. These must be set after installation if automatic address setting is not performed.
13	Indoor unit address	
14	Group address	
17	Cooling intake temperature shift	Shifts the intake temperature during cooling and dry operation. (Enabled only when the body thermostat is used.) Increase this value when it is difficult to turn the thermostat ON.
18	Automatic stop time after operation start	The time at which an indoor unit is automatically stopped after operation starts can be set in increments of 5 minutes.
1b	Forced thermostat ON time	Use this setting to change the time for forced operation at installation or servicing from 5 minutes to 4 minutes.
1E	Temperature shift for cooling / heating change in “auto heat / cool” mode	“Auto heat / cool” selects the operating mode automatically based on the difference between the room temperature and the temperature set on the remote controller. This setting establishes a shift temperature for the heating / cooling temperature setting relative to the remote controller temperature setting.



Item code	Item		Description
1F (Upper limit) **20** (Lower limit)	Change to the remote control temperature setting range	Cooling	This setting changes the temperature range (upper limit and lower limit) which is set from the remote controller or central control device. The set upper limit must be greater than or equal to the lower limit. If the temperature setting is to be a single point, set the upper limit and lower limit to the same temperature.
21 (Upper limit) **22** (Lower limit)		Heating	
23 (Upper limit) **24** (Lower limit)		Drying	
25 (Upper limit) **26** (Lower limit)		Auto heat/cool	
2A	Filter input switching		This setting switches the filter input according to the purpose of use.
2C	Indoor unit electronic control valve		This setting indicates whether or not an indoor unit electronic control valve is present. At the time of shipping, this setting is set according to the conditions of the indoor unit.
2E	T10 terminal input switching		Ordinarily, the T10 terminal is used as the HA terminal at the time of shipping. However, this setting is used when the T10 terminal is used for OFF reminder or for fire prevention input.
31	Ventilation fan operation from remote controller		It is possible to install a ventilation fan in the system, which can be started and stopped by the wired remote controller. The ventilation fan can operate linked with the start and stop of the indoor unit, or can be operated even when the indoor unit is stopped. Use a ventilation fan that can accept the no-voltage A contact as the external input signal. In the case of group control, the fans are operated together. They cannot be operated individually.
32	Switching to remote controller sensor		This setting is used to switch from the body sensor to the remote controller sensor. Check that “remote controller sensor” is displayed. Do not use this setting with models that do not include a remote controller sensor. Do not use this setting if both the body sensor and remote sensor are used.
34	ON/OFF of “Operation change control in progress” display		In a MULTI system with multiple remote controllers, switching between heating and cooling is restricted, and “Operation change control in progress” is displayed. This setting is used to prevent this display from appearing. Refer to the item concerned with operating mode priorities.
35	OFF reminder function for weekly timer		This setting switches the operation when the weekly timer is connected to the remote controller. This can be used to prevent cases in which the unit is accidentally left ON. There is no change when this setting is ON, however it is necessary to set the weekly timer ON time.

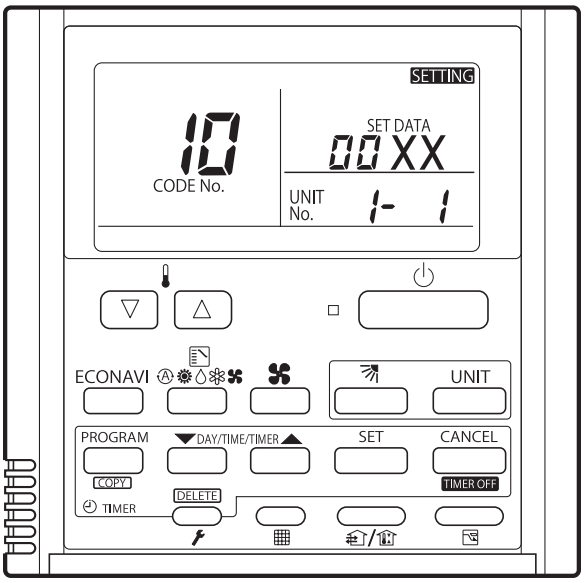
(Continued)

(Continued from previous page)

Item code	Item	Description
3C	Heat exchanger temperature for cold air discharge	The heat exchanger temperature control point for prevention of cold air discharge during heating operation can be changed.
3d	Fan output switching	The indoor unit PCB optional output for the fan can be switched according to the purpose of use.
3E	Drain pump delayed start time	The drain pump starts after the set time delay after cooling operation stops.
45	DC flap operation mode	Changes flap operation to draft reduction mode.
46	DC flap swing mode	Selects the swing operation mode for the flap.
5d	DC fan tap setting	Sets the DC fan tap according to the purpose of use. Change the settings data at the same time.
5F	Stop at time set for OFF timer after operation starts	This setting enables a function that stops operation when the amount of time set for the OFF timer has passed after remote controller operation was started.
60	Timer function change prohibit	This function prohibits changes from being made to the remote controller time setting.
62	Smudging control	Smudging control is disabled when 0000 is set.

7-7. Remote Controller Servicing Functions

- The remote controller includes a number of servicing functions. Use these as needed for test runs and inspections.



CZ-RTC4

Fig. 7-3

List of Servicing Functions

Functions	Description	Button operation	Reset operation	Unit status
Test run	Operation with forced thermostat ON	Press and hold the button for 4 seconds or longer.	Press the button.	Current operation is maintained.
Sensor temperature display	Temperature display from each sensor	Press and hold the and CANCEL buttons for 4 seconds or longer.		
Servicing check display	Alarm history display	Press and hold the and SET buttons for 4 seconds or longer.		
Simple settings	Filter lifetime, operating mode priority, central control address, and other settings	Press and hold the and buttons for 4 seconds or longer.		When settings are made from a remote controller, the indoor unit where that remote controller is connected stops.
Detailed settings	System address, indoor unit address, central control address, and other settings	Press and hold the , CANCEL and SET buttons for 4 seconds or longer.		
Automatic address	Automatic address setting based on command from the wired remote controller	Press and hold the and the timer operation buttons for 4 seconds or longer.	Automatic reset	Entire system stops.
Address change	Change of indoor unit address	Press and hold the and the timer operation buttons for 4 seconds or longer.	Press the button.	

7-8. Test Run Function

Operates the unit with the thermostat forced ON.

(1) Press and hold the button for 4 seconds or longer.

(2) " TEST " appears on the remote controller LCD display (Fig. 7-4).

(3) Press the button to start the test run.

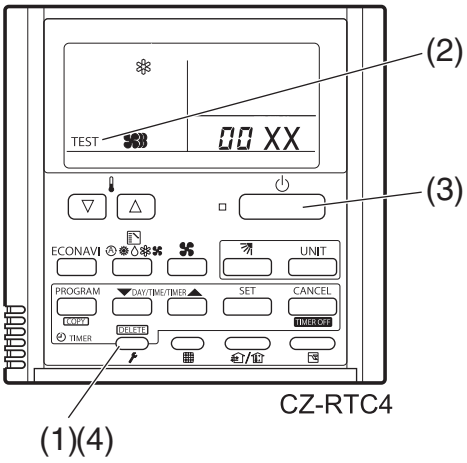


Fig. 7-4

- The temperature cannot be adjusted in Test Run mode. (This mode places a heavy load on the machines. Therefore use it only when performing the test run.)
- The test run can be performed using the HEAT, COOL, or FAN operation modes.

NOTE The outdoor units will not operate for approximately 3 minutes after the power is turned ON and after operation is stopped.

- If correct operation is not possible, an error code is displayed on the remote controller LCD display.

(4) Press the button to return to normal remote controller display.

- To prevent continuous test runs, this remote controller includes a timer function that cancels the test run after 60 minutes.
- The operation is possible even if the cassette-type ceiling panel has not been installed. ("P09" display does not occur.)

■ Sensor Temperature Display Function (displayed regardless of whether unit is operating or stopped)

The procedure below display the sensor temperatures from the remote controller, inddor unit, and outdoor unit on the remote controller.

(1) Press and hold the and CANCEL buttons simultaneously for 4 seconds or longer.

(2) The unit No. "X-X" (main unit No.), item code " XX " (sensor address), and servicing monitor " 00 YY " (sensor temperature) are displayed on the remote controller LCD display. (See Fig. 7-5 at right.)

(3) Press the temperature setting ▽ / △ buttons and select the item code to the address of the sensor to monitor.

(4) If group control is in effect, press the UNIT button to select the unit to monitor.
Press the temperature setting buttons to select the item code to change.

(5) Press the button to return to normal remote controller display.

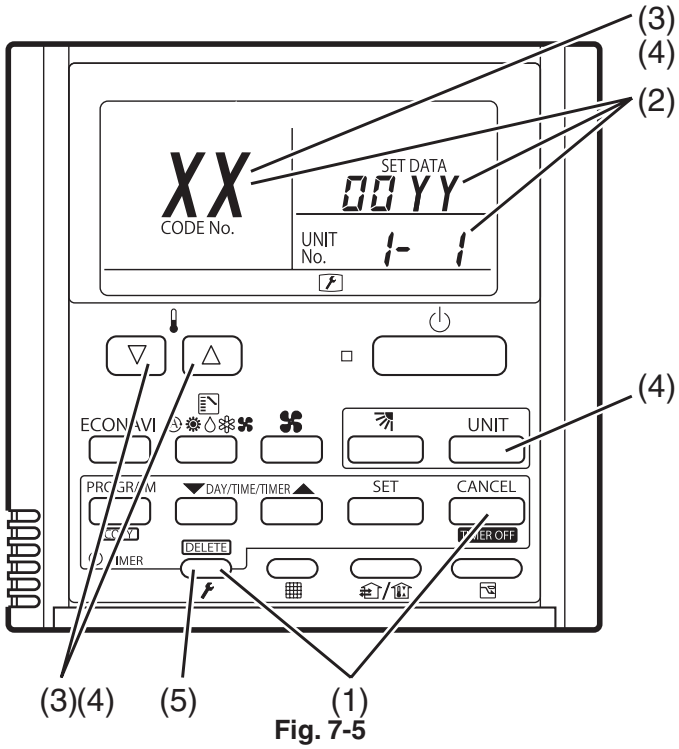


Fig. 7-5

NOTE

The temperature display appears as "- - - -" for units that are not connected.

* If monitor mode is engaged while normal operation is in progress, only the parts of the LCD display shown in the figure will change. Other parts continue to display the same information as during normal operation.

	Item code	Meaning of Code
Indoor unit data	02	Indoor unit intake temp.
	03	Indoor unit heat exchanger temp. (E1)
	04	Indoor unit heat exchanger temp. (E2)
	05	–
	06	–
	07	–
	08	–
	09	
Outdoor unit data	0A	Discharge temp. (TD)
	0b	–
	0C	–
	0d	Intake temp. (TS)
	0E	Outdoor unit heat exchanger temp. (C1)
	0F	Outdoor unit heat exchanger temp. (C2)
	10	–
	11	Outdoor air temp. (TO)
	12	–
	13	Current value (CTL2)
	14	Current value (CTL1)
	15	Outdoor MV value (MOV1)
	16	–
	19	Frequency

* Depending on the model, some items may not be displayed.

– MEMO –

8. HOW TO INSTALL THE WIRELESS REMOTE CONTROLLER RECEIVER

■ Important Safety Instructions

⚠ WARNING

Installation Precautions

- Do not install yourself
  Installation should always be performed by your dealer or a professional service provider.
  Electric shock or fire may result if an inexperienced person performs any installation or wiring procedures incorrectly.
- Use only specified air conditioners
  Always use only air conditions specified by the dealer.

Precautions for Use

- Do not touch switches with wet hands
  Electric shock and damage to the system can result.
- Protect the remote controller from water Damage to the system can result.
- Stop the system and turn the power off if you sense unusual smells or other irregularities
  Continuing operation when the system is out of order can result in electric shock, fire, and damage to the system.
  Contact your dealer.
- Do not swallow the battery.

Moving and Repair Precautions

- Do not repair
  Never repair the system by yourself.
- Contact your dealer before moving the system
  Contact your dealer or a professional service provider about moving and reinstalling the system.
  Electric shock or fire may result if an inexperienced person performs any installation procedures incorrectly.

■ Optional Controller (Remote Controller)

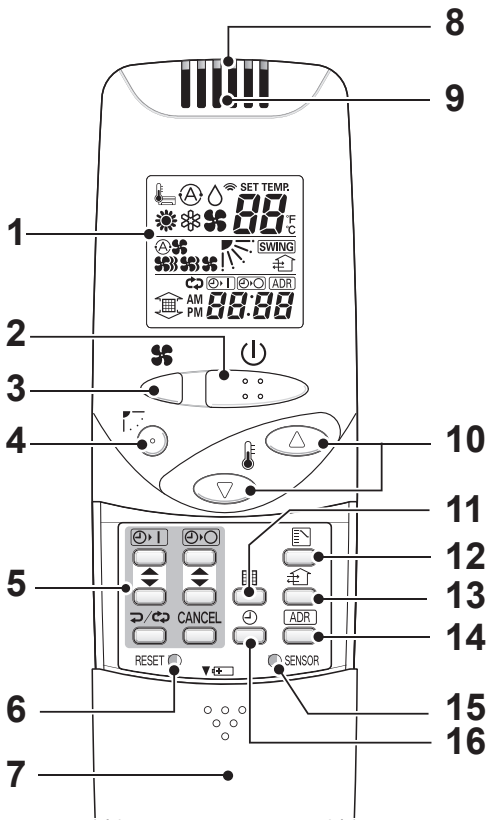
Wireless Remote Controller CZ-RWSK2

One remote controller can control a group of up to eight indoor units.

8-1. Names and Functions

REMOTE CONTROLLER

1. Operation Display	Displays the operation status. (The figure shows all the statuses.) • The auto-flap display may be different, depending on the installed unit.
2. Start/Stop button	Pressing this button once starts and pressing again stops the operation.
3. Fan speed button	
4. Swing/Wind Direction button	
5. Timer setting button	Use for operating with a timer.
6. Reset button	Use this button after changing the batteries.
7. Cover	Press at the top center and then slide down.
8. Transmitter	
9. Remote controller sensor	Detects the temperature at the remote controller when detection has been switched to the remote controller by the sensor button.
10. Temperature setting buttons	raises the temperature setting 1 ℃ at a time. lowers the temperature setting 1 ℃ at a time.
11. Filter button	CZ-RWSC3 Press to turn off the filter lamp on the receiver.
12. Mode Select button	Press to switch the operation mode.
13. Ventilation button	Use this when connected to an aftermarket fan. Pressing this button starts and stops the fan. When the air conditioner is started or stopped, the fan starts or stops at the same time. (appears on the display of the remote controller when the fan is operating.)
14. Address button	
15. Sensor button	Used this to activate the temperature sensor on the remote controller instead of the one on the indoor unit. The temperature sensor on the indoor unit is selected before shipment. At this time is shown on the display.
16. Clock button	Use this to set the clock.

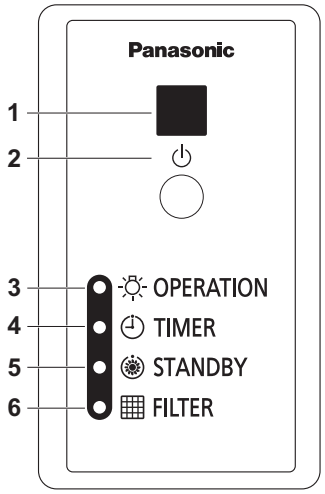


From this page on the names of remote controller's buttons will be indicated with the above illustrations.
E.g.: Start/Stop button → ⏻

RECEIVER

1. Receiver	Receives the signal sent from the remote controller.
2. Emergency operation button	**Indicator lamps** When an error occurs, one of the lamps flashes. When an indicator lamp is flashing, refer to "8-13. Before Requesting Service".
3. OPERATION lamp	Lights up when the unit is operating.
4. Timer lamp	Lights up when the timer is set.
5. STANDBY lamp	• The lamp in the HEAT mode lights up at the following times: during the startup, during the thermostat operation, and during the defrosting. • The lamp flashes when an error occurs.
6. FILTER lamp	This lamp is for notifying you when the filter needs to be cleaned.

CZ-RWSC3



NOTE

- If non-cooling/heating free type is being used, it will beep twice and the operating lamp will light up on the display; if the timer and standby lamps blink alternately, a confl ict between the heating and cooling exists, so the uncannot operate in the desired mode. (On models that do not have an Auto function, even if Auto is selected, it works in the same way.)
- When the local operation is disabled by centralized control or similar cause,and if the Start/Stop ⏻, Mode or Temperature setting button △ ▽ is pressed, the unit will beep five times and the change will not be made.

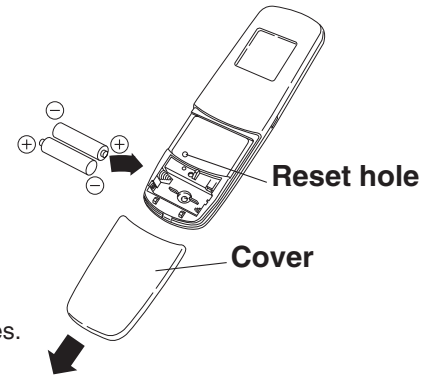
8-2. Installing Batteries

1. Remove the cover.

2. Insert two LR03 size batteries.

Put the batteries in with the polarity [+/–] as shown in the figure.

3. Gently insert one end of an unfolded paper clip (or a similar object that can fit) into the Reset hole and press the Reset button inside the hole, then put the cover back on.



NOTE

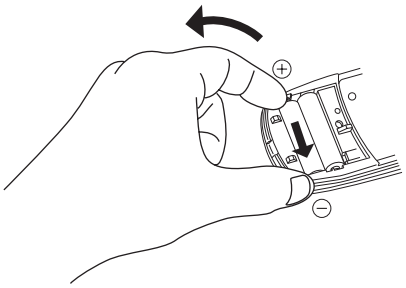
- Change the batteries when the display of the remote controller gets weak or if it will not work unless close to the receiver.
  (Alkaline batteries generally last about one year.)
- When changing batteries, always use two fresh batteries of the same make.
- If the remote controller will not be used for a long period of time, remove the batteries.
- Please dispose of batteries appropriately.
- After changing the batteries, follow the procedures on the next page to reset the current time.

■ How to remove batteries

1. Remove the cover.

2. Press the battery toward the negative end and lift it out by its positive end. (As shown at right)

3. Remove the other battery in the same way.



NOTE

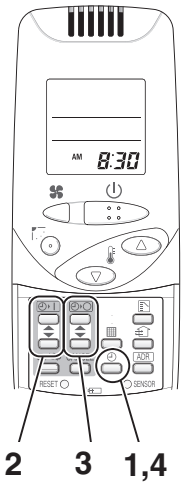
- Dispose of the used batteries at the designated location in compliance with the applicable local ordinances.

⚠ WARNING

- Do not swallow the battery.
- After removing the battery from remote controller, keep it away from the reach of children. The battery can cause death by suffocation if swallowed.
- When inserting the battery, make sure the polarities (+ and -) are correct.

8-3. Setting the Current Time

After changing the batteries and pressing reset, be sure to reset the current time.
(When reset is pressed, the current time reverts to [0:00])



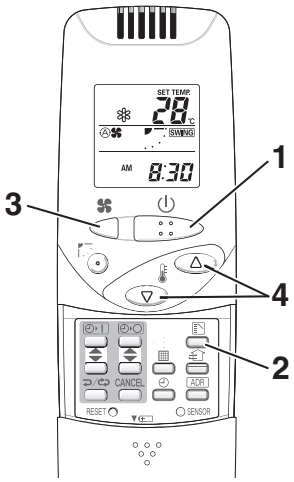
1. **Press ◴ for two seconds or more.**
   Once the clock displays starts blinking, the clock can be set.
2. **Set the hour with ▲/▼ of the ◴.**
   If you press and hold the button, the time changes quickly.
3. **Set the minutes with ▲/▼ of the ◴.**
   If you press and hold the button, the time changes quickly.
4. **Pressing ◴ completes the time setting.**

- While you are setting the current time, the time display flashes but the colon does not.
- If the buttons are not pressed for three minutes while setting the current time, it is set to the displayed time.

NOTE

When reset is pressed, the timer settings are deleted.

8-4. Operation



Auto Ⓐ, Heat ☼, Dry ◊, Cool ❄, Fan ✣

Models that only provide the cooling function cannot operate in the auto or heating modes.

Power: Turn on the power of the indoor unit at least 14 hours before operation.

1. **Press ⏻.**
2. **Press ▤ and select from among Auto Ⓐ, Heat ☼, Dry ◊,Cool ❄ and Fan ✣.**
3. **Press ✣ and select the desired speed.**
   If set to Auto Ⓐ ✣, the fan speed switches automatically.
   (Auto does not work when in the Fan mode.)
4. **Press one of the ▽ △ buttons and set the desired temperature.**
   Temperature settings cannot be made when in the Fan mode.

	MAX	MIN
Auto Ⓐ	27	17
Heat ☼	30	16
Dry ◊ / Cool ❄	30	18

Stop: Press ⏻.

When the unit is stopped with the remote controller, the fan on the outdoor unit may continue to run for a while, even though the compressor of the outdoor unit stops.

If the unit is not heating very effectively with a Low fan speed ✣, switch the fan speed to High ✣ or ✣ Medium.

Depending on the indoor unit being used, it may indicate a function that it does not have. (The fan speed is set.)

If you cannot turn the air conditioner off in the normal way.

Disconnect the power to the indoor unit and contact the dealer where the product was purchased.

<Auto Operation>

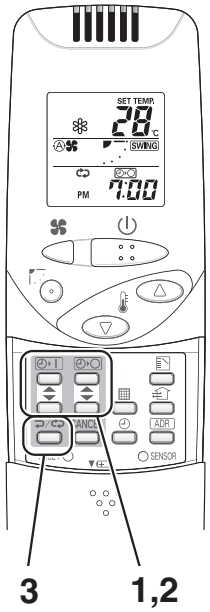
Only when identical refrigerant system inside all the indoor units or cooling/heating free-type are under control as one group.
It heats or cools automatically via the differences between the set temperature and the room temperature.

<Dry Operation>

- Depending on the indoor unit used, the remote controller may have a [Dry] ◊ indicator on its display even though the unit does not have the Dry function. (Same as cooler operation)
- When the room temperature approaches the temperature setting, the unit continues to start up or stop automatically.
- When the drying mode stops operating, the indoor unit's fan blows a gentle breeze in order to keep the moisture from returning to the room at a minimum.
- Depending on the indoor unit used, and/or the temperature in the room, the fan speed may not be adjustable.
- Depending on the unit used, when the outside air temperature is 15 °C or less, the dry function will not operate.

8-5. Timer Operation

- When setting the timer, make sure the current time on the remote controller is accurate.
- The timer's clock can only be set when the display of the remote controller is ON.
- After setting the timer, put the remote controller in a place where its signal will reach the receiver of the indoor unit. (When the time set for the timer is reached, a signal is sent from the remote controller to Start/Stop the unit.)



Using the Timer

1. Press either ▲ / ▼ of the ⏰ or ⏰, and while the time is being displayed, if you press ▲ / ▼ again, a scheduled time can be set.
The time last set on the timer is displayed.
"--:--" indicates time to change the batteries.

2. Press either ▲ / ▼ of the ⏰ or ⏰ and set the timer to the desired time.
Every time you press ▲/▼, the time changes in 10 minute increments.
If you press and hold the button, the time changes quickly.

3. After setting the timer, if you press ↻, the time you set changes to a steady display, indicating settings are complete.
After the timer setting is displayed for three seconds, the display reverts to the current time.

Combining ON and OFF Timers

- Setting the ON and OFF timers, respectively.

Checking the timer setting

- If you press either ▲/▼ for the ⏰ or the ⏰, the scheduled time is displayed for four seconds.
- When no timer setting has been made, it displays --:--. (Initial Setting)

Changing a timer setting

- Press ▲/▼ for the ⏰ or the ⏰, and then when the timer setting is displayed, press ▲ / ▼ for the timer again.

Canceling a timer setting

- If you press [CANCEL], the timer setting is canceled.
- If you wish to cancel the setting for either the ⏰ or the ⏰ timer, press ▲ / ▼ , and long-press [CANCEL] while scheduled time is displayed.

Using the same timer setting every day

- If you press ↻ for 2 or more seconds, " 🔁 " is displayed and the **ON timer** or the **OFF timer** will operate repeatedly every day.
- If you press ↻ again for two seconds or more, " 🔁 " goes off and the timer operates only one time.

8-6. Adjusting the Wind Direction

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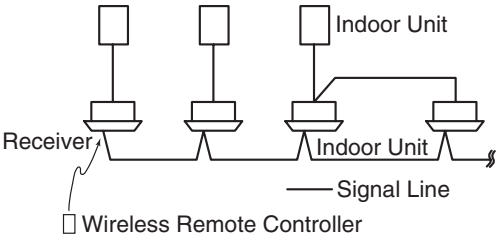
The available functions differ depending on the indoor unit being used. The wind direction cannot be set via remote controller for any models other than those noted below. For more information, please refer to the Operating Instructions that came with your indoor unit.

8-7. Operating Multiple In/Outdoor Units Simultaneously (Group Control)

Group control works well for providing air conditioning to one, large room with more than one air conditioning units.



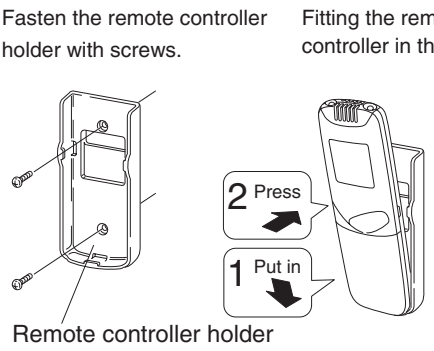
- One remote controller can operate up to eight indoor units.
- All the indoor units have identical settings.
- Set temperature sensing to the indoor unit (Main Sensor).
  (See page 8-3.)

8-8. Using the Remote Controller

- Point the transmitter of the remote controller at the receiver. When the signal is received correctly it will beep once. (It beeps twice only when the unit starts operating.)
- The signal can be received at a distance of about 6 meters. This distance should be used only as a guide. It depends on battery strength.
- Make sure nothing is between the remote controller and the receiver that could block the signal.
- Do not leave the remote controller in direct sunlight, where the wind from the air conditioner can blow directly on it, or near any other heat source.
- Take care not to drop, throw or wash the remote controller with water.
- The signal from the remote controller may not be received in rooms with rapid start fluorescent lighting, inverter lights, plasma displays, LCD televisions (monitor), etc. For more information, please contact the dealer where the product was purchased.

Wall Mount Use

- Press ⏻ from the location you wish to mount the remote controller and make sure the signal is received properly.
- Pull the remote controller forward to remove it.



8-9. For Best Results

Don't get the remote controller too far away from the receiver.
This may cause a malfunction. Be sure to keep the remote controller in the same room as the receiver.

Point the remote controller at the receiver.
When the signal is received properly, it will beep one time.

Avoid locating the remote controller where it is covered, such as behind a curtain.
Keep it out in the open.

8-10. Addresses

In both multi and single unit installations, when more than one indoor units are installed in the same room with a compatible wireress remote controller, addresses can be set up to avoid crosstalk. By setting the address switches on the receivers and matching them with the number of addresses on the remote controller, up to six indoor units can be controlled separately with the remote controller. (When using units in a flexible combination or operating multiple units simultaneously, they cannot be controlled individually as they are operated at the same time.) There are separate address settings: receiver addresses for the receivers and transmitter addresses for the remote controller.
For more information, please contact the distributor where the product was purchased.

- These settings are saved in nonvolatile memory in the remote controller, so even when its batteries are changed, the settings do not have to be made again.

Checking Addresses
When you press ADR on the remote controller, its current address appears on the display. If this address corresponds to the address of a receiver, the buzzer sounds. (If it is on ALL, the buzzer will always sound.)
If it is on ALL, it can be operated regardless of receiver addresses. Point the remote controller at the receiver you wish to operate and transmit.

Matching up Addresses

Setting Remote Controller Addresses

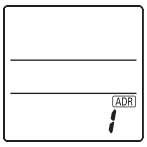
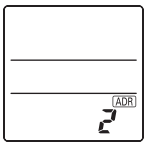
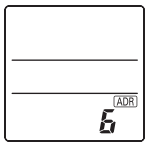
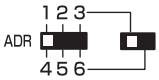
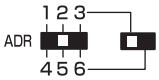
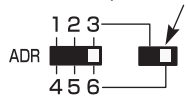
1. If you press [ADR] and ⇄ at the same time,"SET" will blink.

2. While holding [ADR] down, every time you press ⇄, it cycles from ALL →1 → 2 → 3… 6 →ALL.

Set it to the receiver address switch of the indoor unit you wish to operate.

3. When you release [ADR], the address that was displayed is set.

When you do this, if it corresponds to the receiver's address setting, the buzzer sounds.

Address Display on the Remote Controller				●●●●●	
CZ-RWSC3					
Position of the Receiver's Address Switch	The position of the receiver's address switch does not matter.			●●●●●	For 1, 2 and 3, set the switch on the left and for 4, 5 and 6, to the right. 

NOTE

- Please do not hold the [Emergency Operation] ⏻ button of the indoor unit down while the indoor unit's display lamps are blinking one after another.
- Make sure to operate while the indoor unit is stopped.
- The address of indoor unit is set to "ALL" at the time of the shipment.

8-11. Emergency Operation

Use [Emergency Operation] ⏻ in the following situations when there is an urgent need.

- When the remote controller's batteries have failed.
- When the remote controller is broken.
- When the remote controller is lost.

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Start : press [Emergency Operation] ⏻ of the receiver.

If the indoor temperature is 24 °C or greater when the unit starts running, it will act as a cooler.

If the indoor temperature is less than 24 °C when the unit starts running, it will act as a heater.

Stop : press [Emergency Operation] ⏻ of the receiver again.

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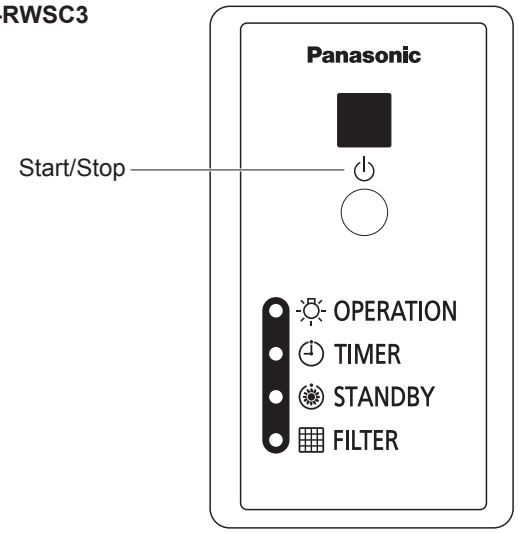


8-12. Miscellaneous Settings

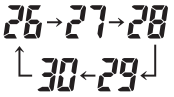
A variety of changes can be made to settings, depending on the indoor unit being used.

Operation mode indicator, time display (24 hour, AM/PM), Heat Max Temp

- (These settings are saved in nonvolatile memory in the remote controller, so even when its batteries are changed, the settings do not have to be made again.)
- First check the display of the remote controller when the unit is stopped and then make any desired settings.

How to Operate

- While holding down the buttons below, every time ↻/↻ is pressed the remote controller's display changes.
- Whatever is being displayed when you release ↻/↻ is set.

Setting Item	Operation Button	Setting Content	Remote Controller Display
Remote controller operation mode display setting when ▭ is pressed	Press ↻/↻ while pressing ▭	Heat Pump (with Auto)	
		Heat Pump (without Auto)	
		Dedicated air conditioner	
Clock display setting	Press ↻/↻ while pressing ◷	24 Hour	
		AM/PM	
Max possible temperature setting in the Heat mode	Press ↻/↻ while pressing △	Maximum heating temperature range is 26 °C – 30 °C	

8

8-13. Before Requesting Service

Before requesting service, please check the followings.

Problem	Cause	Solution
The unit doesn't work even when ⏻ is pressed on the remote controller.	The power to the indoor unit is not ON.	Make sure the power to the indoor unit is ON.
	Are the remote controller's batteries dead?	Change the batteries.
	Is there a mismatch between the display lamp and cooling/heating or is it set to something other than Auto? (The operating lamp stays lit, while the timer lamp and the standby lamp blink alternately.)	Change the operating mode.
	Do the addresses match one another?	Check the addresses of the receiver*1 and the remote controller. (See Page 8-9)
The air conditioner starts and stops on its own.	Has the timer been set to repeat?	Check the timer settings.(See Page 8-7)
"EP" is displayed on the remote controller when the unit is stopped.	An error has occurred in the non-volatile memory.	Please contact your sales outlet.
Although the unit is for air conditioning only, either Auto or Heat is indicated in the display.		Make settings to the remote controller's operation mode display. (See Page 8-12)
After putting the batteries in the remote controller, even when it is operated, the display does not change.		Press the Reset button on the remote controller. (See Page 8-5)
The timer cannot be set.		Make the settings when the remote controller is in Operation Display. (See Page 8-7)

If the problem persists even after you check the foregoing items, stop the unit, disconnect the power to the indoor unit and contact the dealer where the product was purchased with the model number and problem you are having.
As it is dangerous, under no circumstances should you undertake repairs yourself.
Further, when the receiver's*2 lamps are blinking; please contact your retailer with that information.

Specifications

CZ-RWSK2

Wireless Remote Controller	Dimensions	182 mm (H) X 61 mm (W) X 18.5 mm (D)
	Power source	Two LR03 size batteries
	Clock Accuracy	±30 seconds per month (at 25 °C)

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Receiver	Dimensions	120 mm (H) X 70 mm (W) X 20 mm (D)
	Power source	16 V DC (Supplied from the terminal strip of the indoor unit's remote controller)

■ How to Install the Wireless Remote Controller Receiver

8-14. Common to All Models

1. Warnings about Installation of Receivers

The wireless remote controller uses a very weak infrared light for its signal, which can result in the signal not being received because of the following influences, so take care in where the unit is installed.

- Inverter or rapid-start type fluorescent lights. (Models without glow lamps)
- Plasma display or LCD televisions.
- Direct sunlight or other sources of bright light.

2. Warnings about Installing Remote Controllers

(1) If a remote controller is to be operated from a remote controller holder that is hung on a wall, turn on the lights in the room as well as any electrical appliances and then check to make sure the air conditioner works with the remote controller in the location where it will be installed. If it works, continue with installation.

(2) If the air conditioner is to be switched from the main sensor to a remote controller sensor, pay attention to the following when installing.

- Locate where no warm or cold drafts will affect it.
- Locate in a place free from direct sunlight.
- Locate where it will not be affected by any other heat/cold source.

3. Things to remember when wired and wireless remote controllers are installed at the same time

Two remote controllers can be used to controller the unit if the wireless remote controller kit is installed at the same time as the wired remote controller.

(Up to 2 remote controllers [a wireless remote controller kit and the wired remote controller] can be installed.)

When using 2 remote controllers, one or more units can be operated by the remote controllers.

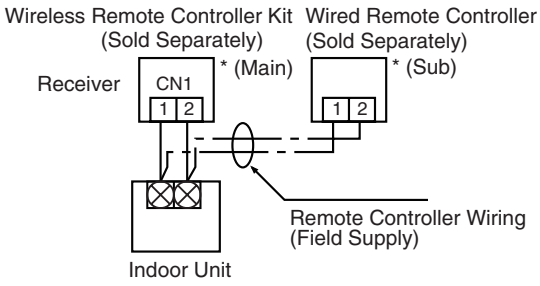
NOTE

1. When wiring remote controllers, be sure to double-check the terminal numbers of the indoor unit before connecting them so there are no mistakes in the wiring. (Damage will occur if high voltage [e.g. supply voltage] is applied)
2. It is not possible to use more than one wireless remote controller kit with one indoor unit. (A receiver located separately can be used at the same time)
3. If both a wireless and a wired remote controller are to be installed and used at the same time, one of them must be set up as the sub remote controller.

- If the wired remote controller is to be the sub remote controller, change the wired remote controller to the sub remote controller.
- If the wireless remote controller is to be the secondary, turn the #3 switch on the wireless receiver (operation panel) from OFF to ON. (see next page)

When 1 indoor unit is operated by 2 remote controllers:

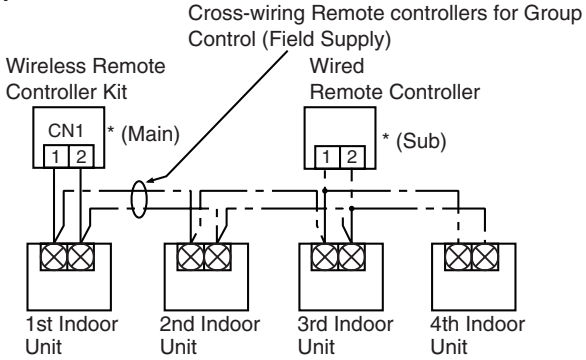
* Either of the remote controllers can be set to main/sub.



- Use wiring of 0.5 mm^2 to 2 mm^2 for field supply.
- Use a total wire length of no more than 400 m.

If a group of units are to be controlled by 2 remote controllers;

* Main/sub remote controllers will work regardless of which indoor unit they are installed to.



- Use wiring of 0.5 mm^2 to 2 mm^2 for field supply.
- Make the total wire length when cross-wiring a group no more than 200 m.

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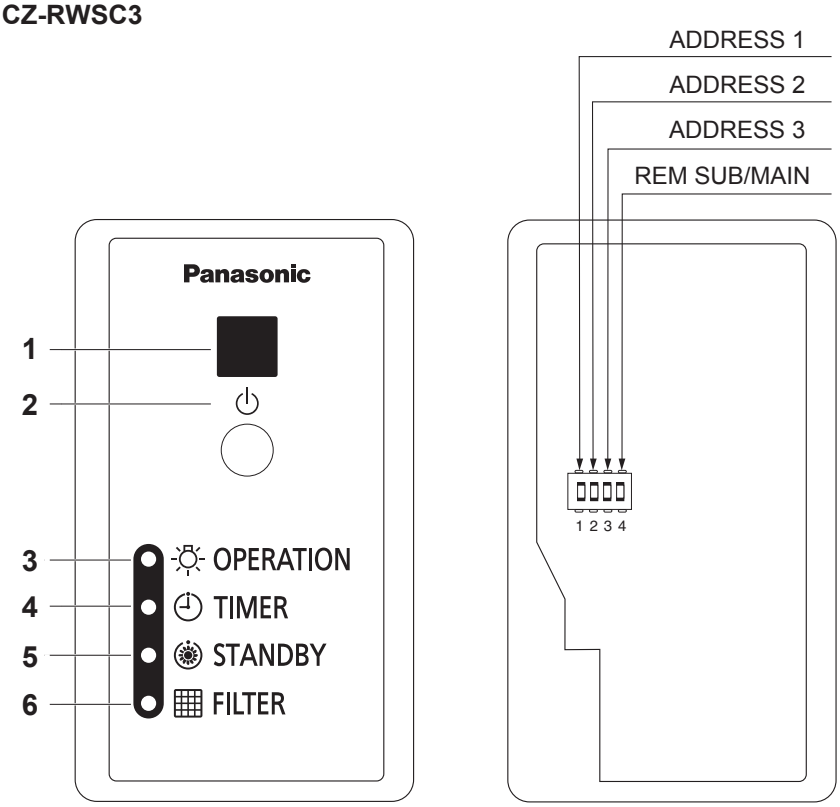
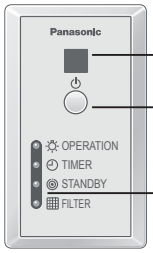


Front side **Rear side**

8-15. CZ-RWSC3

Installation Instructions
Wireless Receiver for ALL

Part Names



(1) Light receiving section
Receives signals.
(2) Emergency operation button
Starts/Stops emergency operation.
(3) Indication lamp
Indicates operation status.

Safety Precautions

Read before installation

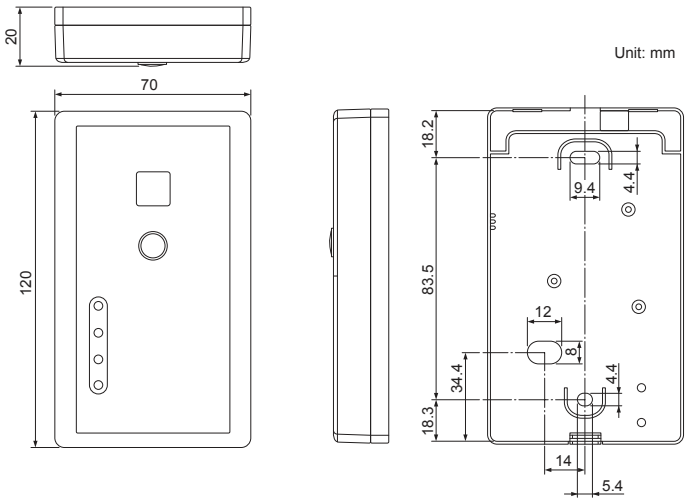
- Read the Installation Instructions carefully to install the unit correctly and safely.
  Be sure to read the Safety Precautions in particular before installation.
- After the installation is complete, perform test operation to confirm that no abnormality is present.

⚠ WARNING
This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

⚠ WARNING

- Turn off the circuit breaker of the units before installation.
- Ask your dealer or professionals for installation and electric work.
- This receiver shall be installed in accordance with National Wiring Regulations.
- Securely connect and fix the specified cables for wiring.
- Do not allow the connection to be exposed to the external force of the cables.
- Choose an installation location that sufficiently supports the weight of the receiver.

Dimensions



- We assume no responsibility for accidents or damages resulting from methods other than those described in the installation instructons or methods without using specified parts.
  Malfunctions that occurred due to the unauthorised installation methods are not covered by the product warranty.
- Read the installation instructions supplied with indoor units as well.

⚠ CAUTION
This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

⚠ CAUTION

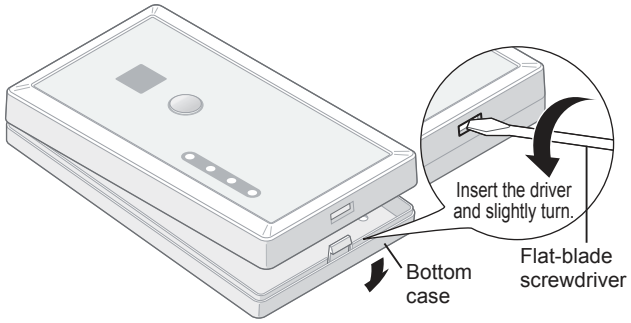
- Do not use at the following locations.
  - Location where condensation occurs
  - Location where flammable gases, etc. may leak
  - Location where corrosive gases, etc. may leak
  - Location with lots of water or oil droplets (including machine oil)
  - Location where voltage fluctuation frequently occurs
  - Location where there is a machine producing electromagnetic radiation
  - Location where droplets of organic solvents spread
    Location where acidic or alkaline solutions or special sprays are frequently used
- Do not operate with wet hands.
- **Do not wash with water.**

1. Accessories

Supplied accessories	
Wood screw M4 × 15.5 (2)	Clamper (1)

2. Installing the Receiver

1 Remove the bottom case.

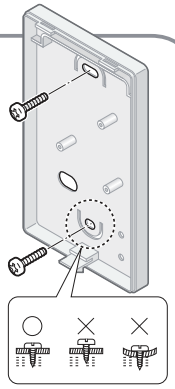


2 Mount to the wall.

Attention

Mounting the bottom case

- Tighten the screws securely until the screw heads touch the bottom case. (Otherwise, loose screw heads may hit the PCB and cause malfunction when mounting the top case.)
- Do not over-tighten the screws. (The bottom case may be deformed, resulting in fall of the unit.)



Connecting the remote controller wiring

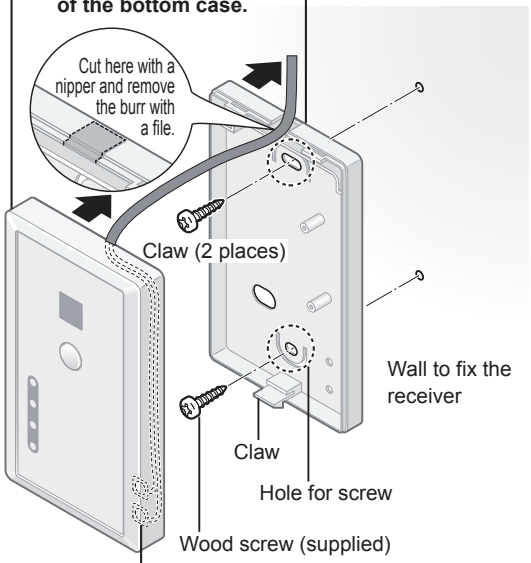
- Arrange the wires as shown in the illustration for (2) in step 2, avoiding unnecessary wires being stored in the case. (Caught wires may destroy the PCB.)
- Avoid wires touching parts on the PCB. (Caught wires may destroy the PCB.)

Exposed type

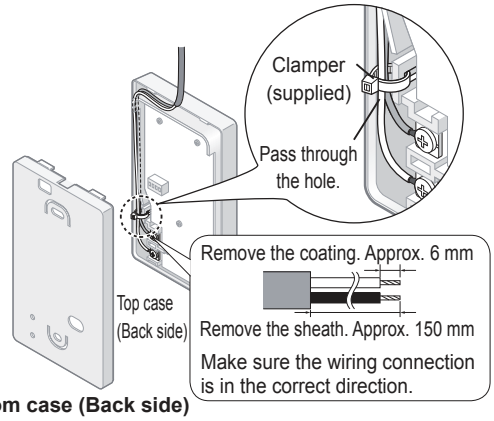
Preparation: Make 2 holes for screws using a driver.

(3) **Mount the top case.**
- **Align the claws of the top case and then align the claws of the bottom case.**

(1) **Mount the bottom case to the wall.**



(2) **Connect the remote controller wiring.**
- Arrange the wires along the groove of the case.

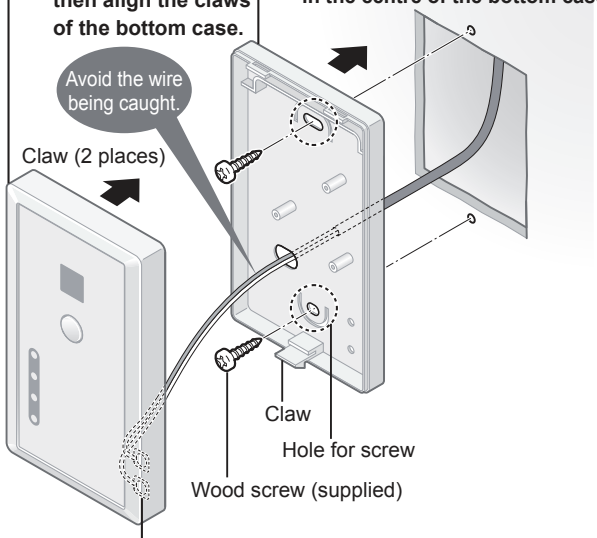


Embedded type

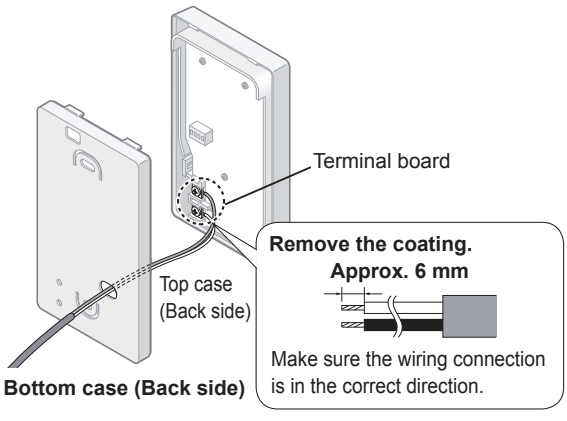
Preparation: Make 2 holes for screws using a driver.

(3) **Mount the top case.**
- **Align the claws of the top case and then align the claws of the bottom case.**

(1) **Mount the bottom case to the wall.**
- **Pass the wire through the hole in the centre of the bottom case.**



(2) **Connect the remote controller wiring.**



8

3. Wiring the Receiver

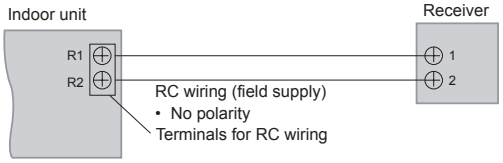
Wiring for the receiver

■ **Wiring diagram**

■ **Type of wiring**
Use cables of 0.5 to 1.25 mm^2.

■ **Total wire length:** 400 m or less
(The wire length between indoor units should be 200 m or less.)

■ **Number of connectable units**
Remote controller and receiver: Max. 2, Indoor unit: Max. 8

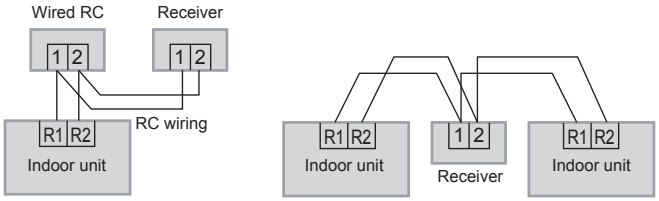


Attention

- Be careful not to connect cables to other terminals of indoor units (e.g. power source wiring terminal). Malfunction may occur.
- Do not bundle together with the power source wiring or store in the same metal tube. Operation error may occur.
- If noise is induced to the unit power supply, attach a noise filter.

- For the RC wiring of field supply, please use insulated wires with sheath. The insulation thickness should be at least 1 mm.
- Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning.
- You must ensure that installation complies with all relevant rules and regulations.

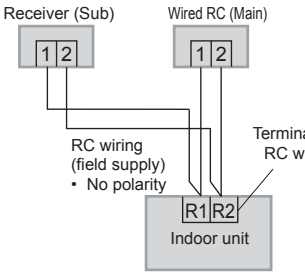
*Wiring as shown below is prohibited.



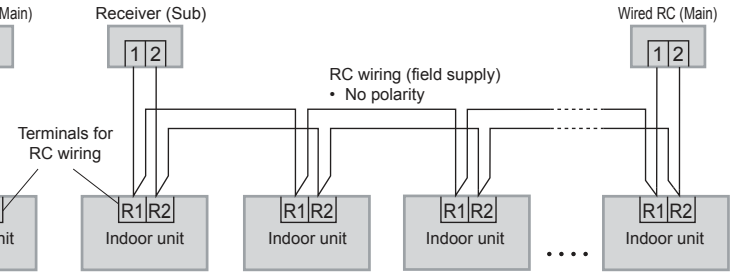
Installation when setting Main/Sub for the remote controller and the receiver

■ Using 1 indoor unit

Installation example



■ Using more than 1 indoor unit



After installation, according to the "Main/Sub setting" in the "Setting" section, set one to [Main] and the other to [Sub].
Setting the wired remote controller to [Main] is recommended.

Note The remote controller and the receiver can be connected to any indoor unit for operation.

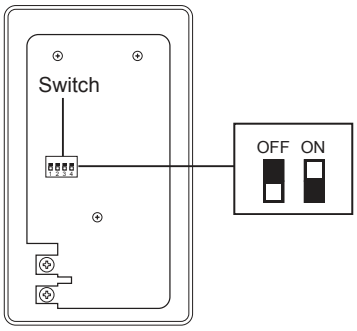
Specifications

Model No.	CZ-RWSC3
Dimensions	(H) 120 mm × (W) 70 mm × (D) 20 mm
Weight	75 g
Temperature/Humidity range	0 °C to 40 °C / 20 % to 80 % (No condensation) *Indoor use only.
Power Source	DC16 V (supplied from indoor unit)

4. Setting Address Switches

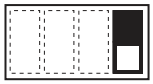
■ **Main/Sub setting** ■ **Address setting**

Remove the top case of the receiver for setting.



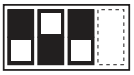
Main/Sub setting

- **Use this to set Main/Sub for the remote controller and the receiver.**
- **Set one to [Main] and the other to [Sub].**
- **Factory default: [Main]**
- **It is recommended to set the wired remote controller to [Main].**

Main/Sub	MAIN	SUB
Main/Sub switch position	 1 2 3 4	 1 2 3 4

Address setting

- When more than 1 receiver is installed in the same room, setting addresses prevents interference.
- For how to change addresses of wireless remote controllers, see operating instructions of wireless remote controllers.

Wireless remote controller address display	Address **ALL**	Address **1**	Address **2**	Address **3**	Address **4**	Address **5**	Address **6**
Address switch position	Receiving is possible at all address positions.	 1 2 3 4	 1 2 3 4	 1 2 3 4	 1 2 3 4	 1 2 3 4	 1 2 3 4

5. Test operation

Preparation : Turn on the circuit breaker of units and then turn the power on. After the power is turned on, remote controller operation is ignored for approx. 1 minute because setting is being made. This is not malfunction. (Contents received while setting are disabled.)

1. To start test operation, press and hold the emergency operation button for 10 seconds.
2. The indication lamps (OPERATION, TIMER, STANDBY) blink during test operation.
3. To finish test operation, press and hold the emergency operation button for 10 seconds.

Attention

- Do not use this mode for purposes other than the test operation. (To prevent overload of the units)
- Read the installation instructions supplied with the units.
- Any of the Heat, Cool and Fan operations can only be performed.
- Temperature cannot be changed.
- The test operation mode is automatically turned off in 60 minutes. (To prevent continuous test operation)
- Outdoor units do not operate for approx. 3 minutes after the power is turned on or operation is stopped.

Self-diagnostics table and detected contents

- The "Alarm Display" as shown in the table below expresses the alarm contents displayed when the wired remote controller is connected. For how to handle the alarms, see installation instructions of indoor units or technical guide.

Detected contents		Indication lamp on the receiver			
	Alarm Display	OPERATION	TIMER	STANDBY	Blinking
Communication error in the remote controller circuit	E01–E03, E08–E14, E17, E18	□	●	●	
Communication error either in the in/outdoor operation line or the sub-bus of the outdoor unit	E04–E07, E15, E16, E19–E31	●	●	□	
Operation of indoor protection device	P01, P09–P14	●	□	□	Alternately
Operation of outdoor protection device	P02–P08, P15–P31	□	●	□	Alternately
Error in the indoor thermistor	F01–F03, F10–F11	□	□	●	Alternately
Error in the outdoor thermistor	F04–F09, F12–F28	□	□	○	Alternately
Error in the indoor EEPROM	F29	□	□	●	Simultaneously
Error in the outdoor EEPROM	F30, F31	□	□	○	Simultaneously
Error related to the compressor	H01–H31	●	□	●	
Error in indoor settings	L01–L03, L05–L09	□	●	□	Simultaneously
Error in outdoor settings	L04, L10–L31	□	○	□	Simultaneously
Inconsistency in Air/Heat (Including an auto-temp setting for a model without auto-temp settings)		○	□	□	Alternately
Oil Alarm (Same as operation of outdoor protection device)		□	●	□	Alternately
Test operation		□	□	□	Simultaneously

●: OFF ○: ON (Illuminated) □: Blinking (0.5 seconds interval)

8-16. Common to All Models

1. The Self-Diagnosis Function Display and What is Detected

Alarm Display in the table below indicates the content of alarms that are displayed when a wired remote controller is connected. For information on how to deal with the alarms, refer to the Mounting Instructions for the indoor unit or to Test Run or servicing materials.

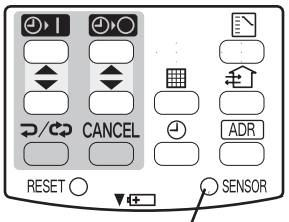
Error Detected		WL Remote Controller LED Display			
	Alarm Display	Run	Timer	Standby	Blinking
Communication error in the remote controller circuit	E01–E03, E08–E14, E17, E18	◎	●	●	
Communication error either in the in/outdoor operation line or the sub-bus of the outdoor unit	E04–E07, E15, E16, E19–E31	●	●	◎	
Operation of indoor protection device	P01, P09–P14	●	◎	◎	Alternately
Operation of outdoor protection device	P02–P08, P15–P31	◎	●	◎	Alternately
Error in the indoor thermistor	F01–F03, F10–F11	◎	◎	●	Alternately
Error in the outdoor thermistor	F04–F09, F12–F28	◎	◎	○	Alternately
Error in the indoor EEPROM	F29	◎	◎	●	Simultaneously
Error in the outdoor EEPROM	F30, F31	◎	◎	○	Simultaneously
Error related to the compressor	H01–H31	●	◎	●	
Error in indoor settings	L01–L03 L05–L09	◎	●	◎	Simultaneously
Error in outdoor settings	L04, L10–L31	◎	○	◎	Simultaneously
Inconsistency in Air/Heat (Including an auto-temp setting for a model without auto-temp settings)		○	◎	◎	Alternately
Oil Alarm (Same as operation of outdoor protection device)		◎	●	◎	Alternately
Test Run		◎	◎	◎	Simultaneously

● : Off / ○ : On / ◎ : Blinking (0.5 sec. intervals)

2. Room Temperature Sensor Settings

Common to All Models

- The indoor unit and the wireless remote controller are equipped with indoor temperature sensors. The sensing of indoor temperature works via one of them.
- When the unit is shipped, it is set to the indoor unit, but to switch to the remote controller, press the sensor button (diagram at right) inside the remote controller's cover and then check to make sure that Main Sensor on the LCD screen goes off.



Sensor Button

Fig. 8-10

NOTE

Even when the Sensor switch has been set to the remote controller, if the unit does not receive any room temperature data from the remote controller for ten minutes, it automatically switches back to the indoor unit sensor, so be sure to install the remote controller facing the receiver.

3. Setting Up Remote Controller Functions

The functions of the wireless remote controller can be set on site.
(These settings are saved in nonvolatile memory in the remote controller, so even when its batteries are changed, the settings do not revert to the defaults.)

NOTE

The operation of the air conditioner can be impacted, depending on the settings made, so only service personnel should make the settings.
Furthermore, making changes to these settings may cause actual operation to deviate from what is printed in the Users Manual, so be sure to explain this to the customer fully.

Making Settings (Do with unit stopped)

(1) Holding down the Swing/Wind Direction + OFF Timer ▲ + Mode Select buttons at the same time for 4 or more seconds makes the Display switch to the setting screen. (See diagram below.)

(2) Use the Temperature setting buttons, △ / ▽ , to select the number of the item to be set.

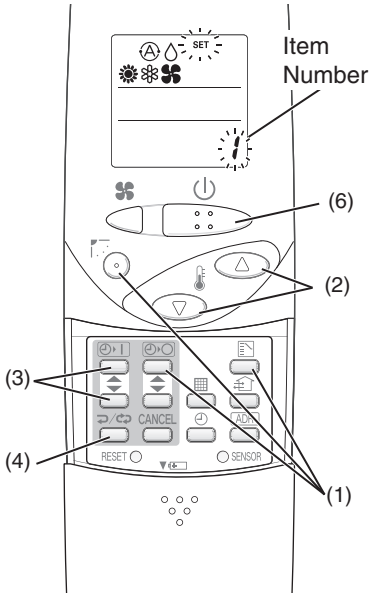
(3) Use the ON Timer buttons, ▲ / ▼ , to change settings.

(4) The settings are saved with the Once/Every Day button. When this is done, the settings display of the LCD changes from blinking to light.

(5) If other settings are to be changed as well, repeat steps 2 to 4.

(6) When all settings have been made, press the Start/Stop button.

Example: Operation mode setting screen



Item Number & Setting Item		Setting Content	Setting when Shipped
1	Operation Mode	Ⓐ → → → → Ⓐ → →	Ⓐ
2	Flap Display	SWING → SWING → SWING → (No Display) (Note 1)	SWING
3	Select Fan Speed	Ⓐ → → → (No Display)	Ⓐ
4	Display of Set Temperature	°C ⟶ °F ⟶ Setting Off (Note 2)	°C
5	Time Display	24 Hour (No Display) ⟶ AM/PM	24 Hour
6	Ventilation Fan ON/OFF	Off (No Display) ⟶ On	OFF(Note 3)
7	Cool temp Max	05 – 35°C	30
8	Cool temp Min	05 – 35°C	18
9	Heat temp Max	05 – 35°C	26 (Note 4)
10	Heat temp Min	05 – 35°C	16
11	Dry temp Max	05 – 35°C	30
12	Dry temp Min	05 – 35°C	18
13	Auto temp Max	05 – 35°C	27
14	Auto temp Min	05 – 35°C	17
16	Address Setting Max Value	00 (ALL only) ⟶ 01 – 31	06 (Note 5)
17	Heat temp Max ON/OFF	JP (Heater Max Temp Change Off) ⟶ EP (On)	JP

NOTE

(1) While the unit is in the swinging mode (Swing/Wind Direction), the flap cannot be stopped in a desired position.
(2) When Setting OFF is selected, "°C" is displayed on the LCD screen.
(3) You can toggle between ON and OFF by pressing Ventilation for 4 seconds or more.
(4) If the Heater Max ON/OFF setting is not changed to EP (ON), the setting change will not be reflected.
(5) This is the number of addresses that can be set in the address change mode. Do not set it to 07 or above.