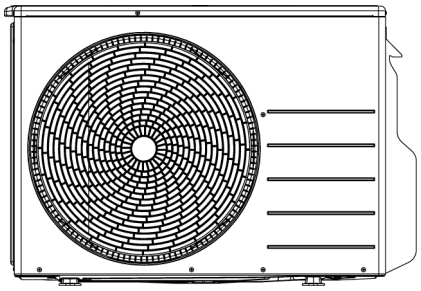
Order No: PAPAMY1303101CE

Service Manual

Air Conditioner



Outdoor Unit
CU-2E15PBD
CU-2E18PBD

Destination
Russia
Ukraine
Belarus
Kazakhstan
Hong Kong

Please file and use this manual together with the service manual for Model No. CS-E7PKDW CS-E9PKDW CS-E12PKDW CS-E10JD3EA CS-E10HB4EA CS-ME10DTEG, Order No. PAPAMY1302030CE PHAAM0901093C8 MAC0803024C8 RAC0503011C2 RAC0602011C2

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

⚠ PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigerant circuit.

Panasonic®

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1. Safety Precautions

- Read the following “SAFETY PRECAUTIONS” carefully before perform any servicing.
- Electrical work must be installed or serviced by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation or servicing due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ **WARNING**	This indication shows the possibility of causing death or serious injury.
⚠ **CAUTION**	This indication shows the possibility of causing injury or damage to properties.

- The items to be followed are classified by the symbols:

⃠	This symbol denotes item that is PROHIBITED from doing.

- Carry out test run to confirm that no abnormality occurs after the servicing. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ **WARNING**	
1. Do not modify the machine, part, material during repairing service.	
2. If wiring unit is supplied as repairing part, do not repair or connect the wire even only partial wire break. Exchange the whole wiring unit.	
3. Do not wrench the fasten terminal. Pull it out or insert it straightly.	
4. Engage dealer or specialist for installation and servicing. If installation or servicing done by the user is defective, it will cause water leakage, electrical shock or fire.	
5. Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electric shock or fire.	
6. Use the attached accessories parts and specified parts for installation and servicing. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.	
7. Install at a strong and firm location which is able to withstand the set’s weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.	
8. For electrical work, follow the local national wiring standard, regulation and the installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.	
9. This equipment is strongly recommended to install with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD). Otherwise, it may cause electrical shock and fire in case equipment breakdown or insulation breakdown.	
10. Do not use joint cable for indoor/outdoor connection cable. Use the specified indoor/outdoor connection cable, refer to Installation Instruction CONNECT THE CABLE TO THE INDOOR UNIT and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will be acted on the terminal. If connecting or fixing is not perfect, it will cause heat up or fire at the connection.	
11. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up or fire at the connection point of terminal, fire or electrical shock.	
12. When install or relocate air conditioner, do not let any substance other than the specified refrigerant, eg. air etc. mix into refrigeration cycle (piping). (Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.).	
13. Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit at veranda of high rise building, child may climb up to outdoor unit and cross over the handrail and causing accident.	
14. This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electric shock in case equipment breakdown or insulation breakdown.	⃠
15. Keep away from small children, the thin film may cling to nose and mouth and prevent breathing.	⃠
16. Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.	⃠
17. Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.	⃠

18. For R410A models, when connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A materials.
    Thickness of copper pipes used with R410A must be more than 0.8mm. Never use copper pipes thinner than 0.8mm.
    It is desirable that the amount of residual oil is less than 40 mg/10m.
19. During installation, install the refrigerant piping properly before run the compressor. (Operation of compressor without fixing refrigeration piping and valves at opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.).
20. During pump down operation, stop the compressor before remove the refrigeration piping. (Removal of refrigeration piping while compressor is operating and valves are opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.).
21. After completion of installation or service, confirm there is no leakage or refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.
22. Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when refrigerant contacts with fire.
23. Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.
24. Must not use other parts except original parts described in catalog and manual.
25. Using of refrigerant other than the specified type may cause product damage, burst and injury etc.

CAUTION

1. Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
2. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
3. Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.
4. Do not touch outdoor unit air inlet and aluminium fin. It may cause injury.
5. Select an installation location which is easy for maintenance.
6. Pb free solder has a higher melting point than standard solder; typically the melting point is 50°F – 70°F (30°C – 40°C) higher. Please use a high temperature solder iron. In case of the soldering iron with temperature control, please set it to 700 ± 20°F (370 ± 10°C). Pb free solder will tend to splash when heated too high (about 1100°F / 600°C).
7. Power supply connection to the room air conditioner.
   Use power supply cord 3 x 1.5 mm^2 type designation 60245 IEC 57 or heavier cord.
   Connect the power supply cord of the air conditioner to the mains using one of the following method.
   Power supply point should be in easily accessible place for power disconnection in case of emergency.
   In some countries, permanent connection of this air conditioner to the power supply is prohibited.
   1) Power supply connection to the receptacle using power plug.
      Use an approved 15/16A power plug with earth pin for the connection to the socket.
   2) Power supply connection to a circuit breaker for the permanent connection.
      Use an approved 16A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap.
8. Do not release refrigerant during piping work for installation, servicing, reinstallation and during repairing a refrigerant parts.
   Take care of the liquid refrigerant, it may cause frostbite.
9. Installation or servicing work: It may need two people to carry out the installation or servicing work.
10. Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
11. Do not sit or step on the unit, you may fall down accidentally.
12. Do not touch the sharp aluminum fins or edges of metal parts.
    If you are required to handle sharp parts during installation or servicing, please wear hand glove.
    Sharp parts may cause injury.

2. Specifications

2.1 CU-2E15PBD

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				2.2kW + 2.2kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	4.5 (1.5 ~ 5.0)
			BTU/h	15300 (5120 ~ 17100)
	Electrical Data	Running Current	A	5.75
		Power Input	kW	1.23 (0.25 ~ 1.35)
		EER	W/W	3.66 (6.00 ~ 3.70)
	Noise	Sound Pressure Level	dB-A (H/L)	47 / -
		Sound Power Level	dB (H/L)	62 / -
Heating Operation	Capacity		kW	5.4 (1.1 ~ 7.0)
			BTU/h	18400 (3750 ~ 23900)
	Electrical Data	Running Current	A	5.20
		Power Input	kW	1.17 (0.21 ~ 1.67)
		COP	W/W	4.62 (5.24 ~ 4.19)
	Noise	Sound Pressure Level	dB-A (H/L)	49 / -
		Sound Power Level	dB (H/L)	64 / -
Maximum Current			A	12.0
Starting Current			A	5.75
Circuit Breaker Capacity			A	15
Dimension	Height		mm	619
	Width		mm	824 (+70)
	Depth		mm	299
Net Weight			kg	38
Connection Cable				3 + 1 (Earth) ø1.5 mm^2
Pipe Length Range (1 room)			m	3 ~ 20
Maximum Pipe Length (Total Room)			m	30
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)
	Gas Side		mm (inch)	9.52 (3/8)
Compressor	Type			Hermetic Motor / Rotary
	Motor Type			Brushless (6-poles)
	Rated Output		W	900
Air Circulation	Type			Propeller Fan
	Motor Type			DC Motor (8-poles)
	Rated Output		W	40
Fan Speed	High (Cooling / Heating)		RPM	800 / 930
Heat Exchanger	Type			Plate fin configuration forced draft type
	Tube Material			Copper
	Fin Material			Aluminum (Pre Coat)
	Row / Stage			2 / 28
	FPI			17
Air Volume	High (Cooling / Heating)		m^3/min	32.7 / 36.9
Refrigerant Control Device				Expansion Valve
Refrigerant Oil				RB68A / Freol Alpha68M
Refrigerant (R410A)			g	1.40k

Item			Unit	OUTDOOR UNIT	
				Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum	°C	32	23
		Minimum	°C	16	11
	Heating	Maximum	°C	30	—
		Minimum	°C	16	—
Outdoor Operation Range	Cooling	Maximum	°C	46	26
		Minimum	°C	-10	—
	Heating	Maximum	°C	24	18
		Minimum	°C	-15	-16

Note

- Specifications are subject to change without notice for further improvement.

2.2 CU-2E18PBD

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				3.2kW + 3.2kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	5.2 (1.5 ~ 5.4)
			BTU/h	17700 (5120 ~ 18400)
	Electrical Data	Running Current	A	7.10
		Power Input	kW	1.52 (0.25 ~ 1.58)
		EER	W/W	3.42 (6.00 ~ 3.42)
	Noise	Sound Pressure Level	dB-A (H/L)	49 / -
		Sound Power Level	dB (H/L)	64 / -
Heating Operation	Capacity		kW	5.6 (1.1 ~ 7.2)
			BTU/h	19100 (3750 ~ 24600)
	Electrical Data	Running Current	A	5.35
		Power Input	kW	1.21 (0.21 ~ 1.70)
		COP	W/W	4.63 (5.24 ~ 4.24)
	Noise	Sound Pressure Level	dB-A (H/L)	51 / -
		Sound Power Level	dB (H/L)	66 / -
Maximum Current			A	12.0
Starting Current			A	7.1
Circuit Breaker Capacity			A	15
Dimension	Height		mm	619
	Width		mm	824 (+70)
	Depth		mm	299
Net Weight			kg	38
Connection Cable				3 + 1 (Earth) ø1.5 mm^2
Pipe Length Range (1 room)			m	3 ~ 20
Maximum Pipe Length (Total Room)			m	30
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)
	Gas Side		mm (inch)	9.52 (3/8)
Compressor	Type			Hermetic Motor / Rotary
	Motor Type			Brushless (6-poles)
	Rated Output		W	900
Air Circulation	Type			Propeller Fan
	Motor Type			DC Motor (8-poles)
	Rated Output		W	40
Fan Speed	High (Cooling / Heating)		RPM	900 / 1000
Heat Exchanger	Type			Plate fin configuration forced draft type
	Tube Material			Copper
	Fin Material			Aluminum (Pre Coat)
	Row / Stage			2 / 28
	FPI			17
Air Volume	High (Cooling / Heating)		m^3/min	36.9 / 41.1
Refrigerant Control Device				Expansion Valve
Refrigerant Oil				RB68A / Freol Alpha68M
Refrigerant (R410A)			g	1.40k

Item			Unit	OUTDOOR UNIT	
				Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum	°C	32	23
		Minimum	°C	16	11
	Heating	Maximum	°C	30	—
		Minimum	°C	16	—
Outdoor Operation Range	Cooling	Maximum	°C	46	26
		Minimum	°C	-10	—
	Heating	Maximum	°C	24	18
		Minimum	°C	-15	-16

Note

- Specifications are subject to change without notice for further improvement.

- **Multi Split Combination Possibility:**
  - A single outdoor unit enables air conditioning of up to two separate rooms for CU-2E15PBD, CU-2E18PBD.

CONNECTABLE INDOOR UNIT			OUTDOOR UNIT			
			CU-2E15PBD		CU-2E18PBD	
Type \ ROOM			A	B	A	B
Wall	2.2kW	CS-E7PKDW	●	●	●	●
	2.8kW	CS-E9PKDW CS-E10JD3EA CS-E10HB4EA	●	●	●	●
		CS-ME10DTEG	–	–	●	●
	3.2kW	CS-E12PKDW	●	●	●	●
Capacity range of connectable indoor units			From 4.4kW to 5.6kW		From 4.4kW to 6.4kW	
Pipe length	1-room maximum pipe length (m)		20		20	
	Allowable elevation (m)		10		10	
	Total allowable pipe length (m)		30		30	
	Total pipe length for maximum chargeless length (m)		20		20	
	Additional gas amount over chargeless length (g/m)		15		15	

Note: " ● " : Available

Remarks for CU-2E15PBD / CU-2E18PBD
1. At least two indoor units must be connected.
2. The total nominal cooling capacity of indoor units that will be connected to outdoor unit must be within connectable capacity range of indoor unit. (as shown in the table above)
   Example: The indoor units' combination below is possible to connect to CU-2E15PBD. (Total nominal capacity of indoor units is between 4.4kW to 5.6kW)
   1) Two CS-E7PKDW only (Total nominal cooling capacity is 4.4kW)
   2) One CS-E7PKDW and one CS-E9PKDW. (Total nominal cooling capacity is 5.0kW)

- Indoor Unit : CS-E7/9/12PKDW, CS-E10JD3EA, CS-E10HB4EA
- Outdoor Unit : CU-2E15PBD

Indoor unit capacity Cooling		Total	Cooling Capacity(kW) Room A	Room B	Total	min	~	max	Input Power (W) Rating	min	~	max	EER W/W	CLASS	ANNUAL ENERGY CONSUMPTION (kWh)	Current, 230V (A)	MOISTURE REMOVAL VOLUME l/h
1 Room	22	22	2.20		2.20	1.1	~	2.9	520	220	~	750	4.23	A	260	2.45	1.4
	28	28	2.80		2.80	1.1	~	3.5	750	220	~	1000	3.73	A	375	3.50	1.6
	32	32	3.20		3.20	1.1	~	4.0	920	220	~	1220	3.48	A	460	4.30	1.8
2 Room	22 + 22	44	2.25	2.25	4.50	1.5	~	5.0	1230	250	~	1350	3.66	A	615	5.75	1.5 + 1.5
	22 + 28	50	2.00	2.50	4.50	1.5	~	5.2	1230	250	~	1520	3.66	A	615	5.75	1.3 + 1.5
	22 + 28*	50	2.00	2.50	4.50	1.5	~	5.2	1390	250	~	1730	3.24	A	695	6.50	1.3 + 1.5
	22 + 32	54	1.80	2.70	4.50	1.5	~	5.2	1230	250	~	1520	3.66	A	615	5.75	1.2 + 1.6
	28 + 28	56	2.25	2.25	4.50	1.5	~	5.2	1230	250	~	1520	3.66	A	615	5.75	1.5 + 1.5
	28 + 28*	56	2.25	2.25	4.50	1.5	~	5.2	1390	250	~	1730	3.24	A	695	6.50	1.5 + 1.5
	28* + 28*	56	2.25	2.25	4.50	1.5	~	5.2	1390	250	~	1730	3.24	A	695	6.50	1.5 + 1.5

* Hide-Away type or 4 Way Cassette type

Indoor unit capacity Heating		Total	Heating Capacity(kW) Room A	Room B	Total	min	~	max	Input Power (W) Rating	min	~	max	COP W/W	CLASS	ANNUAL ENERGY CONSUMPTION (kWh)	Current, 230V (A)	MOISTURE REMOVAL VOLUME l/h
1 Room	22	22	3.20		3.20	0.7	~	4.8	850	170	~	1410	3.76	A	425	3.75	
	28	28	4.00		4.00	0.7	~	5.5	1150	170	~	1700	3.48	B	575	5.10	
	32	32	4.50		4.50	0.7	~	6.2	1250	170	~	1810	3.60	B	625	5.55	
2 Room	22 + 22	44	2.70	2.70	5.40	1.1	~	7.0	1170	210	~	1670	4.62	A	585	5.20	
	22 + 28	50	2.40	3.00	5.40	1.1	~	7.0	1170	210	~	1670	4.62	A	585	5.20	
	22 + 28*	50	2.40	3.00	5.40	1.1	~	7.0	1360	210	~	1670	3.97	A	680	6.05	
	22 + 32	54	2.20	3.20	5.40	1.1	~	7.0	1170	210	~	1670	4.62	A	585	5.20	
	28 + 28	56	2.70	2.70	5.40	1.1	~	7.0	1170	210	~	1670	4.62	A	585	5.20	
	28 + 28*	56	2.70	2.70	5.40	1.1	~	7.0	1360	210	~	1670	3.97	A	680	6.05	
	28* + 28*	56	2.70	2.70	5.40	1.1	~	7.0	1360	210	~	1670	3.97	A	680	6.05	

* Hide-Away type or 4 Way Cassette type

- Indoor Unit : CS-E7/9/12PKDW, CS-E10JD3EA, CS-E10HB4EA, CS-ME10DTEG
- Outdoor Unit : CU-2E18PBD

Indoor unit capacity	Cooling	Total	Cooling Capacity(kW)						Input Power (W)				EER		ANNUAL ENERGY CONSUMPTION (kWh)	Current, 230V (A)	MOISTURE REMOVAL VOLUME l/h
			Room A	Room B			Total	min ~ max	Rating	min ~ max			W/W	CLASS			
1 Room	22	22	2.20				2.20	1.1 ~ 2.9	520	220 ~ 750			4.23	A	260	2.45	1.4
	28	28	2.80				2.80	1.1 ~ 3.5	750	220 ~ 1000			3.73	A	375	3.50	1.6
	32	32	3.20				3.20	1.1 ~ 4.0	920	220 ~ 1220			3.48	A	460	4.30	1.8
2 Room	22 + 22	44	2.25	2.25			4.50	1.5 ~ 5.0	1230	250 ~ 1350			3.66	A	615	5.75	1.5 + 1.5
	22 + 28	50	2.00	2.50			4.50	1.5 ~ 5.2	1230	250 ~ 1520			3.66	A	615	5.75	1.3 + 1.5
	22 + 28*	50	2.00	2.50			4.50	1.5 ~ 5.2	1390	250 ~ 1730			3.24	A	695	6.50	1.3 + 1.5
	22 + 32	54	1.95	2.85			4.80	1.5 ~ 5.3	1310	250 ~ 1540			3.66	A	655	6.10	1.3 + 1.7
	28 + 28	56	2.40	2.40			4.80	1.5 ~ 5.2	1310	250 ~ 1520			3.66	A	655	6.10	1.5 + 1.5
	28* + 28* (Remark)	56	2.40	2.40			4.80	1.5 ~ 5.2	1560	250 ~ 1730			3.08	B	780	7.25	1.5 + 1.5
	28 + 32	60	2.30	2.70			5.00	1.5 ~ 5.3	1490	250 ~ 1540			3.36	A	745	6.95	1.5 + 1.6
	28* + 32	60	2.30	2.70			5.00	1.5 ~ 5.3	1670	250 ~ 1800			2.99	C	835	7.80	1.5 + 1.6
	32 + 32	64	2.60	2.60			5.20	1.5 ~ 5.4	1520	250 ~ 1580			3.42	A	760	7.10	1.6 + 1.6

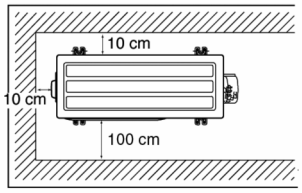
* 2.8kW class can be either model CS-E10JD3EA（Ducted) or model CS-ME10DTEG（Ceiling Floor) or model CS-E10HB4EA (4 Way Cassette)
(Remark) (28*+28*)combinations include CS-E10JD3EA + CS-E10JD3EA (Ducted type), CS-E10JD3EA (Ducted) + CS-E9PKDW (Wall-mounted)
CS-ME10DTEG + CS-ME10DTEG (Ceiling Floor), CS-ME10DTEG (Ceiling Floor) + CS-E9PKDW (Wall-mounted)
CS-E10HB4EA + CS-E10HB4EA (4 Way Cassette), CS-E10HB4EA (4 Way Cassette) + CS-E9PKDW (Wall-mounted)
CS-ME10DTEG (Ceiling Floor) + CS-E10JD3EA (Ducted), CS-E10HB4EA (4 Way Cassette) + CS-ME10DTEG (Ceiling Floor)
CS-E10HB4EA (4 Way Cassette) + CS-E10JD3EA (Ducted)

Indoor unit capacity	Heating	Total	Heating Capacity(kW)						Input Power (W)				COP		ANNUAL ENERGY CONSUMPTION (kWh)	Current, 230V (A)	MOISTURE REMOVAL VOLUME l/h
			Room A	Room B			Total	min ~ max	Rating	min ~ max			W/W	CLASS			
1 Room	22	22	3.20				3.20	0.7 ~ 4.8	850	170 ~ 1410			3.76	A	425	3.75	
	28	28	4.00				4.00	0.7 ~ 5.5	1150	170 ~ 1700			3.48	B	575	5.10	
	32	32	4.50				4.50	0.7 ~ 6.2	1250	170 ~ 1810			3.60	B	625	5.55	
2 Room	22 + 22	44	2.70	2.70			5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	22 + 28	50	2.40	3.00			5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	22 + 28*	50	2.40	3.00			5.40	1.1 ~ 7.0	1360	210 ~ 1670			3.97	A	680	6.05	
	22 + 32	54	2.30	3.30			5.60	1.1 ~ 7.2	1230	210 ~ 1720			4.55	A	615	5.45	
	28 + 28	56	2.80	2.80			5.60	1.1 ~ 7.2	1250	210 ~ 1740			4.48	A	625	5.55	
	28* + 28* (Remark)	56	2.80	2.80			5.60	1.1 ~ 7.2	1470	210 ~ 1740			3.81	A	735	6.50	
	28 + 32	60	2.60	3.00			5.60	1.1 ~ 7.2	1230	210 ~ 1720			4.55	A	615	5.45	
	28* + 32	60	2.60	3.00			5.60	1.1 ~ 7.2	1390	210 ~ 1720			4.03	A	695	6.15	
	32 + 32	64	2.80	2.80			5.60	1.1 ~ 7.2	1210	210 ~ 1700			4.63	A	605	5.35	

* 2.8kW class can be either model CS-E10JD3EA（Ducted) or model CS-ME10DTEG（Ceiling Floor) or model CS-E10HB4EA (4 Way Cassette)
(Remark) (28*+28*)combinations include CS-E10JD3EA + CS-E10JD3EA (Ducted type), CS-E10JD3EA (Ducted) + CS-E9PKDW (Wall-mounted)
CS-ME10DTEG + CS-ME10DTEG (Ceiling Floor), CS-ME10DTEG (Ceiling Floor) + CS-E9PKDW (Wall-mounted)
CS-E10HB4EA + CS-E10HB4EA (4 Way Cassette), CS-E10HB4EA (4 Way Cassette) + CS-E9PKDW (Wall-mounted)
CS-ME10DTEG (Ceiling Floor) + CS-E10JD3EA (Ducted), CS-E10HB4EA (4 Way Cassette) + CS-ME10DTEG (Ceiling Floor)
CS-E10HB4EA (4 Way Cassette) + CS-E10JD3EA (Ducted)

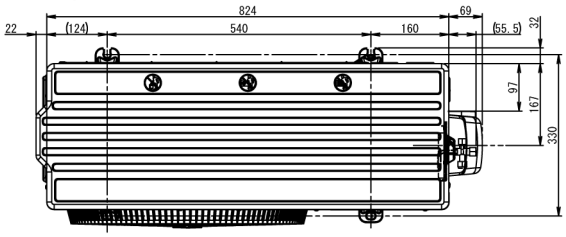
3. Dimensions

Space necessary for installation

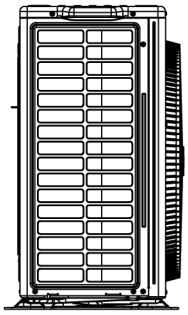


Anchor Bolt Pitch
540 x 330

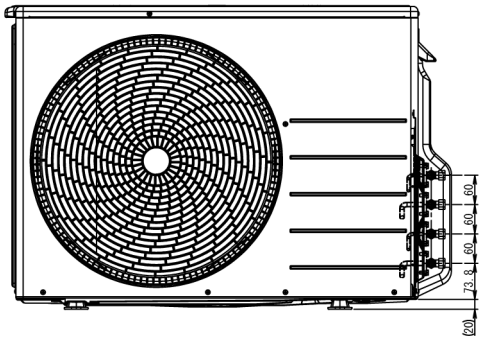
<Top View>



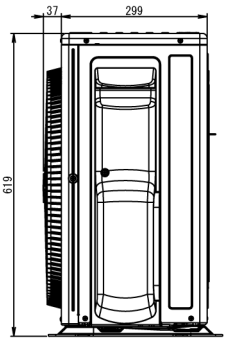
<Side View>



<Front View>

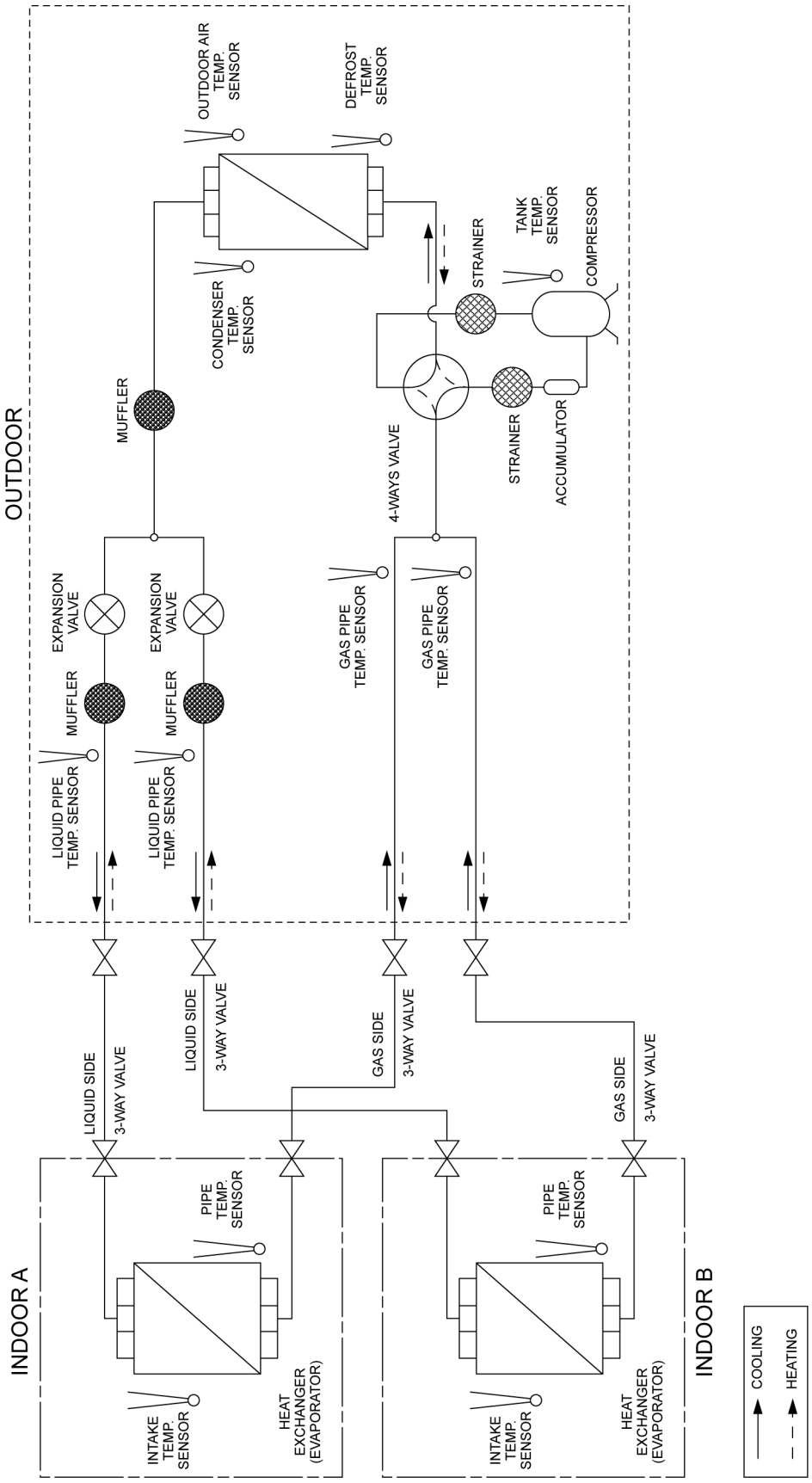


<Side View>

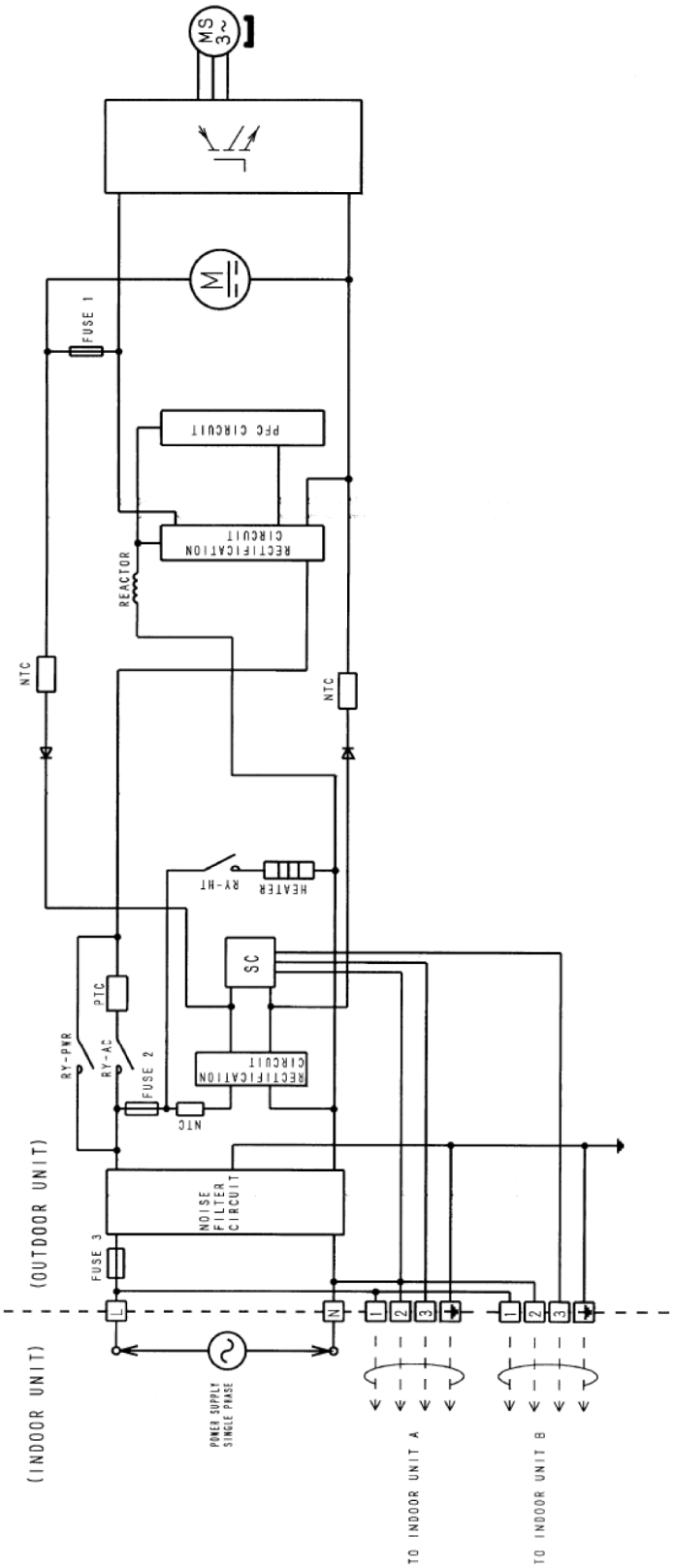


Unit: mm

4. Refrigeration Cycle Diagram



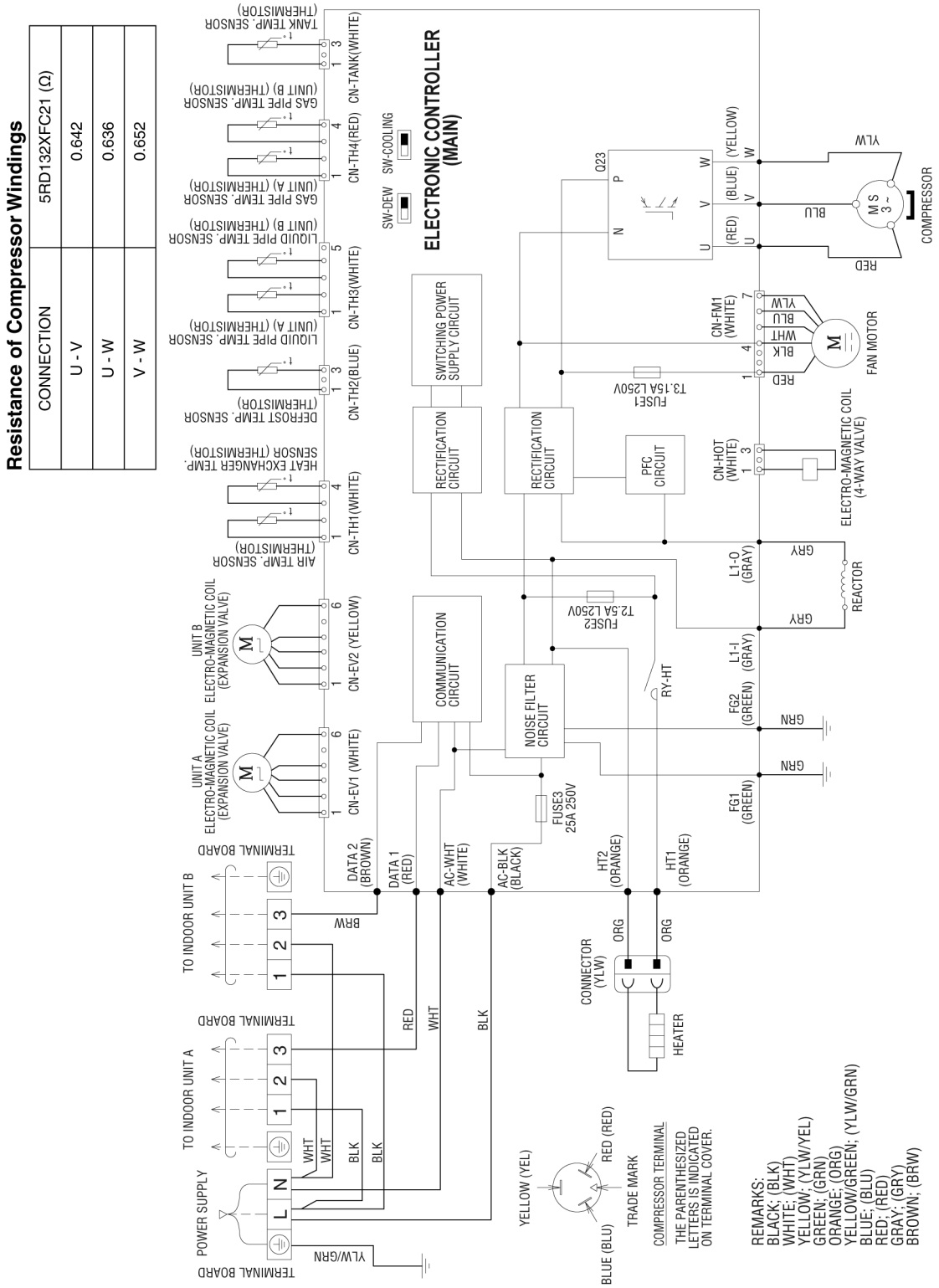
5. Block Diagram



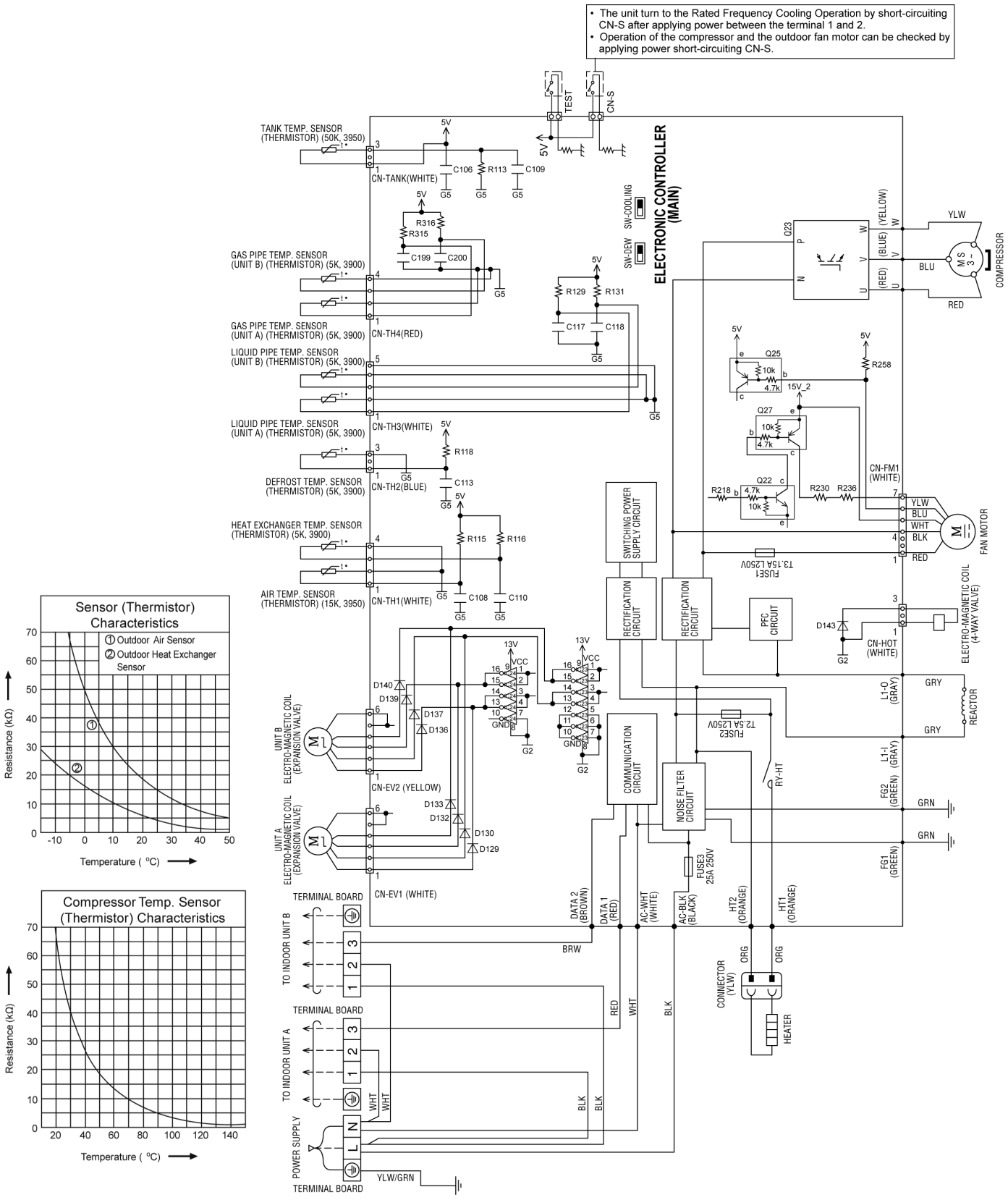
6. Wiring Connection Diagram

Resistance of Compressor Windings

CONNECTION	5RD132XFC21 (Ω)
U - V	0.642
U - W	0.636
V - W	0.652

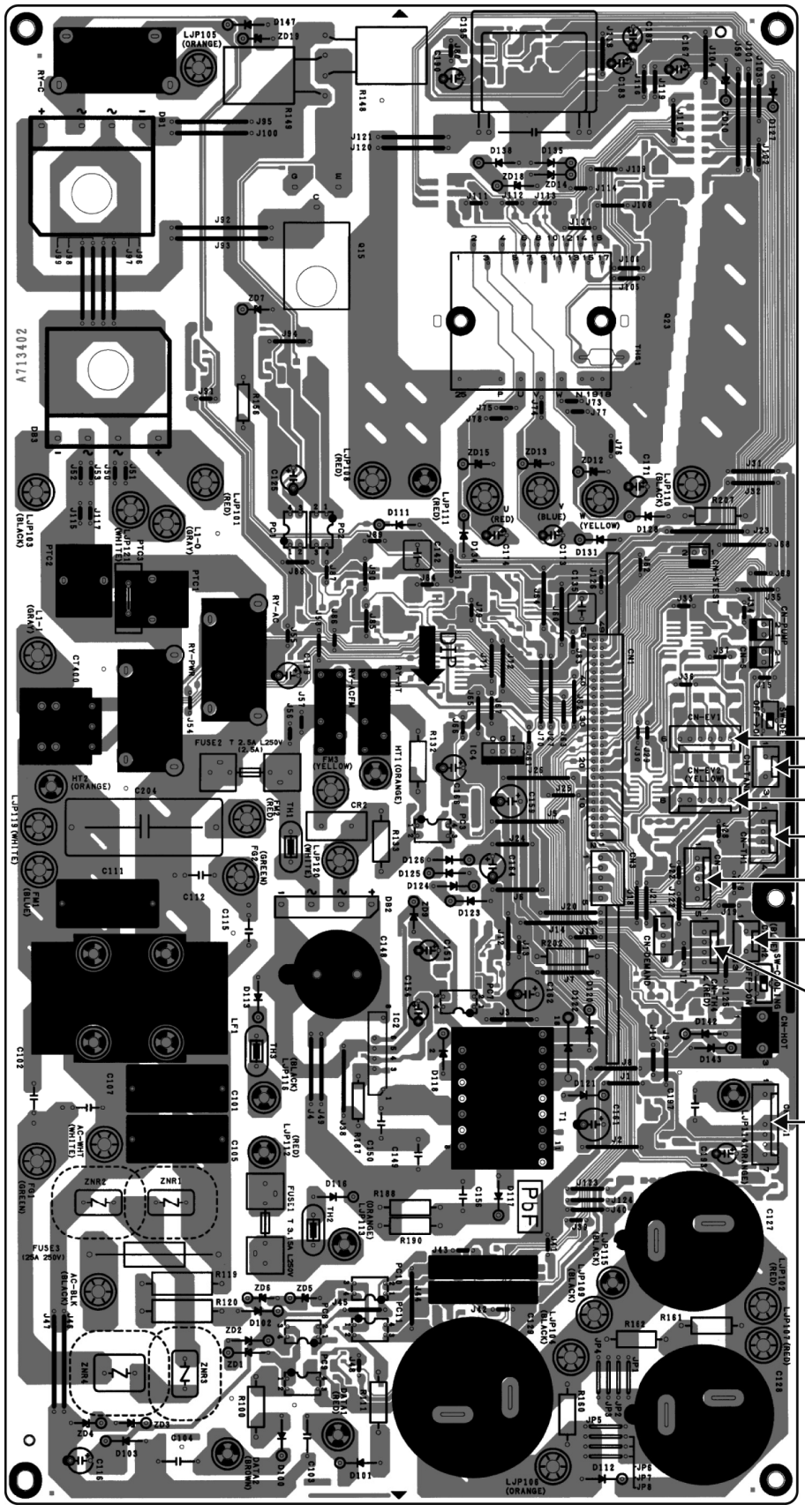


7. Electronic Circuit Diagram

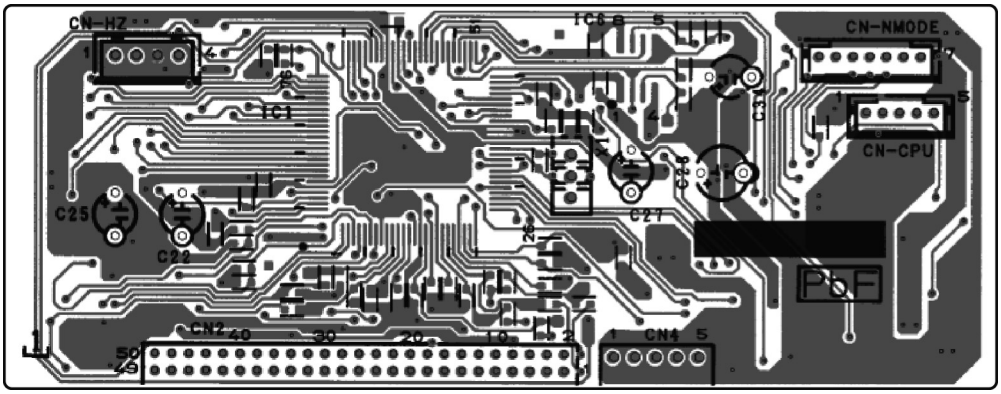


8. Printed Circuit Board

8.1 Main Printed Circuit Board



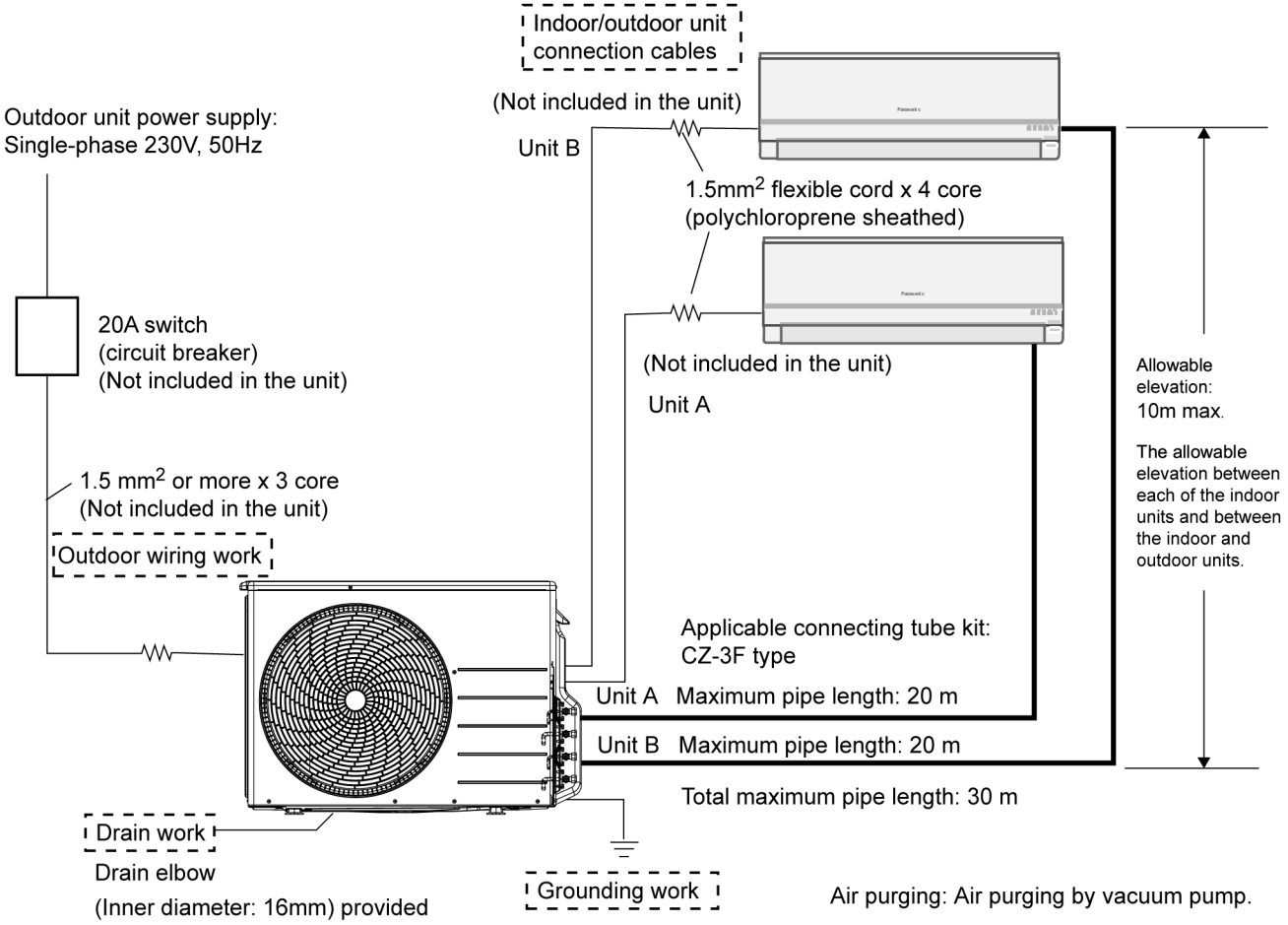
8.2 CPU Printed Circuit Board



9. Installation Information

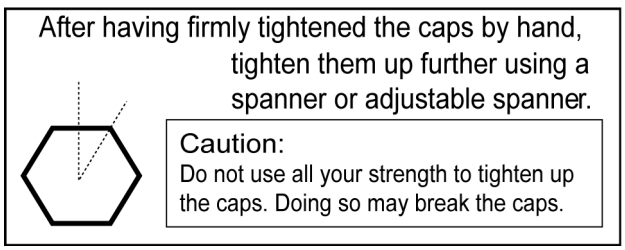
9.1 CU-2E15PBD

9.1.1 Check Points



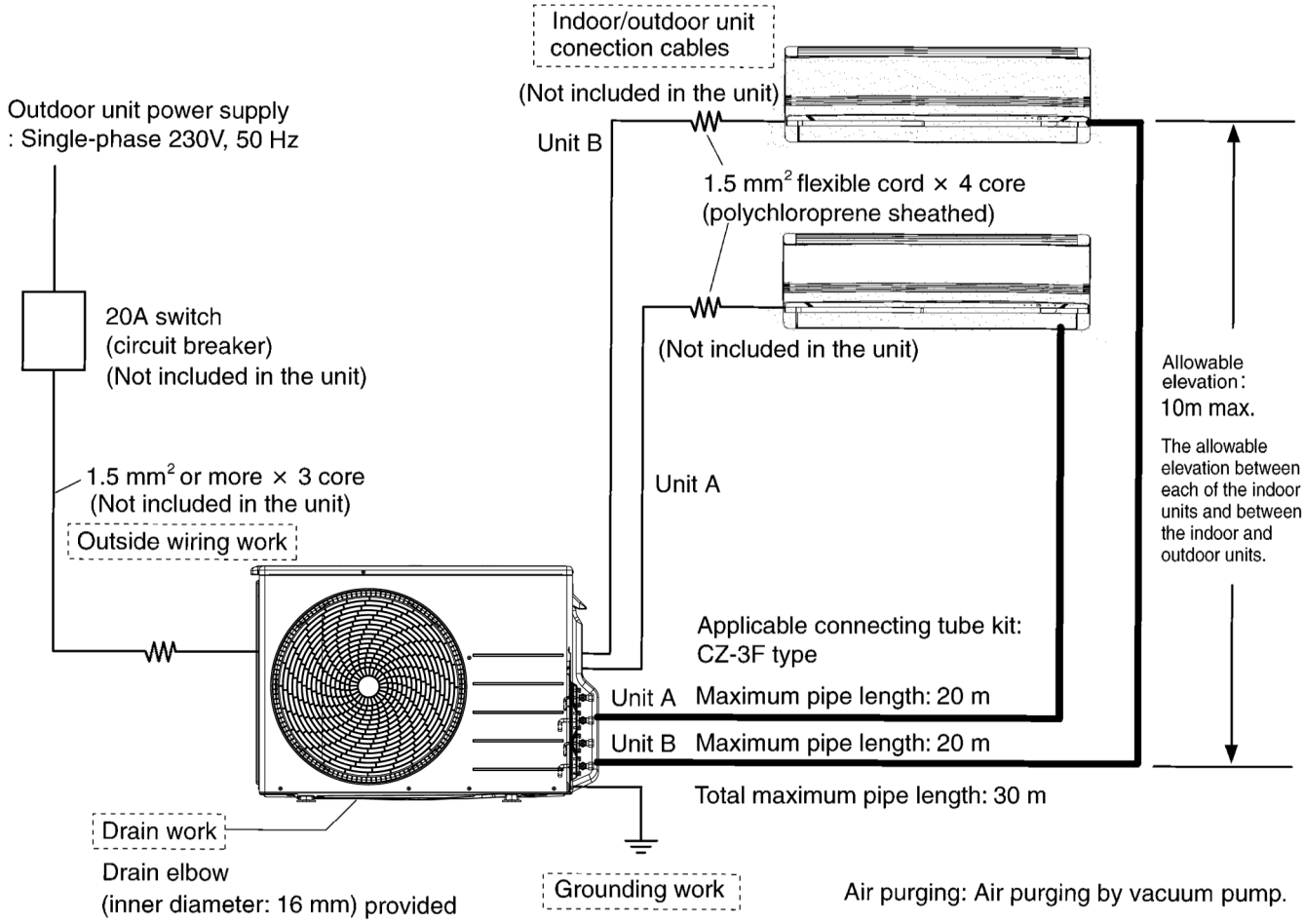
9.1.2 The Shapes of the 3-Way Valve Caps of the Outdoor Unit Have Been Changed

- Accompanying the changes in the shapes of the 3-way valve caps, the tightening method has also been changed.
- Firmly tighten the 3-way valve caps by hand, and then tighten them up by another 30 degrees or so (one-twelfth of a full turn) using a spanner or adjustable spanner.



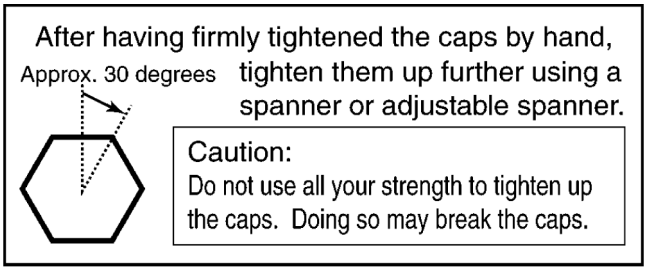
9.2 CU-2E18PBD

9.2.1 Check Points



9.2.2 The Shapes of the 3-Way Valve Caps of the Outdoor Unit Have Been Changed

- Accompanying the changes in the shapes of the 3-way valve caps, the tightening method has also been changed.
- Firmly tighten the 3-way valve caps by hand, and then tighten them up by another 30 degrees or so (one-twelfth of a full turn) using a spanner or adjustable spanner.

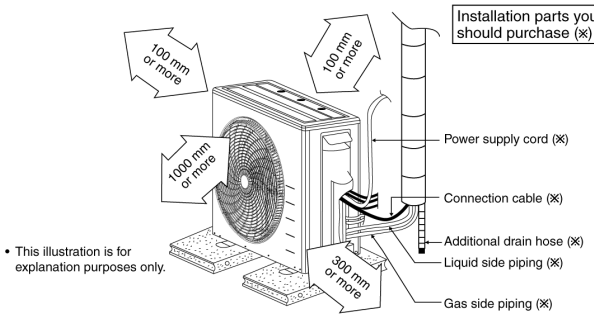


10. Installation Instruction

10.1 Select The Best Location

- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over the [piping length for additional gas], additional refrigerant should be added as shown in the table.

Attached accessories	Qty.
Drain elbow	1
Installation parts you should purchase (※)	



Piping size		Std. Length (m)	Min. Length (m)	Max. total Length (m)	Max. Elevation (m)	Additional gas charge amount (g/m)
Gas 9.52 mm (3/8")	Liquid 6.35 mm (1/4")	5 m / indoor unit	3 m / indoor unit	30	10	15

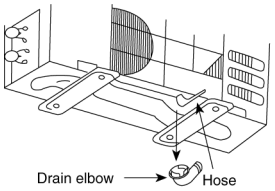
Note:

(1) It is possible to extend the piping length of one unit up to 20 meters.
However, the total piping length must not exceed 30 meters.

(2) If the length exceeds 20 meters, refrigerant of 15g per meter must be added.

10.2 Disposal Of Outdoor Unit Drain Water

- If a drain elbow is used, the unit should be placed on a stand which is taller than 3 cm.
- If the unit is used in an area where temperature falls below 0°C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.

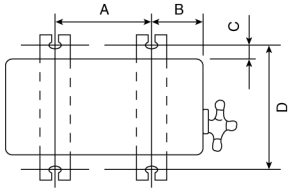


Install the hose at an angle so that the water smoothly flows out.

10.3 Install The Outdoor Unit

- After selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram.
  1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut (ø10 mm).
  2. When installing at roof, please consider strong wind and earthquake.
     Please fasten the installation stand firmly with bolt or nails.

Model	A	B	C	D
2E15***, 2E18***	540 mm	160 mm	18.5 mm	330 mm



10.4 Connect the Piping

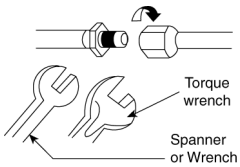
Connecting The Piping To Indoor Unit

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe.
(In case of using long piping)

Connect the piping

- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.

Do not over tighten, over tightening may cause gas leakage.	
Piping size	Torque
6.35 mm (1/4")	[18 N•m (1.8 kgf.m)]
9.52 mm (3/8")	[42 N•m (4.3 kgf.m)]
12.7 mm (1/2")	[55 N•m (5.6 kgf.m)]
15.88 mm (5/8")	[65 N•m (6.6 kgf.m)]
19.05 mm (3/4")	[100 N•m (10.2 kgf.m)]

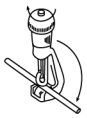


Connecting The Piping To Outdoor Multi

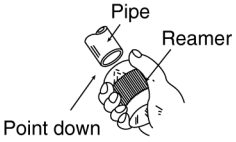
Decide piping length and then cut by using pipe cutter.
Remove burrs from cut edge.
Make flare after inserting the flare nut (locate at valve) onto the copper pipe. Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.

CUTTING AND FLARING THE PIPING

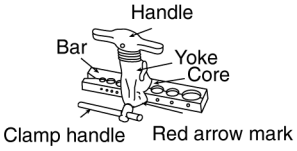
1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.



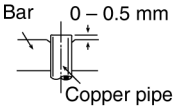
1. To cut

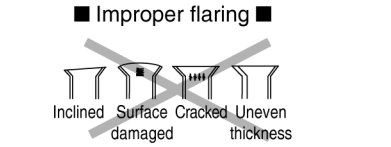


2. To remove burrs



3. To flare

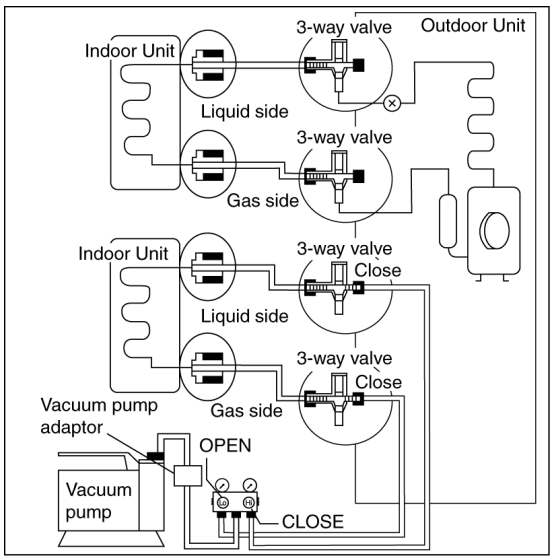




When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

10.5 Evacuation of the Equipment

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.



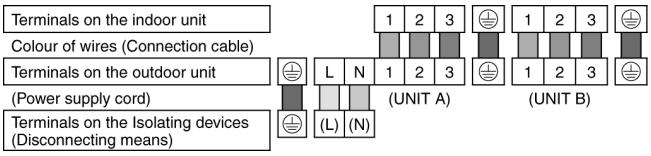
1. Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.
   - Be sure to connect the end of the charging hose with the push pin to the service port.

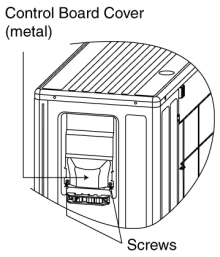
2. Connect the center hose of the charging set to a vacuum pump with check valve, or vacuum pump adaptor.
3. Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air approximately 10 minutes.
4. Close the Low and High side valves of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately 5 minutes.
   Note: BE SURE TO FOLLOW THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
6. Tighten the service port caps of the 3-way valve at a torque of 18 N•m with a torque wrench.
7. Remove the valve caps of the both 3-way valves. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).
8. Mount valve caps onto the both 3-way valves.
   - Be sure to check for gas leakage.

- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step ③ above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step ③.
- If the leak does not stop when the connections are retightened, repair location of leak.
- Do not release refrigerant during piping work for installation and reinstallation.
- Take care of the liquid refrigerant, it may cause frostbite.

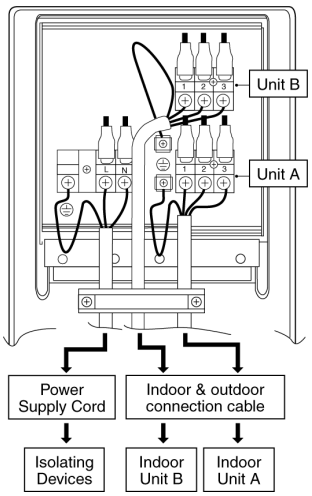
10.6 Connect The Cable To The Outdoor Unit

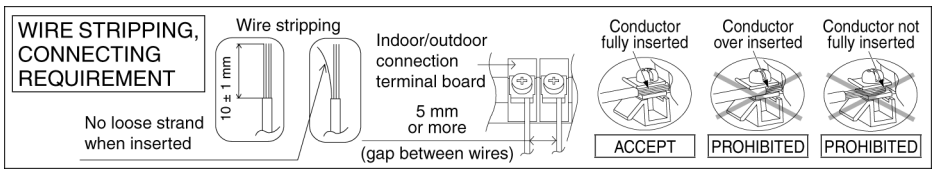
1. Remove the control board cover (metal) from the unit by loosening two screws.
2. Cable connection to the power supply through isolating Devices (Disconnecting means).
   - Connect approved type polychloroprene sheathed **power supply cord** 3 x 1.5 mm^2 type designation 60245 IEC 57 or heavier cord to the terminal board, and connect the others end of the cord to Isolating Devices (Disconnecting means)
3. **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm^2 flexible cord, type designation 60245 IEC 57 or heavier cord.
4. Connect the power supply cord and connecting cable between indoor unit and outdoor unit according to the diagram as shown.





5. Secure the power supply cord and connection cables onto the control board with the holder.
6. Attach the control board cover back to the original position with screw.
7. For wire stripping and connection requirement, refer to the diagram as shown.





⚠ WARNING
⏚ This equipment must be properly earthed.

- Note: Isolating Devices (Disconnecting means) should have minimum 3.0 mm contact gap.
- Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason.

10.7 Piping Insulation

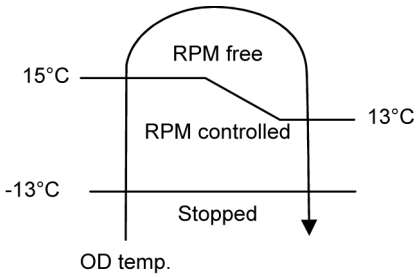
1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6mm or above.

11. Operation Control

11.1 Cooling Operation

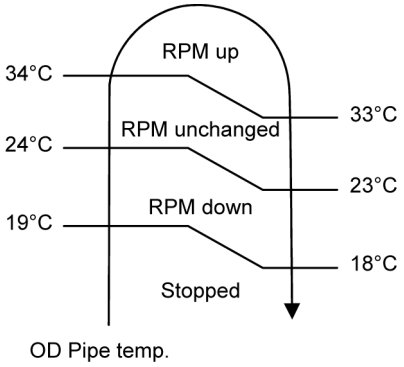
11.1.1 Outdoor fan control

- When cooling operation is enabled, based on outdoor ambient temperature, fan motor control will be adjusted according to figure below:



11.1.2 Annual Cooling control

- This control is to enable cooling operation when outdoor ambient temperature is low.
- Control start conditions:
  - Cooling operation is activated with compressor ON.
  - Outdoor ambient temperature is less than 15°C.
- Control contents:
  - When the above conditions are fulfilled, based on outdoor pipe temperature, the outdoor fan motor will operate according to figure below:



- To improve the judgment accuracy during annual cooling control, outdoor ambient temperature sampling for 2 minutes will be activated every 35 minutes under designated fan speed.
- Control stop conditions:
  - When either one of the start conditions are not complied.

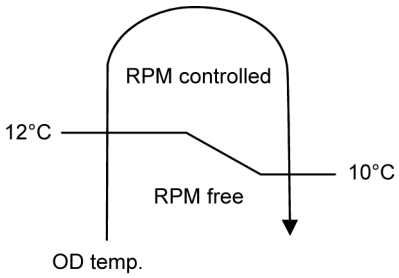
11.1.3 Cooling Powerful Operation 1

- During cooling operation, this control is to concentrate outdoor unit capability to the powerful operation enabled indoor unit by temporary stop the capability supply to low load demand indoor units.
- Operation start condition:
  - Powerful operation ON for targeted indoor unit.
- Operation content:
  - If other indoor units (where Powerful operation are OFF) achieve setting temperature continuously for 1 minute after received powerful command from indoor unit, then capability supply to other indoor units are stopped for minimum 3 minutes.
    Capability supply stop period follows powerful operation period.
- Operation stops when comply either one of the following conditions:
  - When other indoor units (where Powerful operation are OFF) is demand for capacity.
  - When the powerful operation is OFF for all indoor units.
  - When Quiet operation received from 1 indoor unit.
  - When protection control starts.

11.2 Heating Operation

11.2.1 Outdoor fan control

- When heating operation is enabled, based on outdoor ambient temperature, fan motor control will be adjusted according to figure below for Heating overload control:



11.2.2 Heating Room Temp Sampling Control

- To improve the judgment accuracy, indoor room temperature sampling starts when any indoor unit has stopped capability supplied (heating thermo-off) during heating operation with compressor ON, outdoor unit will send signal to all thermo-off indoor units to ON fan motor and get room temperature sample.
- To prevent discharge temperature drop at indoor units which is ON when sampling the room temperature of heating thermo-off units, the compressor frequency is increased accordingly.
- However, if indoor room temperature is much higher compare to remote control setting temperature, before thermo-off, sampling of corresponding indoor unit will be cancelled.

11.2.3 Powerful Operation 2

- During cooling / heating operation, this control is to provide fast cooling / heating operation compare to normal operation.
- Operation start if all condition below are complied:
  - Powerful operation ON for indoor unit.
  - Not under Annual Cooling control.
- Operation content:
  - Outdoor fan speed will adjust automatically.
  - Compressor frequency will adjust automatically.
- Operation stop when comply either one of the follow conditions:
  - When the powerful operation is OFF for all indoor units.
  - When annual cooling control activated.

12. Simultaneous Operation Control

- Operation modes which can be selected using the remote control unit:
  - Automatic, Cooling, Dry, Heating and e-ion operation mode.
- Types of operation modes which can be performed simultaneously
  - Cooling operation and Cooling, Dry or e-ion operation.
  - Heating operation and Heating operation.
- Types of operation modes which cannot be performed simultaneously
  - During cooling operation, heating operation is impossible at another indoor unit in another room.
  - The priority is given to cooling operation if the cooling mode is selected first. In another room where heating mode is selected afterward, the POWER LED blinks to indicate the heating operation is in standby condition, where the fan is stopped hence no discharged air.
  - During heating operation, cooling operation is impossible at another indoor unit in another room.
  - The priority is given to heating operation if the heating mode is selected first. In another room where cooling mode is selected afterward, the POWER LED blinks to indicate the cooling operation is in standby condition, where the fan is stopped hence no discharged air.
- Operation mode priority control
  - The operation mode designated first by the indoor unit has priority.
  - If the priority indoor unit stops operation or initiates the fan operation, the priority is transferred to other indoor units.

"Waiting" denotes the standby status in which the POWER LED blinks (ON for 2.5 seconds and OFF for 0.5 seconds) and the fan is stopped.

ROOM A / ROOM B		Non Priority Unit (2nd ON)			
		Cooling	Dry	Heating	e-ion
Priority Unit (1st ON)	Cooling	C / C	D / C	Waiting / C	E / C
	Dry	C / D	D / D	Waiting / D	E / D
	Heating	Waiting / H	Waiting / H	H / H	Stop / H
	e-ion	C / E	D / E	H / Stop	E / E

In the e-ion mode, priority is transferred to a non-priority unit.
Note

- C: Cooling operation mode
- D: Dry operation mode
- H: Heating operation mode
- E: e-ion operation mode

13. Protection Control

13.1 Freeze Prevention control (Cool)

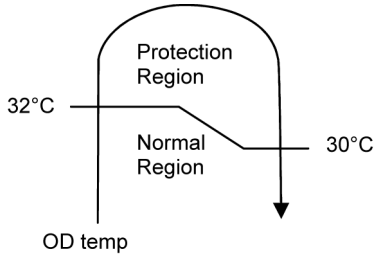
- When received freeze prevention signal from indoor unit, the compressor frequency changes according to indoor heat exchanger temperature.
- When indoor unit request capability OFF due to freeze condition, immediately the capability supply to targeted indoor unit stops.

13.2 Dew Prevention control (Cool)

- When received dew prevention signal from indoor unit, which according to indoor intake temperature and indoor heat exchanger temperature the compressor frequency changes.

13.3 Electronic Parts Temperature Rise Protection 1 (Cool)

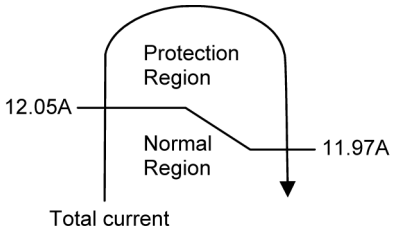
- This control prevents electronic parts temperature rise during cooling overload condition.
- Start conditions:
  - Outdoor ambient temperature is at protection region as shown in figure below:



  - Outdoor unit total current is above 5.0A
- Control content
  - Outdoor fan speed is adjusted accordingly.
- Control stop condition
  - When outdoor ambient temperature is back to normal region.
- During this control, outdoor fan speed does not reduce for Quiet operation.

13.4 Electronic Parts Temperature Rise Protection 2 (Cool)

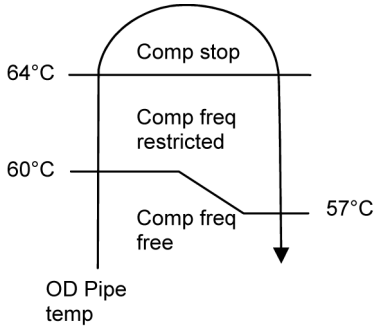
- This control prevents electronic parts temperature rise during cooling/dry operation.
- Start conditions:
  - Total current is at protection region as shown in figure below:



- Control content
  - Outdoor fan speed is adjusted accordingly.
- Control stop conditions
  - When total current is back to normal region.
- During this control, outdoor fan speed does not reduce for Quiet operation.

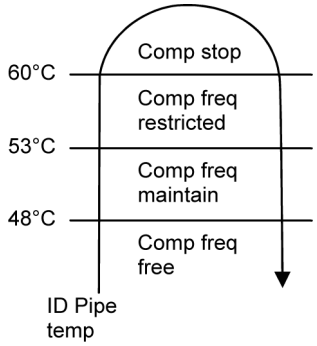
13.5 Cooling overload control (Cool)

- This control detect outdoor pipe temperature and perform the compressor frequency restriction during cooling operation.

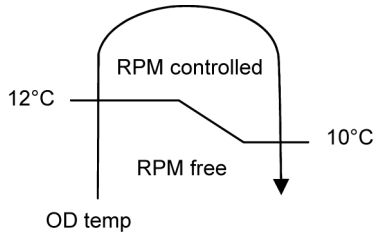


13.6 Heating overload control (Heat)

- This control detect indoor pipe temperature and perform the compressor frequency restriction during heating operation.

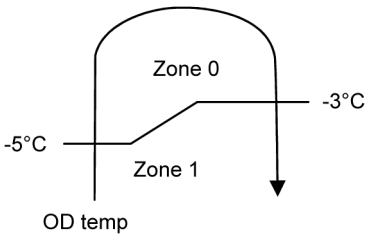


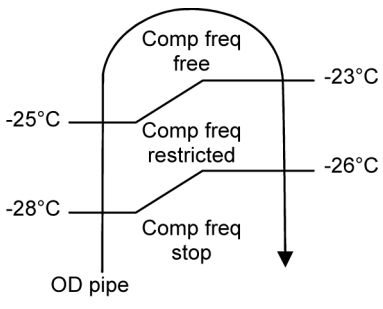
- This control detect outdoor ambient temperature and perform the fan speed adjustment during heating operation.



13.7 Extreme Low Temperature Compressor low pressure protection control (Heat)

- This control is to prevent low pressure drops too low during extremely low outdoor ambient temperature to improve the compressor reliability.
- During heating operation, when outdoor ambient temperature is in Zone 1, this control will be activated. Compressor frequency restriction will be based on outdoor piping temperature.





13.8 Deice Control

- When outdoor pipe temperature and outdoor air temperature is low, deice operation starts where indoor fan motor and outdoor fan motor stop, indoor unit horizontal vane close and operation LED blink with compressor ON.

13.9 Time Delay Safety Control (Restart Control)

- The compressor will not restart within three minutes after compressor is stopped.
- This control is not applicable if the power supply reset or after deice condition.

13.10 30 seconds Force Operation

- Once the compressor starts operation, it will not stop its operation for 30 seconds in order to cycle back compressor oil.
- However, it can be stopped using remote control or Auto OFF/ON button at indoor unit.

13.11 Total Current Control

- By referring to table below, during normal (default) operation, the running current refer to Hi values and during Power Save Mode, the running current refer to Lo values. (not applicable for 2E18/2E15)
- When the outdoor unit total running current (AC) exceeds X value, compressor frequency will decrease.
- If the running current does not exceed X value for 5 seconds, compressor frequency will increase.
- However, if total outdoor unit running current exceeds Y value, compressor will be stopped immediately for 3 minutes.

Operation Mode		CU-2E18PBD		CU-2E15PBD	
		X (A)	Y (A)	X (A)	Y (A)
Cooling/Soft Dry (A)	Hi	10.12	12.54	10.12	12.54
	Lo	-	-	-	-
Cooling/Soft Dry (B)	Hi	8.79	12.54	8.79	12.54
	Lo	-	-	-	-
Heating	Hi	11.04	12.54	11.04	12.54
	Lo	-	-	-	-

13.12 IPM (power transistor) Protection Control

- Overheating Prevention Control
  - If IPM temperature rises to 80°C, outdoor fan speed will be increased.
  - When the IPM temperature rises to 95°C, compressor operation will stop immediately.
  - Compressor operation restarts when temperature decreases to 90°C.
  - If IPM temperature detected less than -30°C, IPM is judged as open circuit (“F96” is indicated).
- DC peak current control
  - When IPM DC current exceeds set value of 30.0 ± 3.0 A, the compressor will stop.
  - If the DC peak current detected within 30 seconds after operation starts, compressor will restart after 1 minute.
  - If the DC peak current detected 30 seconds or more after operation starts, compressor will restart after 2 minutes.
  - Within 30 seconds after compressor restarts, if the DC peak current is exceeded set value continuously for 7 times, all indoor and outdoor relays will be cut off (“F99” is indicated).
- Error reset can be done by power supply reset.

13.13 Compressor Protection Control (Gas leak detection control 1)

- Control start conditions
  - For 5 minutes, the compressor continuously operates and total current is low.
  - During Cooling or Soft Dry operation:
    Indoor intake temperature — indoor piping temperature is below 4°C.
  - During Heating operation:
    Indoor pipe temperature — indoor intake temperature is below 3°C.
  - Not during deice control.
  - Compressor ON with maximum frequency.
- Control content
  - Compressor stops (and restart after 3 minutes)
  - If the conditions above happen 4 times within 60 minutes, the unit will stop operation (“F91” is indicated).

13.14 Compressor Protection Control (Gas leak detection control 2)

- This control detect gas leakage condition to prevent compressor damage.
- Control start condition
  - All connected indoor units capability supply ON.
  - Compressor ON with maximum frequency.
  - Not during annual cooling.
  - Compressor discharge temperature high.
- Control content
  - Compressor OFF during this control (“F91” is memorized in EEPROM)
  - If the above conditions happen 2 times within 60 minutes, indoor units’ Timer LED will blinks (“F91” is indicated at all indoor units)

13.15 Valve close detection control

- This control detects 3-way valve close condition to prevent damage to refrigerant cycle.
- Start conditions:
  - For all connected indoor units, if Indoor intake temperature — indoor piping temperature are between -2°C and 2°C continuously for 5 minutes after compressor ON at first cooling operation.
  - The first cooling operation is defined as cooling operation is ON for less than 8 minutes after new installation or after pump down.
- Control content
  - During this control, compressor stop, indoor units’ Timer LED will blink. (“F91” is indicated at indoor units)
- Error reset can be done by power supply reset or reset by using remote control.

13.16 Compressor discharge high pressure protection control

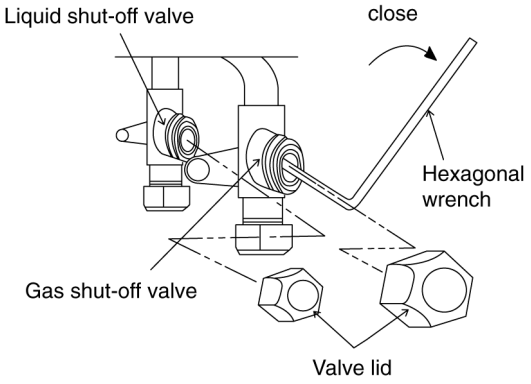
- This control protect by using high pressure switch during operation.
- Start conditions
  - High pressure switch is activated (from normally close to open) when outdoor operation mode is cooling or heating during compressor running.
- Control 1 content
  - Compressor stop when high pressure switch is opened and restart after high pressure switch closed. If this condition happen 4 times within 30 minutes, “F94” is indicated.
  - After 30 minutes, counter is reset if this condition does not happen for 4 times.
- Control 1 stop conditions
  - Power supply reset
  - Reset by using remote control

14. Servicing Mode

14.1 Pump down operation

- Operate the pump down process according to the following procedure
  - Confirm the valve on the liquid side and gas side are open.
  - Short the CN-PUMP button on the Service PCB inside the outdoor unit for more than 5 seconds. Pump down (cooling) operation is performed for 15 minutes.
  - Set the liquid side 3 way valve to close position and wait until the pressure gauge indicates 0.01MPa ($0.1kg/cm^2G$).
  - Immediate set the gas side valve to close position and then Short the CN-PUMP button to stop the pump down operation.

NOTE: Pump down operation will stop automatically after 15 minutes if CN-PUMP button is not shorted again. Pump down operation is not started within 3 minutes after compressor is stopped.



14.2 Cooling only function

- The unit capable to limit the operation mode to Cooling Mode only (Heating mode disabled) by switch to ON (SW-COOLING) at outdoor main PCB before power supply ON.
- This function prevent wrong operation during the unit installed in server room.
- This function could be disabled again by switch to OFF (SW-COOLING) at outdoor main PCB before power supply ON.

15. Troubleshooting Guide

15.1 Self Diagnosis Function

Diagnosis display	Abnormality or protection control	Abnormality judgement	Protection operation	Problem	Check location
H11	Indoor/outdoor abnormal communication	After operation for 1 minute	Indoor fan only operation can start by entering into force cooling operation	Indoor/outdoor communication not establish	• Indoor/outdoor wire terminal • Indoor/outdoor PCB • Indoor/outdoor connection wire
H12	Indoor unit capacity unmatched	90s after power supply	—	Total indoor capability more than maximum limit or less than minimum limit, or number of indoor unit less than two.	• Indoor/outdoor connection wire • Indoor/outdoor PCB • Specification and combination table in catalogue
H15	Compressor temperature sensor abnormality	Continuous for 5s	—	Compressor temperature sensor open or short circuit	• Compressor temperature sensor lead wire and connector
H16	Outdoor current transformer (CT) abnormality	—	—	Current transformer faulty or compressor faulty	• Outdoor PCB faulty or compressor faulty
H27	Outdoor air temperature sensor abnormality	Continuous for 5s	—	Outdoor air temperature sensor open or short circuit	• Outdoor air temperature sensor lead wire and connector
H28	Outdoor heat exchanger temperature sensor 1 abnormality	Continuous for 5s	—	Outdoor heat exchanger temperature sensor 1 open or short circuit	• Outdoor heat exchanger temperature sensor 1 lead wire and connector
H32	Outdoor heat exchanger temperature sensor 2 abnormality	Continuous for 5s	—	Outdoor heat exchanger temperature sensor 2 open or short circuit	• Outdoor heat exchanger temperature sensor 2 lead wire and connector
H33	Indoor / outdoor misconnection abnormality	—	—	Indoor and outdoor rated voltage different	• Indoor and outdoor units check
H36	Outdoor gas pipe temperature sensor abnormality	Continuous for 5s	Heating protection operation only	Outdoor gas pipe temperature sensor open or short circuit	• Outdoor gas pipe temperature sensor lead wire and connector
H37	Outdoor liquid pipe temperature sensor abnormality	Continuous for 5s	Cooling protection operation only	Outdoor liquid pipe temperature sensor open or short circuit	• Outdoor liquid pipe temperature sensor lead wire and connector
H64	Outdoor high pressure sensor abnormality	Continuous for 1 minutes	—	High pressure sensor open circuit during compressor stop	• High pressure sensor • Lead wire and connector
H97	Outdoor fan motor mechanism lock	2 times happen within 30 minutes	—	Outdoor fan motor lock or feedback abnormal	• Outdoor fan motor lead wire and connector • Fan motor lock or block
H98	Indoor high pressure protection	—	—	Indoor high pressure protection (Heating)	• Check indoor heat exchanger • Air filter dirty • Air circulation short circuit
H99	Indoor operating unit freeze protection	—	—	Indoor freeze protection (Cooling)	• Check indoor heat exchanger • Air filter dirty • Air circulation short circuit
F11	4-way valve switching abnormality	4 times happen within 30 minutes	—	4-way valve switching abnormal	• 4-way valve • Lead wire and connector.

Diagnosis display	Abnormality or protection control	Abnormality judgement	Protection operation	Problem	Check location
F17	Indoor standby units freezing abnormality	3 times happen within 40 minutes	—	Wrong wiring and connecting pipe, expansion valve leakage.	• Check indoor/outdoor connection wire and pipe • Indoor heat exchanger sensor lead wire and connector • Expansion valve lead wire and connector.
F90	Power factor correction (PFC) circuit protection	4 times happen within 20 minutes	—	Power factor correction circuit abnormal	• Outdoor PCB faulty
F91	Refrigeration cycle abnormality	4 times happen within 60 minutes	—	Refrigeration cycle abnormal	• Insufficient refrigerant or valve close
F93	Compressor abnormal revolution	4 times happen within 20 minutes	—	Compressor abnormal revolution	• Power transistor module faulty or compressor lock
F94	Compressor discharge pressure overshoot protection	4 times happen within 30 minutes	—	Compressor discharge pressure overshoot	• Check refrigeration system
F95	Outdoor cooling high pressure protection	4 times happen within 20 minutes	—	Cooling high pressure protection	• Check refrigeration system • Outdoor air circuit
F96	Power transistor module overheating protection	4 times happen within 30 minutes	—	Power transistor module overheat	• PCB faulty • Outdoor air circuit (fan motor)
F97	Compressor overheating protection	3 times happen within 30 minutes	—	Compressor overheat	• Insufficient refrigerant
F98	Total running current protection	3 times happen within 20 minutes	—	Total current protection	• Check refrigeration system • Power source or compressor lock
F99	Outdoor direct current (DC) peak detection	Continuous happen for 7 times	—	Power transistor module current protection	• Power transistor module faulty or compressor lock

16. Disassembly and Assembly Instructions

WARNING

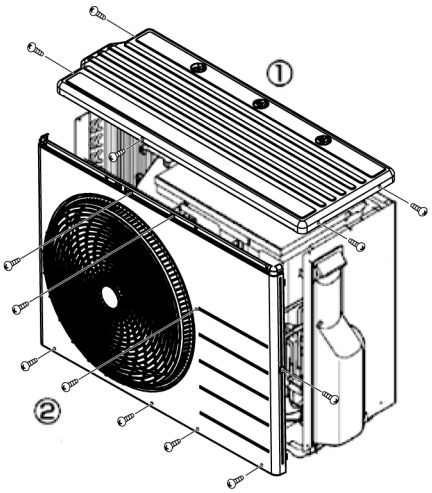
High voltages are generated in the electrical parts area by the capacitor. Ensure that the capacitor has discharged sufficiently before proceeding with repair work. Failure to heed this caution may result in electric shocks.

16.1 Outdoor Unit Removal Procedure

⚠ Caution! When handling electronic controller, be careful of electrostatic discharge.

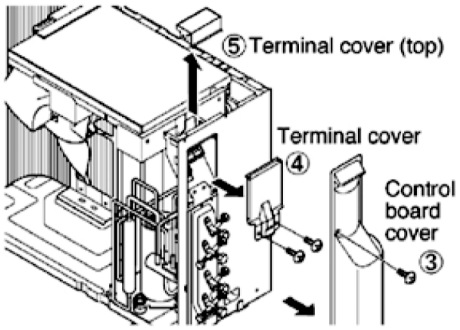
16.1.1 Removing the Cabinet Top Plate and Cabinet Front Plate

1. Remove the cabinet top plate (by removing the 5 screws).
2. Remove the 8 screws fixing the cabinet front plate, release 6 hooks and pull the cabinet front plate toward front side.



16.1.2 Removing the Control Board Cover

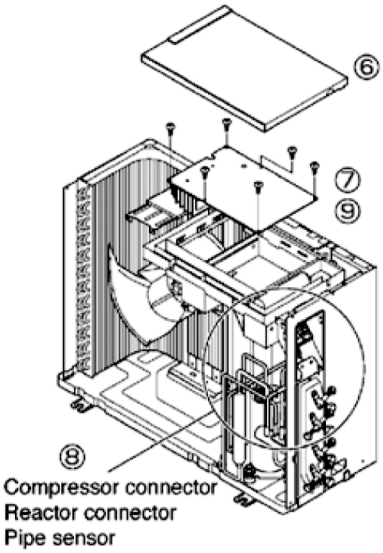
3. Remove the control board cover (remove 1 screw).
4. Remove the terminal cover (remove 2 screws).
5. Remove the terminal cover (top) and disconnect all the lead wires (3 fasten tab) inside.



16.1.3 Removing the Control Board

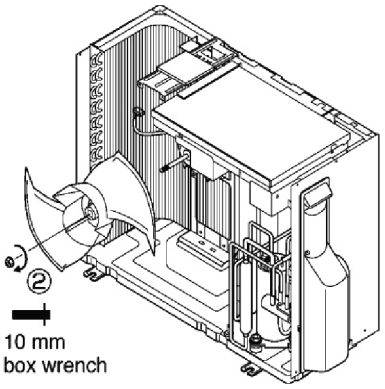
6. Remove the control board cover.
7. Remove the 6 screws at the positions on the control board indicated by arrows.
8. Disconnect the connectors and pipe sensor connected to the compressor and reactor.
9. Remove the control board.

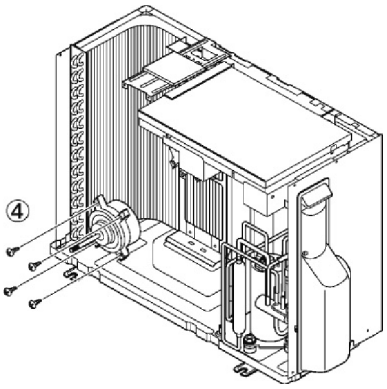
   When pulling the control board upward, it may not be possible to remove it because of the way in which the ground wire and other wires are routed. In this case, it is removed after the control board cover itself has been removed.



16.1.4 Removing the Propeller Fan and Fan Motor

1. Remove the cabinet top plate and cabinet front plate.
2. Remove the propeller fan by removing the nut turning clockwise at its center.
3. Disconnect the connector of the fan motor from the control board.
4. Loosen the 4 screws at the fan motor mounting then remove the fan motor.





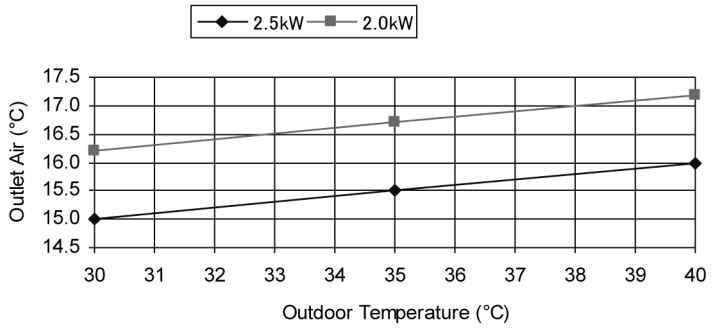
17. Technical Data

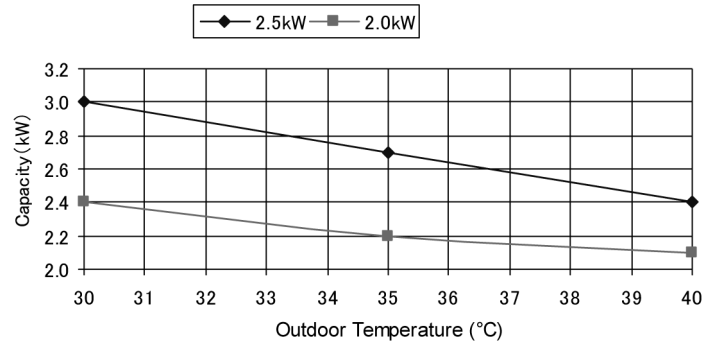
17.1 Operation Characteristics (CU-2E15PBD)

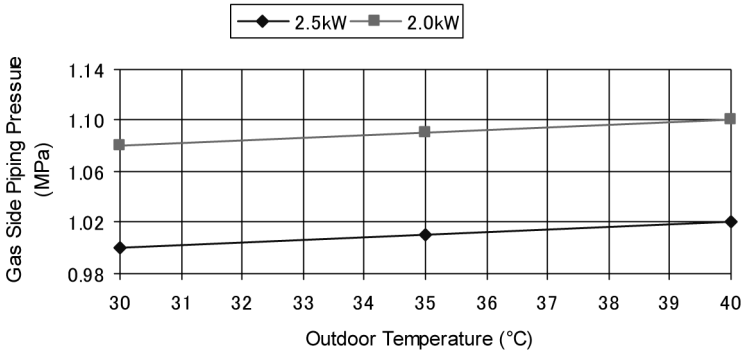
17.1.1 One Indoor Unit Operation

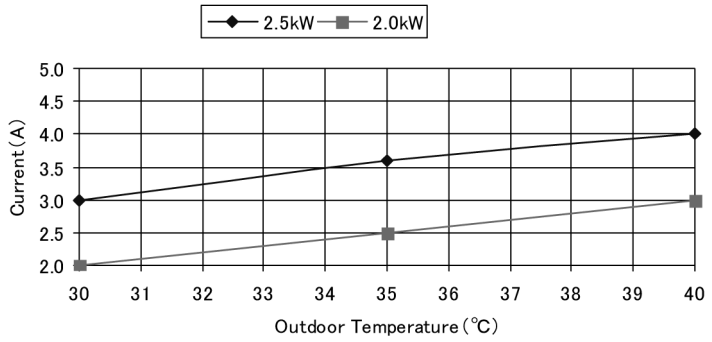
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5m



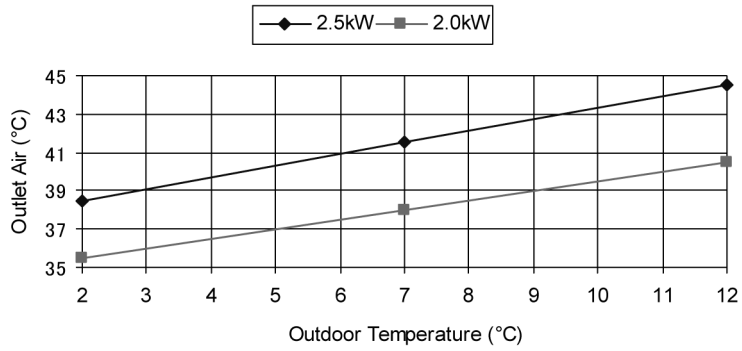


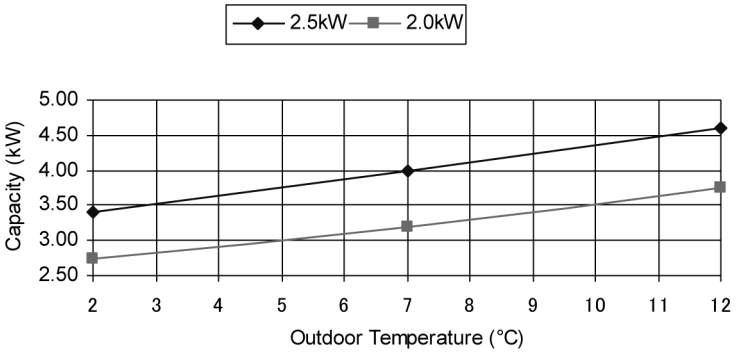


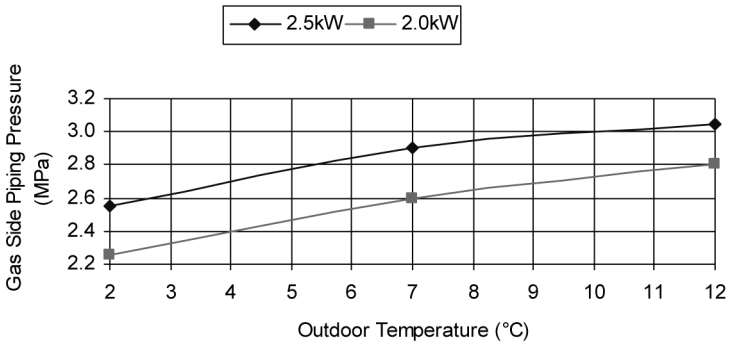


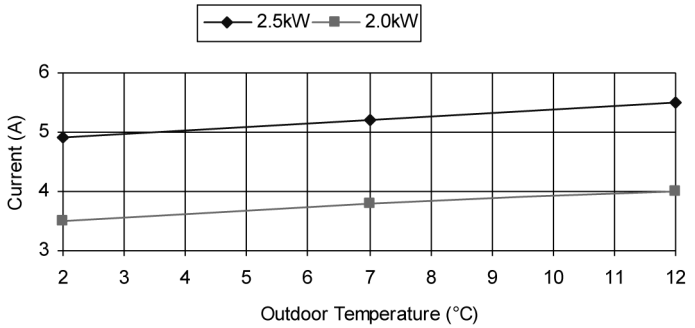
• Heating Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5m





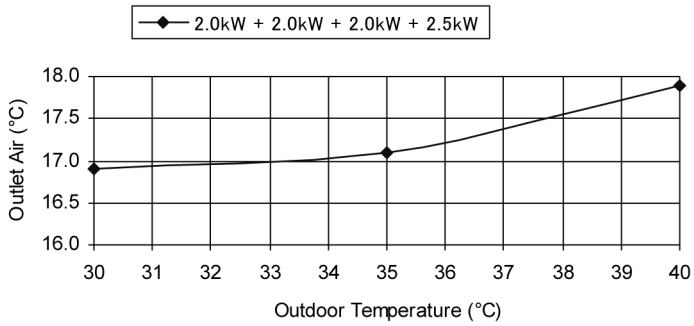


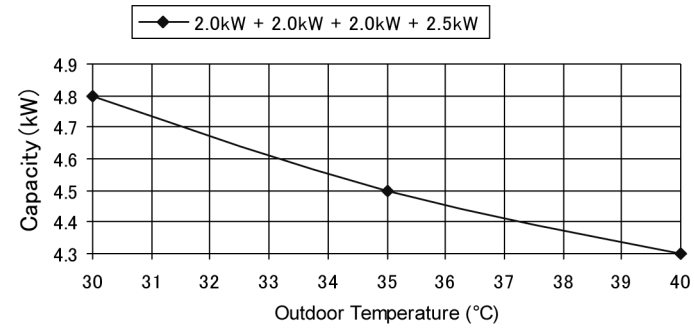


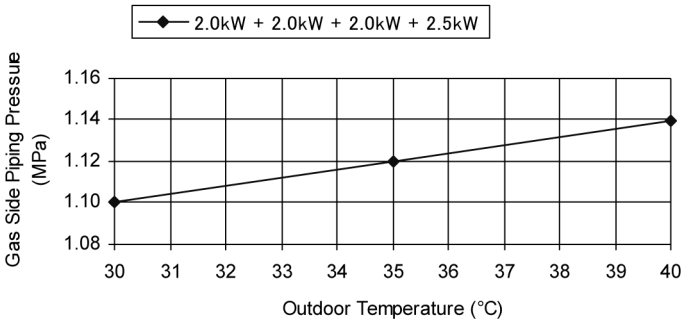
17.1.2 Two Indoor Unit Operation

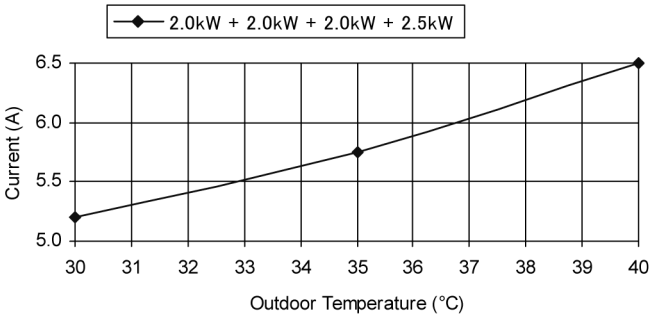
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping Length: 5m



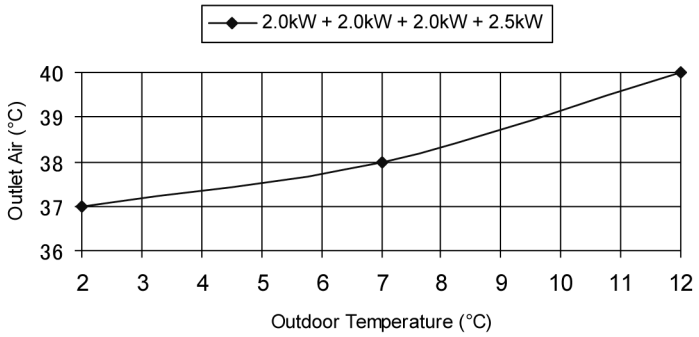


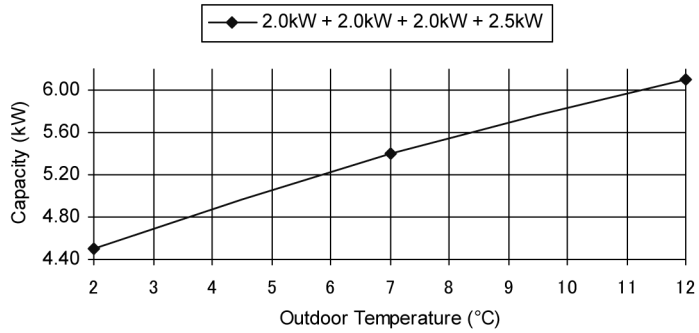


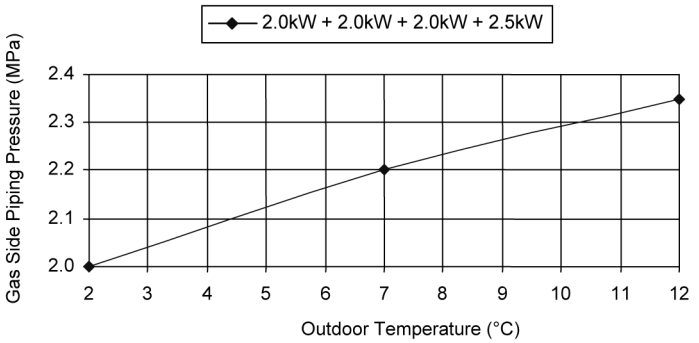


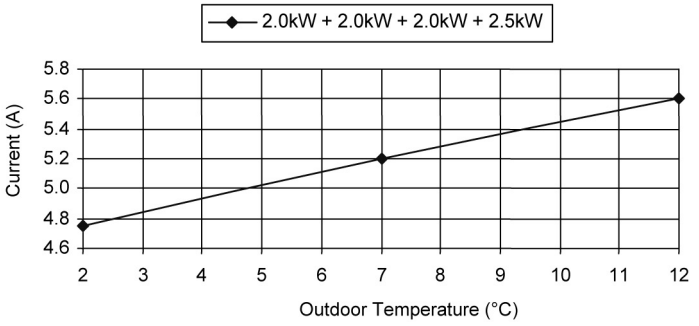
• Heating Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5m







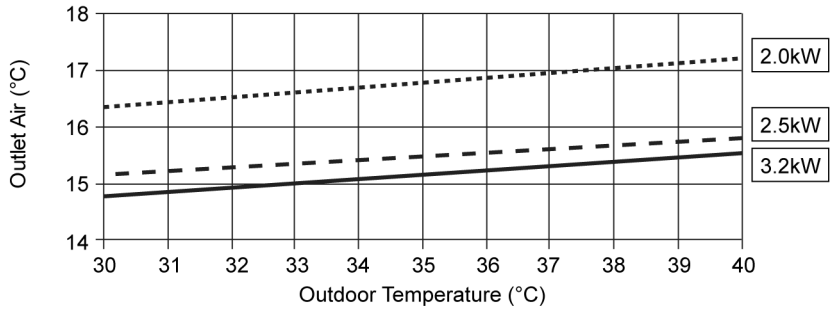


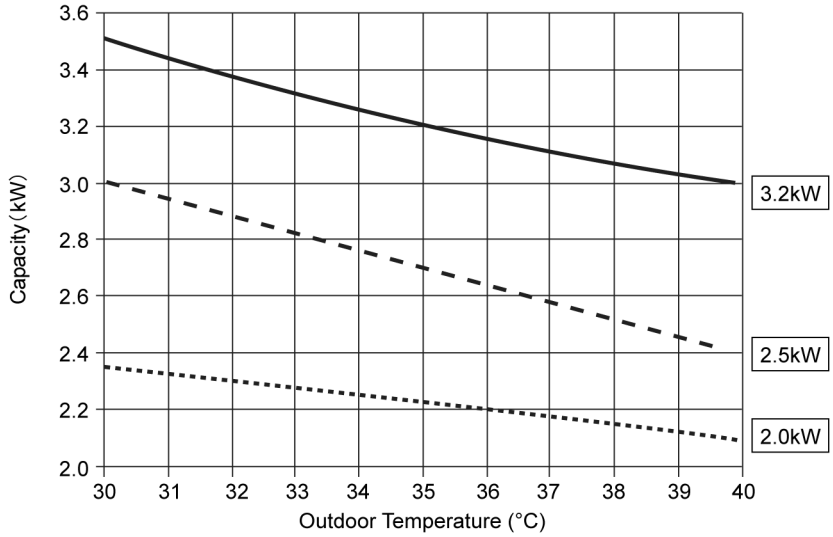
17.2 Operation Characteristics (CU-2E18PBD)

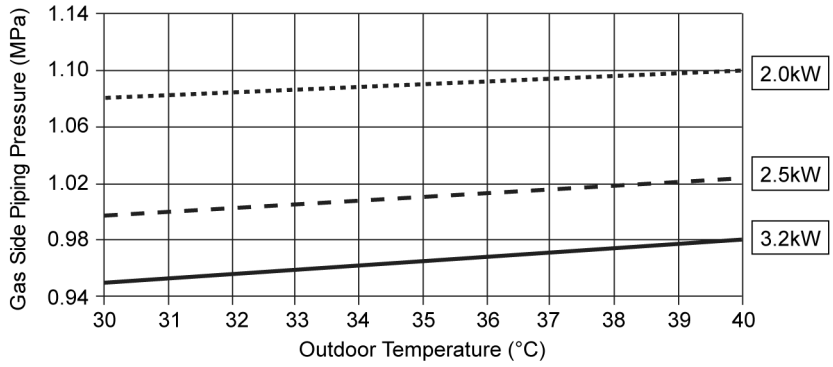
17.2.1 One Indoor Unit Operation

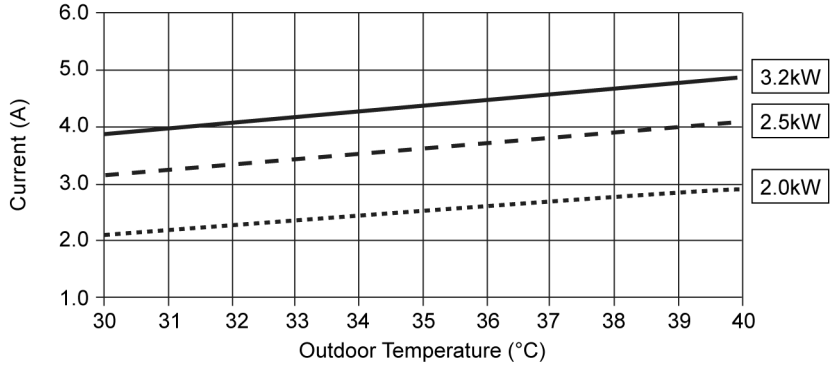
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5m



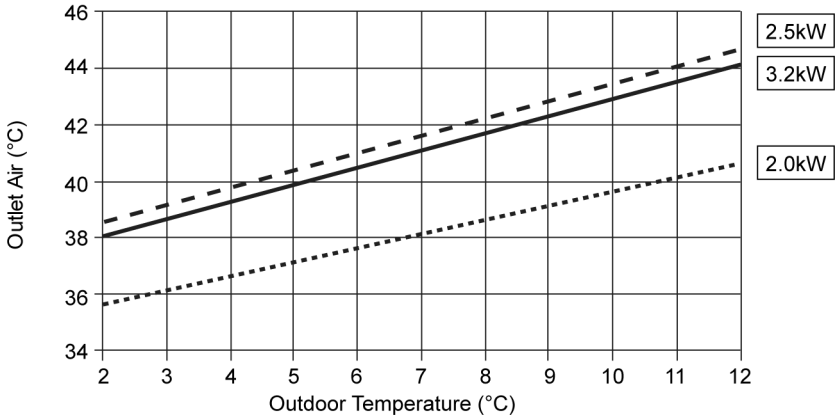


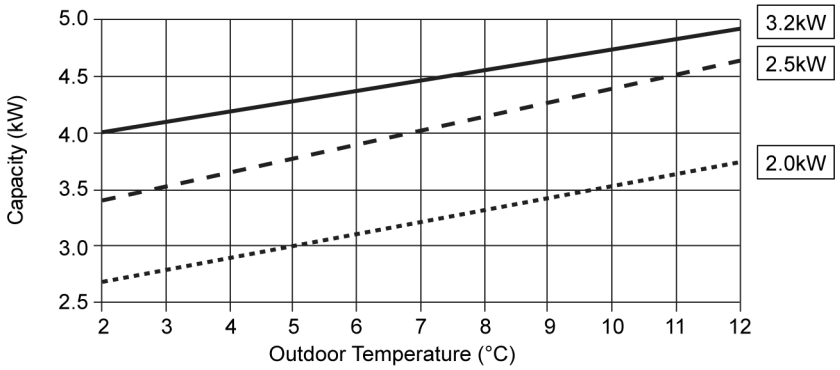


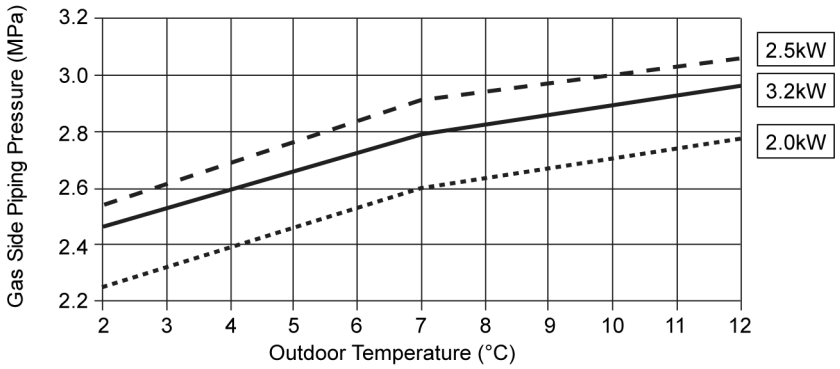


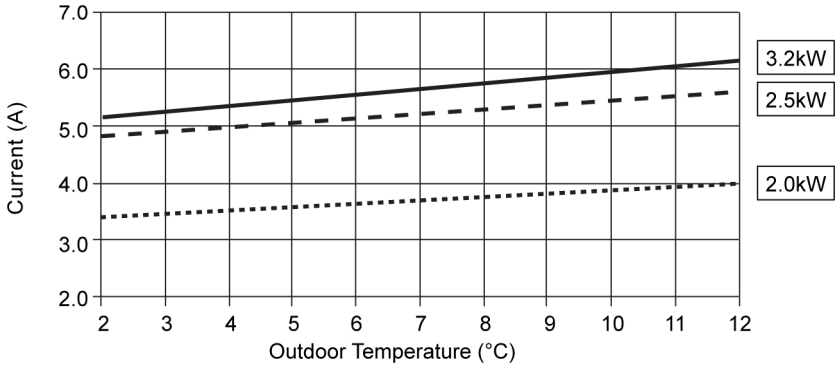
• Heating Characteristic

[Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: At high fan
Piping length: 5m





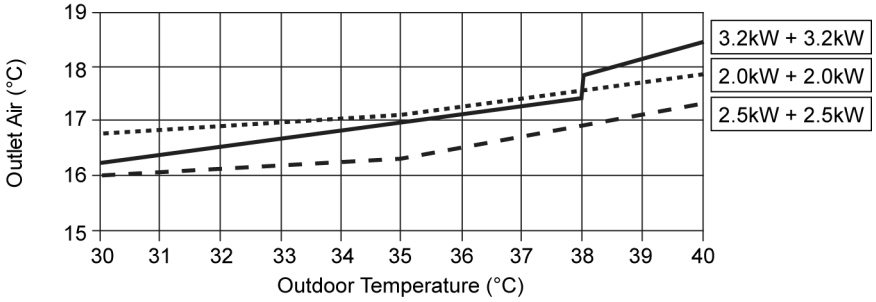


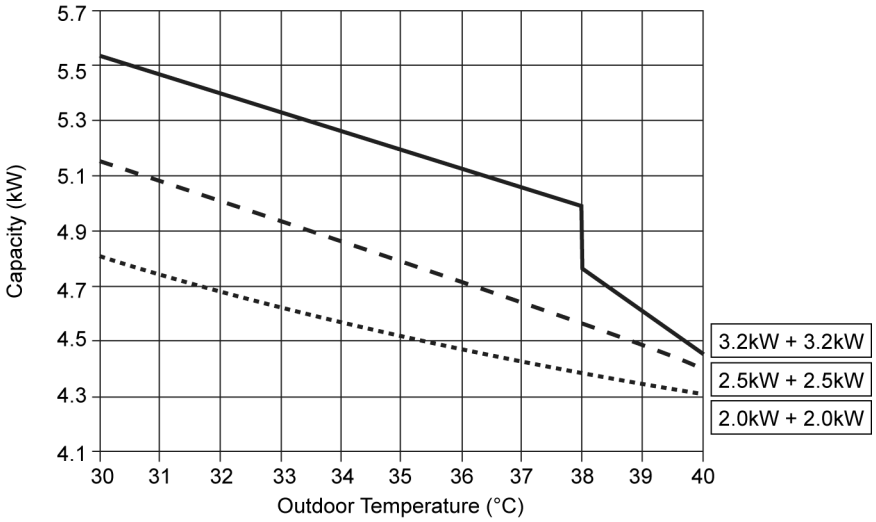


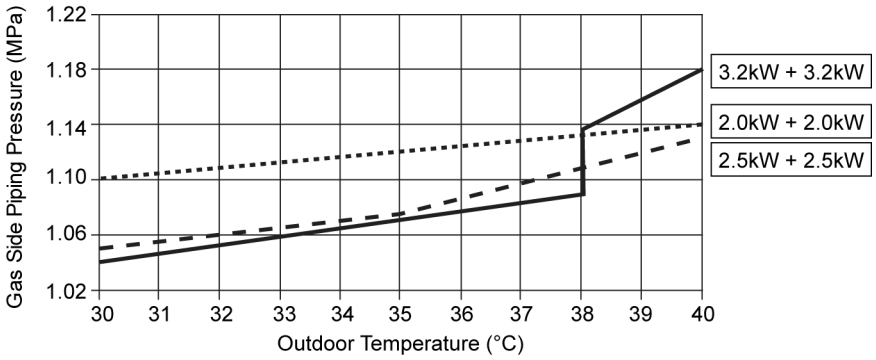
17.2.2 Two Indoor Unit Operation

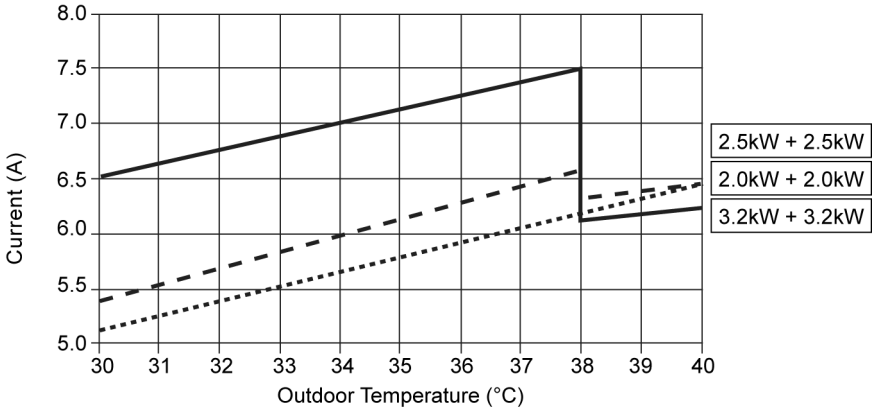
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 5m



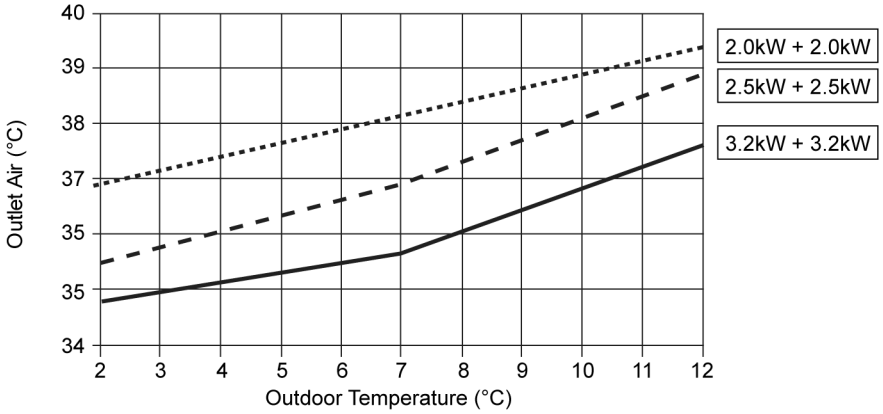


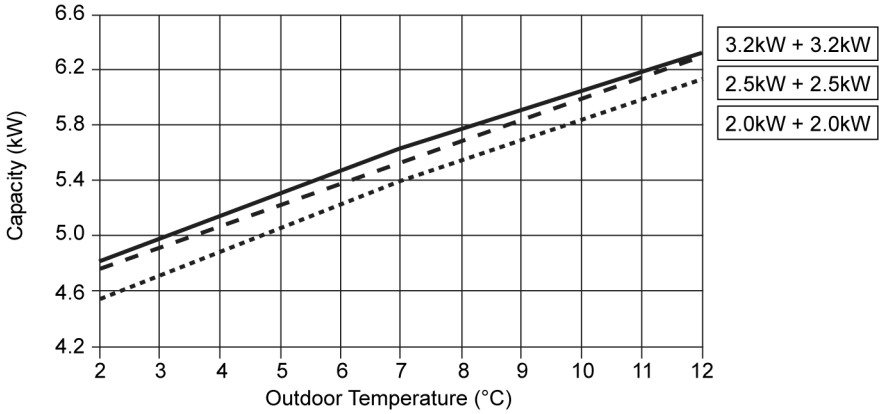


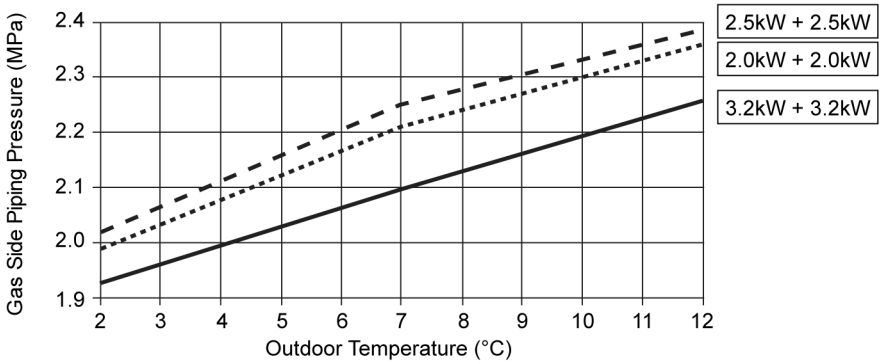


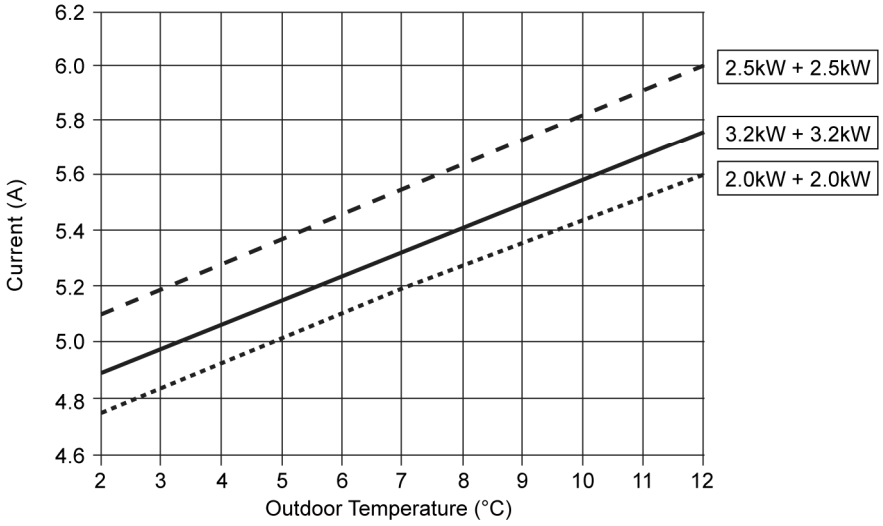
• Heating Characteristic

[Condition] Room temperature: 20°C (DBT), 12°C (WBT)
Operation condition: At high fan
Piping length: 5m

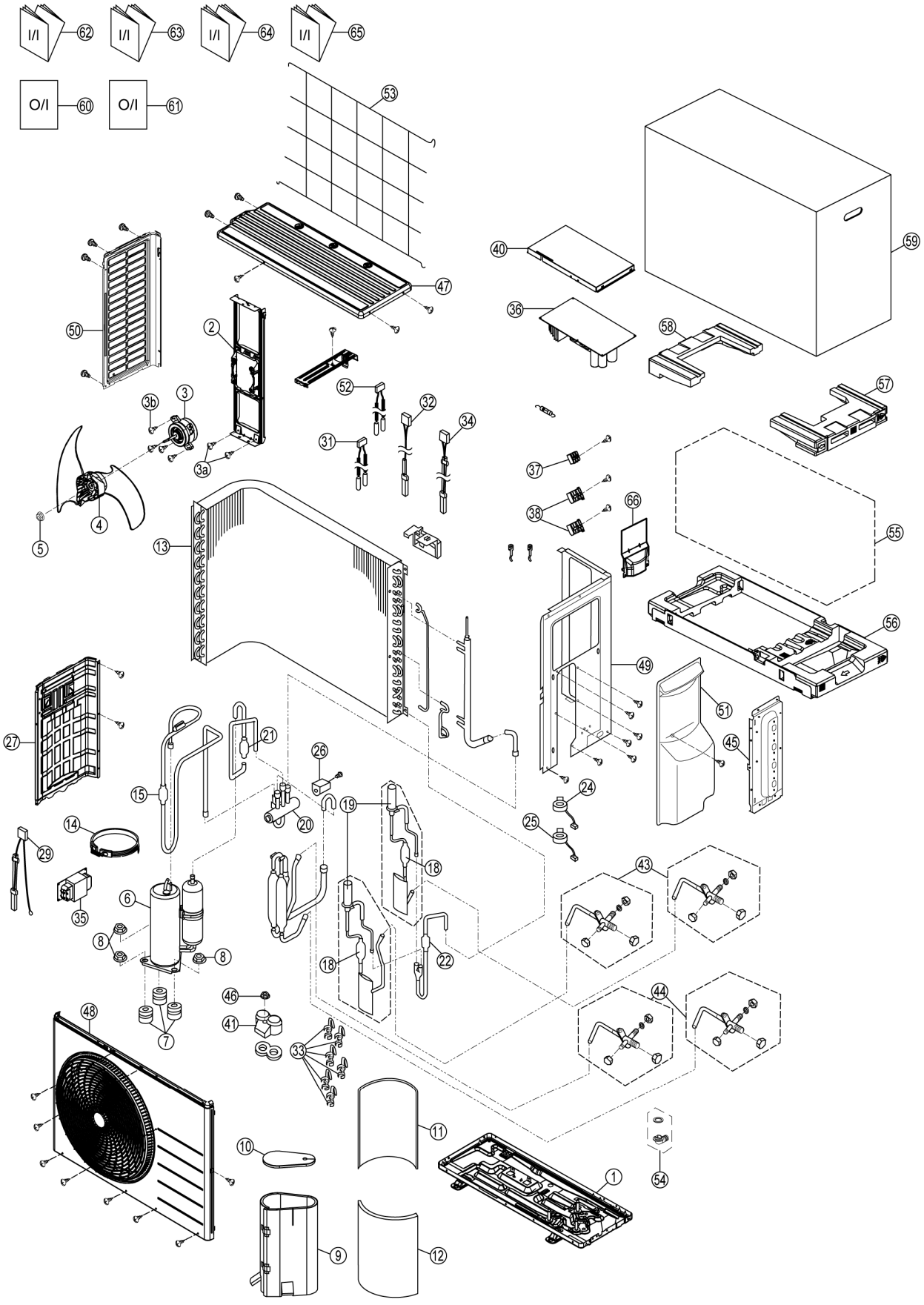








18. Exploded View and Replacement Parts List



Note
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

SAFETY	REF. NO.	DESCRIPTION & NAME	Q'TY	CU-2E15PBD	CU-2E18PBD	REMARK
	1	CHASSIS ASSY	1	CWD52K1277	←	
	2	FAN MOTOR BRACKET	1	CWD541167	←	
⚠	3	FAN MOTOR, AC 50W SINGLE	1	ARW6405AC	←	O
	3a	SCREW-FAN MOTOR BRACKET	2	CWH551217	←	
	3b	SCREW-FAN MOTOR MOUNT	4	CWH55252J	←	
	4	PROPELLER FAN	1	CWH03K1066	←	
	5	NUT - PROPELLER FAN	1	CWH56053J	←	
⚠	6	COMPRESSOR	1	5RD132XFC21	←	O
	7	ANTI - VIBRATION BUSHING	3	CWH50077	←	
	8	NUT - COMPRESSOR	3	CWH56000J	←	
	9	SOUND PROOF MATERIAL	1	CWG302808	←	
	10	SOUND PROOF MATERIAL	1	CWG302630	←	
	11	SOUND PROOF MATERIAL	1	CWG302806	←	
	12	SOUND PROOF MATERIAL	1	CWG302807	←	
	13	CONDENSER COMPLETE	1	CWB32C3795	←	
	14	CRANKCASE HEATER	1	CWA341044	←	
	15	RECEIVER	1	CWB14011	←	
	18	STRAINER	2	CWB111024	←	
	19	EXPANSION VALVE	2	CWB051029	←	O
	20	4-WAYS VALVE	1	CWB001064	←	O
	21	STRAINER	1	CWB111004	←	
	22	STRAINER	1	CWB111080	←	
⚠	24	V-COIL COMPLETE (EXPAND VALVE-WHITE)	1	CWA43C2579	←	O
⚠	25	V-COIL COMPLETE (EXPAND VALVE-YELLOW)	1	CWA43C2580	←	O
⚠	26	V-COIL COMPLETE (4 WAY VALVE)	1	CWA43C2585	←	O
	27	SOUND-PROOF BOARD	1	CWH151366	←	
	29	SENSOR-COMPLETE - INTAKE & PIPE (CN-TH1)	1	CWA50C3078	←	O
	31	SENSOR-COMPLETE – GAS (CN-TH4)	1	CWA50C3070	←	O
	32	SENSOR-COMPLETE - DEF. (CN-TH2)	1	CWA50C3069	←	O
	33	HOLDER-SENSOR	6	CWH32143	←	
	34	SENSOR-COMPLETE - TANK	1	CWA50C2894	←	O
	35	NORMAL-MODE LINE CHOKE COILS	1	G0C193J00004	←	O
⚠	36	ELECTRONIC CONTROLLER	1	CWA73C7705R	CWA73C7704R	O
⚠	37	TERMINAL BOARD ASS'Y (L, N)	1	CWA28K1162	←	O
⚠	38	TERMINAL BOARD ASS'Y (1, 2, 3)	2	CWA28K1161	←	O
	40	CONTROL BOARD COVER	1	CWH131473	←	
	41	TERMINAL COVER	1	CWH171039A	←	
	43	3-WAY VALVE (LIQUID)	2	CWB011418	←	O
	44	3-WAY VALVE (GAS)	2	CWB011081J	←	O
	45	HOLDER COUPLING	1	CWH351253	←	
	46	NUT - TERMINAL COVER	1	CWH7080300J	←	
	47	CABINET TOP PLATE	1	CWE031148A	←	
	48	CABINET FRONT PLATE CO.	1	CWE06C1468	←	
	49	CABINET SIDE PLATE COMP	1	CWE04C1453	←	
	50	CABINET SIDE PLATE	1	CWE041579A	←	
	51	CONTROL BOARD COVER COMPLETE	1	CWH13C1300	←	
	52	SENSOR-COMPLETE – LIQUID (CN-TH3)	1	CWA50C3071	←	O
	53	WIRE NET	1	CWD041200A	←	
	54	BAG-COMPLETE	1	CWG87C900	←	
	55	BAG	1	CWG861078	←	
	56	BASE BOARD-COMPLETE	1	CWG62C1144	←	
	57	SHOCK ABSORBER (R)	1	CWG713415	←	
	58	SHOCK ABSORBER (L)	1	CWG713416	←	
	59	C.C. CASE	1	CWG569609	CWG569610	
	60	OPERATING INSTRUCTION	1	CWF569016	←	

SAFETY	REF. NO.	DESCRIPTION & NAME	Q'TY	CU-2E15PBD	CU-2E18PBD	REMARK
	61	OPERATING INSTRUCTION	1	CWF569017	←	
	62	INSTALLATION INSTRUCTION	1	CWF615858	←	
	63	INSTALLATION INSTRUCTION	1	CWF615859	←	
	64	INSTALLATION INSTRUCTION	1	CWF615885	←	
	65	INSTALLATION INSTRUCTION	1	CWF615886	←	
	66	CONTROL BOARD COVER	1	CWH131595	←	

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.

[PAPAMY] Printed in Malaysia
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