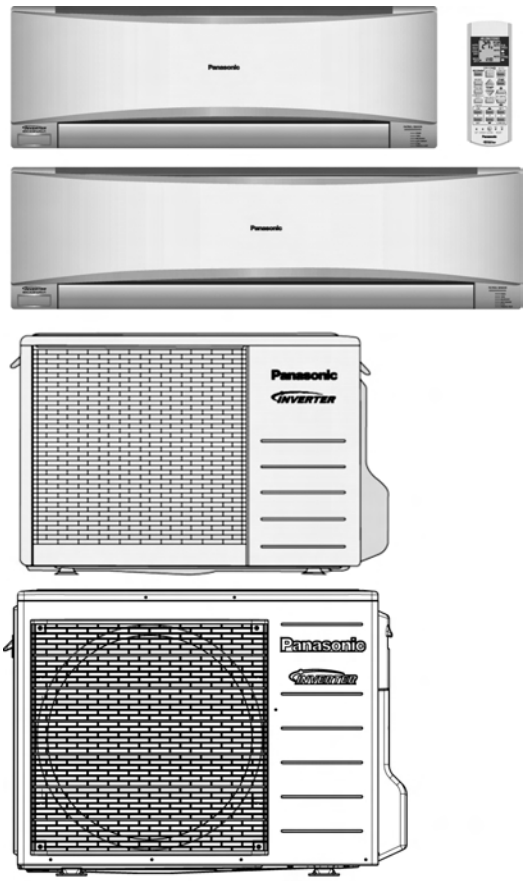
Order No. PHAAM1101071C2

Service Manual

Air Conditioner



Indoor Unit	Outdoor Unit
CS-E7MKEW	CU-E7MKE
CS-E7MKEW	CU-E7MKE-3
CS-E9MKEW	CU-E9MKE
CS-E9MKEW	CU-E9MKE-3
CS-E12MKEW	CU-E12MKE
CS-E12MKEW	CU-E12MKE-3
CS-E15MKEW	CU-E15MKE
CS-E18MKEW	CU-E18MKE
CS-E21MKEW	CU-E21MKE
CS-XE7MKEW	CU-E7MKE
CS-XE7MKEW	CU-E7MKE-3
CS-XE9MKEW	CU-E9MKE
CS-XE9MKEW	CU-E9MKE-3
CS-XE12MKEW	CU-E12MKE
CS-XE12MKEW	CU-E12MKE-3
CS-XE15MKEW	CU-E15MKE
CS-XE18MKEW	CU-E18MKE
CS-XE21MKEW	CU-E21MKE

⚠ 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.

⚠ PRECAUTION OF LOW TEMPERATURE

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

Panasonic®

TABLE OF CONTENTS

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 PROHIBITTED 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 authorized 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, electrical 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 be installed 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 connection 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 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 electrical 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.	⃠

⚠ WARNING

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 of 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 the 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 describe in catalog and manual.

⚠ 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 air conditioner. Connect the power supply cord of the air conditioner to the mains using one of the following methods.
   Power supply point shall be the place where there is ease for access for the power disconnection in case of emergency. In some countries, permanent connection of this room air conditioner to the power supply is prohibited.
   i. Power supply connection to the receptacle using a power plug. Use an approved 15/16A (3/4~1.75HP), 16A (2.0HP), 20A (2.5HP) or 25A (3.0HP) power plug with earth pin for the connection to the socket.
   ii. Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A (3/4~2.0HP), 20A (2.5HP) or 25A (3.0HP) 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 aluminium 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

MODEL				INDOOR	CS-E7MKEW, CS-XE7MKEW			CS-E9MKEW, CS-XE9MKEW		
				OUTDOOR	CU-E7MKE			CU-E9MKE		
Performance Test Condition					EUROVENT			EUROVENT		
Power Supply				Phase, Hz	Single, 50			Single, 50		
				V	230			230		
					Min.	Mid.	Max.	Min.	Mid.	Max.
Cooling	Capacity			kW	0.75	2.05	2.40	0.85	2.50	3.00
				BTU/h	2560	6990	8180	2900	8530	10200
				Kcal/h	650	1760	2060	730	2150	2580
	Running Current			A	—	2.2	—	—	2.5	—
	Input Power			W	240	470	580	245	535	730
	Annual Consumption			kWh	—	235	—	—	268	—
	EER			W/W	3.13	4.36	4.14	3.47	4.67	4.11
				Kcal/hW	2.71	3.74	3.55	2.98	4.02	3.53
	Power Factor			%	—	93	—	—	93	—
	Indoor Noise (H / L / QLo)			dB-A	37 / 24 / 20			39 / 25 / 20		
				Power Level dB	53 / -			55 / -		
	Outdoor Noise (H / L)			dB-A	45 / -			46 / -		
				Power Level dB	60 / -			61 / -		
Heating	Capacity			kW	0.75	2.80	4.00	0.85	3.40	5.00
				BTU/h	2560	9550	13600	2900	11600	17100
				Kcal/h	650	2410	3440	730	2920	4300
	Running Current			A	—	3.0	—	—	3.4	—
	Input Power			W	230	635	1.02k	240	735	1.30k
	COP			W/W	3.26	4.41	3.92	3.54	4.63	3.85
				Kcal/hW	2.83	3.80	3.37	3.04	3.97	3.31
	Power Factor			%	—	92	—	—	94	—
	Indoor Noise (H / L / QLo)			dB-A	38 / 25 / 20			40 / 27 / 20		
				Power Level dB	54 / -			56 / -		
	Outdoor Noise (H / L)			dB-A	46 / -			47 / -		
				Power Level dB	61 / -			62 / -		
Low Temp. : Capacity (kW) / I.Power (W) / COP					2.90 / 900 / 3.22			3.62 / 1.15k / 3.15		
Extr Low Temp. : Capacity (kW) / I.Power (W) / COP					2.35 / 930 / 2.53			2.88 / 1.18k / 2.44		
Max Current (A) / Max Input Power (W)					4.7 / 1.02k			5.8 / 1.30k		
Starting Current (A)					3.0			3.4		
Compressor		Type			Hermetic Motor			Hermetic Motor		
		Motor Type			Brushless (6-poles)			Brushless (6-poles)		
		Output Power		W	650			700		
Indoor Fan	Type				Cross-flow Fan			Cross-flow Fan		
	Material				ASG20K1			ASG20K1		
	Motor Type				Transistor (8-poles)			Transistor (8-poles)		
	Input Power			W	47.3			47.3		
	Output Power			W	40			40		
	Speed	QLo	Cool	rpm	590			630		
			Heat	rpm	630			670		
		Lo	Cool	rpm	670			730		
			Heat	rpm	730			820		
		Me	Cool	rpm	860			950		
			Heat	rpm	910			1030		
		Hi	Cool	rpm	1050			1180		
			Heat	rpm	1090			1240		
		SHi	Cool	rpm	1110			1240		
			Heat	rpm	1150			1280		

MODEL				INDOOR	CS-E7MKEW, CS-XE7MKEW	CS-E9MKEW, CS-XE9MKEW
				OUTDOOR	CU-E7MKE	CU-E9MKE
Outdoor Fan	Type				Propeller Fan	Propeller Fan
	Material				PP	PP
	Motor Type				Induction (6-poles)	Induction (6-poles)
	Input Power			W	—	—
	Output Power			W	25	25
	Speed	Hi		rpm	750	770
Moisture Removal				L/h (Pt/h)	1.3 (2.7)	1.5 (3.2)
Indoor Airflow		QLo	Cool	m^3/min (ft^3/min)	5.6 (198)	4.9 (173)
			Heat	m^3/min (ft^3/min)	6.0 (212)	5.3 (187)
		Lo	Cool	m^3/min (ft^3/min)	6.5 (230)	6.0 (212)
			Heat	m^3/min (ft^3/min)	7.2 (254)	7.1 (251)
		Me	Cool	m^3/min (ft^3/min)	8.7 (307)	8.7 (307)
			Heat	m^3/min (ft^3/min)	9.3 (328)	9.6 (339)
		Hi	Cool	m^3/min (ft^3/min)	10.9 (385)	11.3 (400)
			Heat	m^3/min (ft^3/min)	11.4 (400)	11.7 (410)
		SHi	Cool	m^3/min (ft^3/min)	11.6 (410)	11.7 (410)
			Heat	m^3/min (ft^3/min)	12.0 (424)	12.1 (427)
Outdoor Airflow		Hi	Cool	m^3/min (ft^3/min)	33.9 (1200)	29.8 (1050)
			Heat	m^3/min (ft^3/min)	33.9 (1200)	29.8 (1050)
Refrigeration Cycle		Control Device			Check Valve & Capillary Tube	Check Valve & Capillary Tube
		Refrigerant Oil		cm^3	RB68A or Freol Alpha 68M (320)	RB68A or Freol Alpha 68M (320)
		Refrigerant Type		g (oz)	R410A, 830 (29.3)	R410A, 950 (33.5)
Dimension		Height (I/D / O/D)		mm (inch)	290 (11-7/16) / 540 (21-9/32)	290 (11-7/16) / 540 (21-9/32)
		Width (I/D / O/D)		mm (inch)	870 (34-9/32) / 780 (30-23/32)	870 (34-9/32) / 780 (30-23/32)
		Depth (I/D / O/D)		mm (inch)	204 (8-1/16) / 289 (11-13/32)	204 (8-1/16) / 289 (11-13/32)
Weight		Net (I/D / O/D)		kg (lb)	9 (20) / 33 (73)	9 (20) / 34 (75)
Piping	Pipe Diameter (Liquid / Gas)			mm (inch)	6.35 (1/4) / 9.52 (3/8)	6.35 (1/4) / 9.52 (3/8)
	Standard Length			m (ft)	5 (16.4)	5 (16.4)
	Length Range (min - max)			m (ft)	3 (9.8) ~ 15 (49.2)	3 (9.8) ~ 15 (49.2)
	I/D & O/D Height Different			m (ft)	15.0 (49.2)	15.0 (49.2)
	Additional Gas Amount			g/m (oz/ft)	20 (0.2)	20 (0.2)
	Length for Additional Gas			m (ft)	7.5 (24.6)	7.5 (24.6)
Drain Hose		Inner Diameter		mm	16	16
		Length		mm	650	650
Indoor Heat Exchanger		Fin Material			Aluminium (Pre Coat)	Aluminium (Pre Coat)
		Fin Type			Slit Fin	Slit Fin
		Row x Stage x FPI			2 x 15 x 17	2 x 15 x 21
		Size (W x H x L)		mm	610 x 315 x 25.4	610 x 315 x 25.4
Outdoor Heat Exchanger		Fin Material			Aluminium	Aluminium
		Fin Type			Corrugated Fin	Corrugated Fin
		Row x Stage x FPI			1 x 20 x 19	2 x 24 x 17
		Size (W x H x L)		mm	22 x 508 x 708.4	36.4 x 504 x 713 684
Air Filter		Material			Polypropelene	Polypropelene
		Type			One-touch	One-touch
Power Supply					Outdoor Power Supply	Outdoor Power Supply
Power Supply Cord				A	Nil	Nil
Thermostat					Electronic Control	Electronic Control
Protection Device					Electronic Control	Electronic Control

MODEL		INDOOR	CS-E7MKEW, CS-XE7MKEW		CS-E9MKEW, CS-XE9MKEW	
		OUTDOOR	CU-E7MKE		CU-E9MKE	
			Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum	32	23	32	23
		Minimum	16	11	16	11
	Heating	Maximum	30	—	30	—
		Minimum	16	—	16	—
Outdoor Operation Range	Cooling	Maximum	43	26	43	26
		Minimum	5	4	5	4
	Heating	Maximum	24	18	24	18
		Minimum	-5	-6	-5	-6

1. Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb)
2. Heating capacities are based on indoor temperature of 20°C Dry Bulb (68°F Dry Bulb) and outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb)
3. Heating low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor 2/1°C
4. Heating extreme low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor -7/-8°C
5. Specifications are subjected to change without prior notice for further improvement.

MODEL				INDOOR	CS-E12MKEW, CS-XE12MKEW			CS-E15MKEW, CS-XE15MKEW		
				OUTDOOR	CU-E12MKE			CU-E15MKE		
Performance Test Condition					EUROVENT			EUROVENT		
Power Supply				Phase, Hz	Single, 50			Single, 50		
				V	230			230		
					Min.	Mid.	Max.	Min.	Mid.	Max.
Cooling	Capacity			kW	0.85	3.50	4.00	0.85	4.20	5.00
				BTU/h	2900	11900	13600	2900	14300	17100
				Kcal/h	730	3010	3440	730	3610	4300
	Running Current			A	—	4.0	—	—	5.7	—
	Input Power			W	250	860	1.13k	260	1.26k	1.57k
	Annual Consumption			kWh	—	430	—	—	630	—
	EER			W/W	3.40	4.07	3.54	3.27	3.33	3.18
				Kcal/hW	2.92	3.50	3.04	2.81	2.87	2.74
	Power Factor			%	—	93	—	—	96	—
	Indoor Noise (H / L / QLo)			dB-A	42 / 28 / 20			43 / 31 / 25		
				Power Level dB	58 / -			59 / -		
	Outdoor Noise (H / L)			dB-A	48 / -			49 / -		
				Power Level dB	63 / -			64 / -		
Heating	Capacity			kW	0.85	4.00	6.00	0.85	5.30	6.80
				BTU/h	2900	13600	20500	2900	18100	23200
				Kcal/h	730	3440	5160	730	4560	5850
	Running Current			A	—	4.4	—	—	6.6	—
	Input Power			W	245	950	1.71k	255	1.44k	1.94k
	COP			W/W	3.47	4.21	3.51	3.33	3.68	3.51
				Kcal/hW	2.98	3.62	3.02	2.86	3.17	3.02
	Power Factor			%	—	94	—	—	95	—
	Indoor Noise (H / L / QLo)			dB-A	42 / 33 / 20			43 / 35 / 29		
				Power Level dB	58 / -			59 / -		
	Outdoor Noise (H / L)			dB-A	50 / -			51 / -		
				Power Level dB	65 / -			66 / -		
Low Temp. : Capacity (kW) / I.Power (W) / COP					4.47 / 1.48k / 3.02			4.92 / 1.72k / 2.86		
Extr Low Temp. : Capacity (kW) / I.Power (W) / COP					3.46 / 1.49k / 2.32			3.94 / 1.83k / 2.15		
Max Current (A) / Max Input Power (W)					7.8 / 1.71k			9.0 / 1.94k		
Starting Current (A)					4.4			6.6		
Compressor		Type			Hermetic Motor			Hermetic Motor		
		Motor Type			Brushless (4-poles)			Brushless (6-poles)		
		Output Power		W	700			700		
Indoor Fan	Type				Cross-flow Fan			Cross-flow Fan		
	Material				ASG20K1			ASG20K1		
	Motor Type				Transistor (8-poles)			Transistor (8-poles)		
	Input Power			W	47.3			47.3		
	Output Power			W	40			40		
	Speed	QLo	Cool	rpm	630			730		
			Heat	rpm	670			900		
		Lo	Cool	rpm	830			870		
			Heat	rpm	1010			1080		
		Me	Cool	rpm	1040			1070		
			Heat	rpm	1150			1210		
		Hi	Cool	rpm	1260			1270		
			Heat	rpm	1300			1350		
		SHi	Cool	rpm	1320			1340		
			Heat	rpm	1340			1370		

MODEL				INDOOR	CS-E12MKEW, CS-XE12MKEW	CS-E15MKEW, CS-XE15MKEW
				OUTDOOR	CU-E12MKE	CU-E15MKE
Outdoor Fan	Type				Propeller Fan	Propeller Fan
	Material				PP	PP
	Motor Type				DC Motor (8-poles)	Induction (6-poles)
	Input Power			W	—	—
	Output Power			W	40	30
	Speed	Hi		rpm	830	850
Moisture Removal				L/h (Pt/h)	2.0 (4.2)	2.4 (5.1)
Indoor Airflow		QLo	Cool	m^3/min (ft^3/min)	4.9 (173)	6.0 (212)
			Heat	m^3/min (ft^3/min)	5.3 (187)	8.1 (286)
		Lo	Cool	m^3/min (ft^3/min)	7.2 (254)	7.7 (272)
			Heat	m^3/min (ft^3/min)	9.4 (332)	10.2 (360)
		Me	Cool	m^3/min (ft^3/min)	9.7 (343)	10.1 (357)
			Heat	m^3/min (ft^3/min)	11.0 (389)	11.7 (413)
		Hi	Cool	m^3/min (ft^3/min)	12.5 (440)	12.5 (440)
			Heat	m^3/min (ft^3/min)	12.8 (450)	13.4 (475)
		SHi	Cool	m^3/min (ft^3/min)	13.1 (463)	13.3 (470)
			Heat	m^3/min (ft^3/min)	13.3 (470)	13.6 (480)
Outdoor Airflow		Hi	Cool	m^3/min (ft^3/min)	31.0 (1090)	31.4 (1110)
			Heat	m^3/min (ft^3/min)	31.0 (1090)	31.4 (1110)
Refrigeration Cycle		Control Device			Check Valve & Capillary Tube	Check Valve & Capillary Tube
		Refrigerant Oil		cm^3	RB68A or Freol Alpha 68M (320)	RB68A or Freol Alpha 68M (400)
		Refrigerant Type		g (oz)	R410A, 980 (34.6)	R410A, 1.01k (35.7)
Dimension		Height (I/D / O/D)		mm (inch)	290 (11-7/16) / 540 (21-9/32)	290 (11-7/16) / 540 (21-9/32)
		Width (I/D / O/D)		mm (inch)	870 (34-9/32) / 780 (30-23/32)	870 (34-9/32) / 780 (30-23/32)
		Depth (I/D / O/D)		mm (inch)	204 (8-1/16) / 289 (11-13/32)	204 (8-1/16) / 289 (11-13/32)
Weight		Net (I/D / O/D)		kg (lb)	9 (20) / 34 (75)	9 (20) / 34 (75)
Piping	Pipe Diameter (Liquid / Gas)			mm (inch)	6.35 (1/4) / 9.52 (3/8)	6.35 (1/4) / 12.70 (1/2)
	Standard Length			m (ft)	5 (16.4)	5 (16.4)
	Length Range (min - max)			m (ft)	3 (9.8) ~ 15 (49.2)	3 (9.8) ~ 15 (49.2)
	I/D & O/D Height Different			m (ft)	15.0 (49.2)	15.0 (49.2)
	Additional Gas Amount			g/m (oz/ft)	20 (0.2)	20 (0.2)
	Length for Additional Gas			m (ft)	7.5 (24.6)	7.5 (24.6)
Drain Hose		Inner Diameter		mm	16	16
		Length		mm	650	650
Indoor Heat Exchanger		Fin Material			Aluminium (Pre Coat)	Aluminium (Pre Coat)
		Fin Type			Slit Fin	Slit Fin
		Row x Stage x FPI			2 x 15 x 21	2 x 15 x 21
		Size (W x H x L)		mm	610 x 315 x 25.4	610 x 315 x 25.4
Outdoor Heat Exchanger		Fin Material			Aluminium	Aluminium
		Fin Type			Corrugated Fin	Corrugated Fin
		Row x Stage x FPI			2 x 24 x 17	2 x 24 x 17
		Size (W x H x L)		mm	36.4 x 504 x 713 684	36.4 x 504 x 713 684
Air Filter		Material			Polypropelene	Polypropelene
		Type			One-touch	One-touch
Power Supply					Outdoor Power Supply	Outdoor Power Supply
Power Supply Cord				A	Nil	Nil
Thermostat					Electronic Control	Electronic Control
Protection Device					Electronic Control	Electronic Control

MODEL		INDOOR	CS-E12MKEW, CS-XE12MKEW		CS-E15MKEW, CS-XE15MKEW	
		OUTDOOR	CU-E12MKE		CU-E15MKE	
			Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum	32	23	32	23
		Minimum	16	11	16	11
	Heating	Maximum	30	—	30	—
		Minimum	16	—	16	—
Outdoor Operation Range	Cooling	Maximum	43	26	43	26
		Minimum	5	4	5	4
	Heating	Maximum	24	18	24	18
		Minimum	-5	-6	-5	-6

1. Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb)
2. Heating capacities are based on indoor temperature of 20°C Dry Bulb (68°F Dry Bulb) and outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb)
3. Heating low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor 2/1°C
4. Heating extreme low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor -7/-8°C
5. Specifications are subjected to change without prior notice for further improvement.

MODEL				INDOOR	CS-E7MKEW, CS-XE7MKEW			CS-E9MKEW, CS-XE9MKEW		
				OUTDOOR	CU-E7MKE-3			CU-E9MKE-3		
Performance Test Condition					EUROVENT			EUROVENT		
Power Supply				Phase, Hz	Single, 50			Single, 50		
				V	230			230		
					Min.	Mid.	Max.	Min.	Mid.	Max.
Cooling	Capacity			kW	0.75	2.05	2.40	0.85	2.50	3.00
				BTU/h	2560	6990	8180	2900	8530	10200
				Kcal/h	650	1760	2060	730	2150	2580
	Running Current			A	—	2.2	—	—	2.5	—
	Input Power			W	240	470	580	245	535	730
	Annual Consumption			kWh	—	235	—	—	268	—
	EER			W/W	3.13	4.36	4.14	3.47	4.67	4.11
				Kcal/hW	2.71	3.74	3.55	2.98	4.02	3.53
	Power Factor			%	—	93	—	—	93	—
	Indoor Noise (H / L / QLo)			dB-A	37 / 24 / 20			39 / 25 / 20		
				Power Level dB	53 / -			55 / -		
	Outdoor Noise (H / L)			dB-A	45 / -			46 / -		
				Power Level dB	60 / -			61 / -		
Heating	Capacity			kW	0.75	2.80	4.00	0.85	3.40	5.00
				BTU/h	2560	9550	13600	2900	11600	17100
				Kcal/h	650	2410	3440	730	2920	4300
	Running Current			A	—	3.0	—	—	3.4	—
	Input Power			W	230	635	1.02k	240	735	1.30k
	COP			W/W	3.26	4.41	3.92	3.54	4.63	3.85
				Kcal/hW	2.83	3.80	3.37	3.04	3.97	3.31
	Power Factor			%	—	92	—	—	94	—
	Indoor Noise (H / L / QLo)			dB-A	38 / 25 / 20			40 / 27 / 20		
				Power Level dB	54 / -			56 / -		
	Outdoor Noise (H / L)			dB-A	46 / -			47 / -		
				Power Level dB	61 / -			62 / -		
Low Temp. : Capacity (kW) / I.Power (W) / COP					2.90 / 900 / 3.22			3.62 / 1.15k / 3.15		
Extr Low Temp. : Capacity (kW) / I.Power (W) / COP					2.35 / 930 / 2.53			2.88 / 1.18k / 2.44		
Max Current (A) / Max Input Power (W)					4.7 / 1.02k			5.8 / 1.30k		
Starting Current (A)					3.0			3.4		
Compressor		Type			Hermetic Motor			Hermetic Motor		
		Motor Type			Brushless (6-poles)			Brushless (6-poles)		
		Output Power		W	650			700		
Indoor Fan	Type				Cross-flow Fan			Cross-flow Fan		
	Material				ASG20K1			ASG20K1		
	Motor Type				Transistor (8-poles)			Transistor (8-poles)		
	Input Power			W	47.3			47.3		
	Output Power			W	40			40		
	Speed	QLo	Cool	rpm	590			630		
			Heat	rpm	630			670		
		Lo	Cool	rpm	670			730		
			Heat	rpm	730			820		
		Me	Cool	rpm	860			950		
			Heat	rpm	910			1030		
		Hi	Cool	rpm	1050			1180		
			Heat	rpm	1090			1240		
		SHi	Cool	rpm	1110			1240		
			Heat	rpm	1150			1280		

MODEL				INDOOR	CS-E7MKEW, CS-XE7MKEW	CS-E9MKEW, CS-XE9MKEW
				OUTDOOR	CU-E7MKE-3	CU-E9MKE-3
Outdoor Fan	Type				Propeller Fan	Propeller Fan
	Material				PP	PP
	Motor Type				Induction (6-poles)	Induction (6-poles)
	Input Power			W	62	65
	Output Power			W	25	25
	Speed	Hi		rpm	770	770
Moisture Removal				L/h (Pt/h)	1.3 (2.7)	1.5 (3.2)
Indoor Airflow		QLo	Cool	m^3/min (ft^3/min)	5.6 (198)	4.9 (173)
			Heat	m^3/min (ft^3/min)	6.0 (212)	5.3 (187)
		Lo	Cool	m^3/min (ft^3/min)	6.5 (230)	6.0 (212)
			Heat	m^3/min (ft^3/min)	7.2 (254)	7.1 (251)
		Me	Cool	m^3/min (ft^3/min)	8.7 (307)	8.7 (307)
			Heat	m^3/min (ft^3/min)	9.3 (328)	9.6 (339)
		Hi	Cool	m^3/min (ft^3/min)	10.9 (385)	11.3 (400)
			Heat	m^3/min (ft^3/min)	11.4 (400)	11.7 (410)
		SHi	Cool	m^3/min (ft^3/min)	11.6 (410)	11.7 (410)
			Heat	m^3/min (ft^3/min)	12.0 (424)	12.1 (427)
Outdoor Airflow		Hi	Cool	m^3/min (ft^3/min)	33.9 (1200)	29.8 (1050)
			Heat	m^3/min (ft^3/min)	33.9 (1200)	29.8 (1050)
Refrigeration Cycle		Control Device			Check Valve & Capillary Tube	Check Valve & Capillary Tube
		Refrigerant Oil		cm^3	RB68A or Freol Alpha 68M (320)	RB68A or Freol Alpha 68M (320)
		Refrigerant Type		g (oz)	R410A, 830 (29.3)	R410A, 950 (33.5)
Dimension		Height (I/D / O/D)		mm (inch)	290 (11-7/16) / 540 (21-9/32)	290 (11-7/16) / 540 (21-9/32)
		Width (I/D / O/D)		mm (inch)	870 (34-9/32) / 780 (30-23/32)	870 (34-9/32) / 780 (30-23/32)
		Depth (I/D / O/D)		mm (inch)	204 (8-1/16) / 289 (11-13/32)	204 (8-1/16) / 289 (11-13/32)
Weight		Net (I/D / O/D)		kg (lb)	9 (20) / 33 (73)	9 (20) / 34 (75)
Piping	Pipe Diameter (Liquid / Gas)			mm (inch)	6.35 (1/4) / 9.52 (3/8)	6.35 (1/4) / 9.52 (3/8)
	Standard Length			m (ft)	5 (16.4)	5 (16.4)
	Length Range (min - max)			m (ft)	3 (9.8) ~ 15 (49.2)	3 (9.8) ~ 15 (49.2)
	I/D & O/D Height Different			m (ft)	15.0 (49.2)	15.0 (49.2)
	Additional Gas Amount			g/m (oz/ft)	20 (0.2)	20 (0.2)
	Length for Additional Gas			m (ft)	7.5 (24.6)	7.5 (24.6)
Drain Hose		Inner Diameter		mm	16	16
		Length		mm	650	650
Indoor Heat Exchanger		Fin Material			Aluminium (Pre Coat)	Aluminium (Pre Coat)
		Fin Type			Slit Fin	Slit Fin
		Row x Stage x FPI			2 x 15 x 17	2 x 15 x 21
		Size (W x H x L)		mm	610 x 315 x 25.4	610 x 315 x 25.4
Outdoor Heat Exchanger		Fin Material			Aluminium	Aluminium
		Fin Type			Corrugated Fin	Corrugated Fin
		Row x Stage x FPI			1 x 20 x 19	2 x 24 x 17
		Size (W x H x L)		mm	32 x 508 x 708	36.4 x 504 x 713 684
Air Filter		Material			Polypropelene	Polypropelene
		Type			One-touch	One-touch
Power Supply					Outdoor Power Supply	Outdoor Power Supply
Power Supply Cord				A	Nil	Nil
Thermostat					Electronic Control	Electronic Control
Protection Device					Electronic Control	Electronic Control

MODEL		INDOOR	CS-E7MKEW, CS-XE7MKEW		CS-E9MKEW, CS-XE9MKEW	
		OUTDOOR	CU-E7MKE-3		CU-E9MKE-3	
			Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum	32	23	32	23
		Minimum	16	11	16	11
	Heating	Maximum	30	—	30	—
		Minimum	16	—	16	—
Outdoor Operation Range	Cooling	Maximum	43	26	43	26
		Minimum	5	4	5	4
	Heating	Maximum	24	18	24	18
		Minimum	-15	-16	-15	-16

1. Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb)
2. Heating capacities are based on indoor temperature of 20°C Dry Bulb (68°F Dry Bulb) and outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb)
3. Heating low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor 2/1°C
4. Heating extreme low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor -7/-8°C
5. Specifications are subjected to change without prior notice for further improvement.

MODEL				INDOOR	CS-E12MKEW, CS-XE12MKEW		
				OUTDOOR	CU-E12MKE-3		
Performance Test Condition					EUROVENT		
Power Supply				Phase, Hz	Single, 50		
				V	230		
					Min.	Mid.	Max.
Cooling	Capacity			kW	0.85	3.50	4.00
				BTU/h	2900	11900	13600
				Kcal/h	730	3010	3440
	Running Current			A	—	4.1	—
	Input Power			W	250	905	1.18k
	Annual Consumption			kWh	—	453	—
	EER			W/W	3.40	3.87	3.39
				Kcal/hW	2.92	3.33	2.92
	Power Factor			%	—	96	—
	Indoor Noise (H / L / QLo)			dB-A	42 / 28 / 20		
				Power Level dB	58 / -		
	Outdoor Noise (H / L)			dB-A	48 / -		
				Power Level dB	63 / -		
Heating	Capacity			kW	0.85	4.40	6.70
				BTU/h	2900	15000	22800
				Kcal/h	730	3780	5760
	Running Current			A	—	5.1	—
	Input Power			W	245	1.09k	1.93k
	COP			W/W	3.47	4.04	3.47
				Kcal/hW	2.98	3.47	2.98
	Power Factor			%	—	93	—
	Indoor Noise (H / L / QLo)			dB-A	42 / 33 / 20		
				Power Level dB	58 / -		
	Outdoor Noise (H / L)			dB-A	50 / -		
				Power Level dB	65 / -		
Low Temp. : Capacity (kW) / I.Power (W) / COP					4.85 / 1.67k / 2.90		
Extr Low Temp. : Capacity (kW) / I.Power (W) / COP					3.75 / 1.68k / 2.23		
Max Current (A) / Max Input Power (W)					8.9 / 1.93k		
Starting Current (A)					5.1		
Compressor		Type			Hermetic Motor		
		Motor Type			Brushless (6-poles)		
		Output Power		W	700		
Indoor Fan	Type				Cross-flow Fan		
	Material				ASG20K1		
	Motor Type				Transistor (8-poles)		
	Input Power			W	47.3		
	Output Power			W	40		
	Speed	QLo	Cool	rpm	630		
			Heat	rpm	670		
		Lo	Cool	rpm	830		
			Heat	rpm	1010		
		Me	Cool	rpm	1040		
			Heat	rpm	1150		
		Hi	Cool	rpm	1260		
			Heat	rpm	1300		
		SHi	Cool	rpm	1320		
			Heat	rpm	1340		

MODEL				INDOOR	CS-E12MKEW, CS-XE12MKEW
				OUTDOOR	CU-E12MKE-3
Outdoor Fan	Type				Propeller Fan
	Material				PP
	Motor Type				Induction (6-poles)
	Input Power			W	70
	Output Power			W	30
	Speed	Hi		rpm	830
Moisture Removal				L/h (Pt/h)	2.0 (4.2)
Indoor Airflow		QLo	Cool	m^3/min (ft^3/min)	4.9 (173)
			Heat	m^3/min (ft^3/min)	5.3 (187)
		Lo	Cool	m^3/min (ft^3/min)	7.2 (254)
			Heat	m^3/min (ft^3/min)	9.4 (332)
		Me	Cool	m^3/min (ft^3/min)	9.7 (343)
			Heat	m^3/min (ft^3/min)	11.0 (389)
		Hi	Cool	m^3/min (ft^3/min)	12.5 (440)
			Heat	m^3/min (ft^3/min)	12.8 (450)
		SHi	Cool	m^3/min (ft^3/min)	13.1 (463)
			Heat	m^3/min (ft^3/min)	13.3 (470)
Outdoor Airflow		Hi	Cool	m^3/min (ft^3/min)	31.0 (1090)
			Heat	m^3/min (ft^3/min)	31.0 (1090)
Refrigeration Cycle		Control Device			Check Valve & Capillary Tube
		Refrigerant Oil		cm^3	RB68A or Freol Alpha 68M (320)
		Refrigerant Type		g (oz)	R410A, 970 (34.2)
Dimension		Height (I/D / O/D)		mm (inch)	290 (11-7/16) / 540 (21-9/32)
		Width (I/D / O/D)		mm (inch)	870 (34-9/32) / 780 (30-23/32)
		Depth (I/D / O/D)		mm (inch)	204 (8-1/16) / 289 (11-13/32)
Weight		Net (I/D / O/D)		kg (lb)	9 (20) / 34 (75)
Piping	Pipe Diameter (Liquid / Gas)			mm (inch)	6.35 (1/4) / 9.52 (3/8)
	Standard Length			m (ft)	5 (16.4)
	Length Range (min - max)			m (ft)	3 (9.8) ~ 15 (49.2)
	I/D & O/D Height Different			m (ft)	15.0 (49.2)
	Additional Gas Amount			g/m (oz/ft)	20 (0.2)
	Length for Additional Gas			m (ft)	7.5 (24.6)
Drain Hose		Inner Diameter		mm	16
		Length		mm	650
Indoor Heat Exchanger		Fin Material			Aluminium (Pre Coat)
		Fin Type			Slit Fin
		Row x Stage x FPI			2 x 15 x 21
		Size (W x H x L)		mm	610 x 315 x 25.4
Outdoor Heat Exchanger		Fin Material			Aluminium
		Fin Type			Corrugated Fin
		Row x Stage x FPI			2 x 24 x 17
		Size (W x H x L)		mm	36.4 x 504 x 713 684
Air Filter		Material			Polypropelene
		Type			One-touch
Power Supply					Outdoor Power Supply
Power Supply Cord				A	Nil
Thermostat					Electronic Control
Protection Device					Electronic Control

MODEL		INDOOR	CS-E12MKEW, CS-XE12MKEW	
		OUTDOOR	CU-E12MKE-3	
			Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum	32	23
		Minimum	16	11
	Heating	Maximum	30	—
		Minimum	16	—
Outdoor Operation Range	Cooling	Maximum	43	26
		Minimum	5	4
	Heating	Maximum	24	18
		Minimum	-15	-16

1. Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb)
2. Heating capacities are based on indoor temperature of 20°C Dry Bulb (68°F Dry Bulb) and outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb)
3. Heating low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor 2/1°C
4. Heating extreme low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor -7/-8°C
5. Specifications are subjected to change without prior notice for further improvement.

MODEL				INDOOR	CS-E18MKEW, CS-XE18MKEW			CS-E21MKEW, CS-XE21MKEW		
				OUTDOOR	CU-E18MKE			CU-E21MKE		
Performance Test Condition					EUROVENT			EUROVENT		
Power Supply				Phase, Hz	Single, 50			Single, 50		
				V	230			230		
					Min.	Mid.	Max.	Min.	Mid.	Max.
Cooling	Capacity			kW	0.98	5.00	6.00	0.98	6.30	7.10
				BTU/h	3340	17100	20500	3340	21500	24200
				Kcal/h	840	4300	5160	840	5420	6110
	Running Current			A	—	6.6	—	—	9.9	—
	Input Power			W	280	1.47k	2.03k	280	2.21k	2.54k
	Annual Consumption			kWh	—	735	—	—	1105	—
	EER			W/W	3.50	3.40	2.96	3.50	2.85	2.80
				Kcal/hW	3.00	2.93	2.54	3.00	2.45	2.41
	Power Factor			%	—	97	—	—	97	—
	Indoor Noise (H / L / QLo)			dB-A	44 / 37 / 34			45 / 37 / 34		
				Power Level dB	60 / -			61 / -		
	Outdoor Noise (H / L)			dB-A	47 / -			48 / -		
				Power Level dB	61 / -			62 / -		
Heating	Capacity			kW	0.98	5.80	8.00	0.98	7.20	8.50
				BTU/h	3340	19800	27300	3340	24600	29000
				Kcal/h	840	4990	6880	840	6190	7310
	Running Current			A	—	6.9	—	—	9.4	—
	Input Power			W	340	1.54k	2.60k	340	2.10k	2.75k
	COP			W/W	2.88	3.77	3.08	2.88	3.43	3.09
				Kcal/hW	2.47	3.24	2.65	2.47	2.95	2.66
	Power Factor			%	—	97	—	—	97	—
	Indoor Noise (H / L / QLo)			dB-A	44 / 37 / 34			45 / 37 / 34		
				Power Level dB	60 / -			61 / -		
	Outdoor Noise (H / L)			dB-A	47 / -			49 / -		
				Power Level dB	61 / -			63 / -		
Low Temp. : Capacity (kW) / I.Power (W) / COP					5.80 / 2.35k / 2.47			6.16 / 2.43k / 2.53		
Extr Low Temp. : Capacity (kW) / I.Power (W) / COP					4.98 / 2.41k / 2.07			5.24 / 2.54k / 2.06		
Max Current (A) / Max Input Power (W)					11.4 / 2.60k			12.1 / 2.75k		
Starting Current (A)					6.9			9.9		
Compressor		Type			Hermetic Motor			Hermetic Motor		
		Motor Type			Brushless (4-poles)			Brushless (4-poles)		
		Output Power		W	900			900		
Indoor Fan	Type				Cross-flow Fan			Cross-flow Fan		
	Material				ASG20K1			ASG20K1		
	Motor Type				Transistor (8-poles)			Transistor (8-poles)		
	Input Power			W	94.8			94.8		
	Output Power			W	40			40		
	Speed	QLo	Cool	rpm	960			960		
			Heat	rpm	1040			1040		
		Lo	Cool	rpm	1040			1050		
			Heat	rpm	1120			1120		
		Me	Cool	rpm	1160			1210		
			Heat	rpm	1240			1290		
		Hi	Cool	rpm	1280			1370		
			Heat	rpm	1360			1460		
		SHi	Cool	rpm	1390			1460		
			Heat	rpm	1430			1480		

MODEL				INDOOR	CS-E18MKEW, CS-XE18MKEW	CS-E21MKEW, CS-XE21MKEW
				OUTDOOR	CU-E18MKE	CU-E21MKE
Outdoor Fan	Type				Propeller Fan	Propeller Fan
	Material				PP	PP
	Motor Type				Induction (6-poles)	Induction (6-poles)
	Input Power			W	—	—
	Output Power			W	40	40
	Speed	Hi	Cool	rpm	660	700
			Heat	rpm	640	680
Moisture Removal				L/h (Pt/h)	2.8 (5.9)	3.5 (7.4)
Indoor Airflow		QLo	Cool	m^3/min (ft^3/min)	12.0 (424)	12.0 (424)
			Heat	m^3/min (ft^3/min)	13.2 (466)	13.2 (466)
		Lo	Cool	m^3/min (ft^3/min)	13.2 (466)	13.3 (470)
			Heat	m^3/min (ft^3/min)	14.3 (505)	14.3 (505)
		Me	Cool	m^3/min (ft^3/min)	14.9 (526)	15.1 (533)
			Heat	m^3/min (ft^3/min)	16.0 (565)	16.2 (572)
		Hi	Cool	m^3/min (ft^3/min)	16.3 (575)	17.3 (610)
			Heat	m^3/min (ft^3/min)	17.9 (630)	18.5 (655)
		SHi	Cool	m^3/min (ft^3/min)	18.1 (639)	19.1 (675)
			Heat	m^3/min (ft^3/min)	18.5 (653)	19.4 (685)
Outdoor Airflow		Hi	Cool	m^3/min (ft^3/min)	39.2 (1385)	41.7 (1470)
			Heat	m^3/min (ft^3/min)	37.9 (1340)	40.4 (1425)
Refrigeration Cycle		Control Device			Expansion Valve	Expansion Valve
		Refrigerant Oil		cm^3	RB68A or Freol Alpha 68M (400)	RB68A or Freol Alpha 68M (400)
		Refrigerant Type		g (oz)	R410A, 1.22k (43.1)	R410A, 1.28k (45.2)
Dimension		Height (I/D / O/D)		mm (inch)	290 (11-7/16) / 695 (27-3/8)	290 (11-7/16) / 695 (27-3/8)
		Width (I/D / O/D)		mm (inch)	1070 (42-5/32) / 875 (34-15/32)	1070 (42-5/32) / 875 (34-15/32)
		Depth (I/D / O/D)		mm (inch)	235 (9-9/32) / 320 (12-5/8)	235 (9-9/32) / 320 (12-5/8)
Weight		Net (I/D / O/D)		kg (lb)	12 (26) / 45 (99)	12 (26) / 46 (101)
Piping	Pipe Diameter (Liquid / Gas)			mm (inch)	6.35 (1/4) / 12.70 (1/2)	6.35 (1/4) / 12.70 (1/2)
	Standard Length			m (ft)	5.0 (16.4)	5.0 (16.4)
	Length Range (min - max)			m (ft)	3 (9.8) ~ 20 (65.5)	3 (9.8) ~ 20 (65.5)
	I/D & O/D Height Different			m (ft)	15.0 (49.2)	15.0 (49.2)
	Additional Gas Amount			g/m (oz/ft)	20 (0.2)	20 (0.2)
	Length for Additional Gas			m (ft)	7.5 (24.6)	7.5 (24.6)
Drain Hose		Inner Diameter		mm	16	16
		Length		mm	650	650
Indoor Heat Exchanger		Fin Material			Aluminium (Pre Coat)	Aluminium (Pre Coat)
		Fin Type			Slit Fin	Slit Fin
		Row x Stage x FPI			2 x 15 x 19	2 x 15 x 19
		Size (W x H x L)		mm	810 x 315 x 25.4	810 x 315 x 25.4
Outdoor Heat Exchanger		Fin Material			Aluminium (Pre Coat)	Aluminium (Pre Coat)
		Fin Type			Corrugated Fin	Corrugated Fin
		Row x Stage x FPI			2 x 31 x 18	2 x 31 x 18
		Size (W x H x L)		mm	36.4 x 651 x 854.5 824.5	36.4 x 651 x 854.5 824.5
Air Filter		Material			Polypropelene	Polypropelene
		Type			One-touch	One-touch
Power Supply					Outdoor Power Supply	Outdoor Power Supply
Power Supply Cord				A	Nil	Nil
Thermostat					Electronic Control	Electronic Control

MODEL		INDOOR	CS-E18MKEW, CS-XE18MKEW		CS-E21MKEW, CS-XE21MKEW	
		OUTDOOR	CU-E18MKE		CU-E21MKE	
Protection Device			Electronic Control		Electronic Control	
			Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum	32	23	32	23
		Minimum	16	11	16	11
	Heating	Maximum	30	—	30	—
		Minimum	16	—	16	—
Outdoor Operation Range	Cooling	Maximum	43	26	43	26
		Minimum	5	4	5	4
	Heating	Maximum	24	18	24	18
		Minimum	-5	-6	-5	-6

1. Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb)
2. Heating capacities are based on indoor temperature of 20°C Dry Bulb (68°F Dry Bulb) and outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb)
3. Heating low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor 2/1°C
4. Heating extreme low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor -7/-8°C
5. Specifications are subjected to change without prior notice for further improvement.

• Multi Split Combination Possibility:

- A single outdoor unit enables air conditioning of up to two separate rooms for CU-2E15LBE, CU-2E18LBE.
- A single outdoor unit enables air conditioning of up to three separate rooms for CU-3E18LBE.
- A single outdoor unit enables air conditioning of up to four separate rooms for CU-4E23LBE, CU-4E27CBPG.

CONNECTABLE INDOOR UNIT			OUTDOOR UNIT													
			CU-2E15LBE		CU-2E18LBE		CU-3E18LBE			CU-4E23LBE				CU-4E27CBPG			
Type		ROOM	A	B	A	B	A	B	C	A	B	C	D	A	B	C	D
Wall	2.0kW	CS-E7MKEW CS-XE7MKEW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	2.5kW	CS-E9MKEW CS-XE9MKEW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	3.2kW	CS-E12MKEW CS-XE12MKEW	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	4.0kW	CS-E15MKEW CS-XE15MKEW	—	—	—	—	●	●	●	●	●	●	●	●	●	●	●
	5.0kW	CS-E18MKEW CS-XE18MKEW	—	—	—	—	●	●	●	●	●	●	●	●	●	●	●
	6.0kW	CS-E21MKEW CS-XE21MKEW	—	—	—	—	—	—	—	●	●	●	●	—	—	—	—

Capacity range of connectable indoor units		From 4.0kW to 5.6kW	From 4.0kW to 6.4kW	From 4.5kW to 9.0kW	From 4.5kW to 11.0kW	From 4.5kW to 13.6kW
Pipe length	1-room maximum pipe length (m)	20	20	25	25	25
	Allowable elevation (m)	10	10	15	15	15
	Total allowable pipe length (m)	30	30	50	60	70
	Total pipe length for maximum chargeless length (m)	20	20	30	30	40
	Additional gas amount over chargeless length (g/m)	20	20	20	20	20

Note: " ● " : Available

Remarks for CU-2E15LBE / CU-2E18LBE

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-2E15LBE. (Total nominal capacity of indoor units is between 4.0kW to 5.6kW)
   1) Two CS-E7MKEW only (Total nominal cooling capacity is 4.0kW)
   2) One CS-E7MKEW and one CS-E9MKEW. (Total nominal cooling capacity is 4.5kW)

Remarks for CU-3E18LBE / CU-4E23LBE / CU-4E27CBPG

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-3E18LBE. (Total nominal capacity of indoor units is between 4.5kW to 9.0kW)
   1) Two CS-E9MKEW only (Total nominal cooling capacity is 5.0kW)
   2) Three CS-E12MKEW. (Total nominal cooling capacity is 9.6kW)

• Outdoor Unit : CU-2E15LBE

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	20	20	2.00			2.00	1.1 ~ 2.9	520	220 ~ 750			3.85	A	260	2.45	1.3
	25	25	2.50			2.50	1.1 ~ 3.5	670	220 ~ 1000			3.73	A	335	3.15	1.5
	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	20 + 20	40	2.00	2.00		4.00	1.5 ~ 5.0	1090	250 ~ 1350			3.66	A	545	5.10	1.3 + 1.3
	20 + 25	45	2.00	2.50		4.50	1.5 ~ 5.2	1230	250 ~ 1520			3.66	A	615	5.75	1.3 + 1.5
	20 + 28	48	1.85	2.65		4.50	1.5 ~ 5.2	1230	250 ~ 1520			3.66	A	615	5.75	1.2 + 1.6
	20 + 32	52	1.75	2.75		4.50	1.5 ~ 5.2	1230	250 ~ 1520			3.66	A	615	5.75	1.1 + 1.6
	25 + 25	50	2.25	2.25		4.50	1.5 ~ 5.2	1230	250 ~ 1520			3.66	A	615	5.75	1.5 + 1.5
	25 + 28	53	2.10	2.40		4.50	1.5 ~ 5.2	1230	250 ~ 1520			3.66	A	615	5.75	1.4 + 1.5
	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

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	20	20	3.20			3.20	0.7 ~ 4.8	850	170 ~ 1410			3.76	A	425	3.75	
	25	25	3.60			3.60	0.7 ~ 5.5	1030	170 ~ 1700			3.50	B	515	4.55	
	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	20 + 20	40	2.70	2.70		5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	20 + 25	45	2.40	3.00		5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	20 + 28	48	2.25	3.15		5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	20 + 32	52	2.10	3.30		5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	25 + 25	50	2.70	2.70		5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	25 + 28	53	2.55	2.85		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	

• Outdoor Unit : CU-2E18LBE

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	20	20	2.00			2.00	1.1 ~ 2.9	520	220 ~ 750			3.85	A	260	2.45	1.3
	25	25	2.50			2.50	1.1 ~ 3.5	670	220 ~ 1000			3.73	A	335	3.15	1.5
	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	20 + 20	40	2.00	2.00		4.00	1.5 ~ 5.0	1090	250 ~ 1350			3.66	A	545	5.10	1.3 + 1.3
	20 + 25	45	2.00	2.50		4.50	1.5 ~ 5.2	1230	250 ~ 1520			3.66	A	615	5.75	1.3 + 1.5
	20 + 28	48	1.85	2.65		4.50	1.5 ~ 5.2	1230	250 ~ 1520			3.66	A	615	5.75	1.2 + 1.6
	20 + 32	52	1.85	2.95		4.80	1.5 ~ 5.3	1310	250 ~ 1540			3.66	A	655	6.10	1.2 + 1.7
	25 + 25	50	2.40	2.40		4.80	1.5 ~ 5.2	1310	250 ~ 1520			3.66	A	655	6.10	1.5 + 1.5
	25 + 28	53	2.25	2.55		4.80	1.5 ~ 5.2	1310	250 ~ 1520			3.66	A	655	6.10	1.5 + 1.6
	25 + 32	57	2.20	2.80		5.00	1.5 ~ 5.3	1490	250 ~ 1540			3.36	A	745	6.95	1.4 + 1.6
	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 + 32	60	2.35	2.65		5.00	1.5 ~ 5.3	1490	250 ~ 1540			3.36	A	745	6.95	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

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	20	20	3.20			3.20	0.7 ~ 4.8	850	170 ~ 1410			3.76	A	425	3.75	
	25	25	3.60			3.60	0.7 ~ 5.5	1030	170 ~ 1700			3.50	B	515	4.55	
	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	20 + 20	40	2.70	2.70		5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	20 + 25	45	2.40	3.00		5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	20 + 28	48	2.25	3.15		5.40	1.1 ~ 7.0	1170	210 ~ 1670			4.62	A	585	5.20	
	20 + 32	52	2.15	3.45		5.60	1.1 ~ 7.2	1230	210 ~ 1720			4.55	A	615	5.45	
	25 + 25	50	2.80	2.80		5.60	1.1 ~ 7.2	1250	210 ~ 1740			4.48	A	625	5.55	
	25 + 28	53	2.65	2.95		5.60	1.1 ~ 7.2	1250	210 ~ 1740			4.48	A	625	5.55	
	25 + 32	57	2.45	3.15		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 + 32	60	2.60	3.00		5.60	1.1 ~ 7.2	1230	210 ~ 1720			4.55	A	615	5.45	
	32 + 32	64	2.80	2.80		5.60	1.1 ~ 7.2	1210	210 ~ 1700			4.63	A	605	5.35	

• Outdoor Unit : CU-3E18LBE

	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	Room C	Total	min ~ max		Rating	min ~ max			W/W	CLASS			
1 Room	20	20	2.00			2.00	1.8 ~ 2.9		500	340 ~ 810			4.00	A	250	2.5	1.3
	25	25	2.50			2.50	1.8 ~ 2.9		630	340 ~ 810			4.00	A	315	3.0	1.5
	28	28	2.80			2.80	1.8 ~ 2.9		700	340 ~ 810			4.00	A	350	3.3	1.6
	32	32	3.20			3.20	1.8 ~ 3.8		800	340 ~ 1360			4.00	A	400	3.7	1.8
	40	40	4.00			4.00	1.8 ~ 4.5		1240	340 ~ 1990			3.23	A	620	5.6	2.3
	50	50	5.00			5.00	1.9 ~ 5.7		1550	340 ~ 2130			3.23	A	775	6.8	2.7
2 Room	20 + 20	40	2.00	2.00		4.00	1.9 ~ 6.2		1010	350 ~ 2100			3.96	A	505	4.5	1.3 + 1.3
	20 + 25	45	2.00	2.50		4.50	1.9 ~ 6.2		1270	350 ~ 2100			3.55	A	635	5.6	1.3 + 1.5
	20 + 28	48	2.00	2.80		4.80	1.9 ~ 6.2		1350	350 ~ 2100			3.55	A	675	6.0	1.3 + 1.6
	20 + 32	52	2.00	3.20		5.20	1.9 ~ 6.3		1490	350 ~ 2110			3.49	A	745	6.6	1.3 + 1.8
	20 + 40	60	1.73	3.47		5.20	1.9 ~ 6.4		1450	350 ~ 2110			3.59	A	725	6.4	1.1 + 2.0
	20 + 50	70	1.49	3.71		5.20	1.9 ~ 6.8		1290	360 ~ 2150			4.03	A	645	5.7	0.9 + 2.2
	25 + 25	50	2.50	2.50		5.00	1.9 ~ 6.2		1540	350 ~ 2100			3.25	A	770	6.8	1.5 + 1.5
	25 + 28	53	2.45	2.75		5.20	1.9 ~ 6.2		1540	350 ~ 2100			3.38	A	770	6.8	1.5 + 1.6
	25 + 32	57	2.28	2.92		5.20	1.9 ~ 6.3		1480	350 ~ 2110			3.51	A	740	6.5	1.5 + 1.7
	25 + 40	65	2.00	3.20		5.20	1.9 ~ 6.4		1440	350 ~ 2110			3.61	A	720	6.4	1.3 + 1.8
	25 + 50	75	1.73	3.47		5.20	1.9 ~ 6.8		1290	360 ~ 2150			4.03	A	645	5.7	1.1 + 2.0
	28 + 28	56	2.60	2.60		5.20	1.9 ~ 6.2		1540	350 ~ 2100			3.38	A	770	6.8	1.6 + 1.6
	28 + 32	60	2.43	2.77		5.20	1.9 ~ 6.3		1480	350 ~ 2110			3.51	A	740	6.5	1.5 + 1.6
	28 + 40	68	2.14	3.06		5.20	1.9 ~ 6.4		1440	350 ~ 2110			3.61	A	720	6.4	1.4 + 1.7
	28 + 50	78	1.87	3.33		5.20	1.9 ~ 6.8		1290	360 ~ 2150			4.03	A	645	5.7	1.2 + 1.9
	32 + 32	64	2.60	2.60		5.20	1.9 ~ 6.4		1450	350 ~ 2120			3.59	A	725	6.4	1.6 + 1.6
	32 + 40	72	2.31	2.89		5.20	1.9 ~ 6.5		1410	350 ~ 2120			3.69	A	705	6.3	1.5 + 1.7
	32 + 50	82	2.03	3.17		5.20	1.9 ~ 6.9		1250	360 ~ 2150			4.16	A	625	5.5	1.3 + 1.8
	40 + 40	80	2.60	2.60		5.20	1.9 ~ 6.5		1410	350 ~ 2120			3.69	A	705	6.2	1.6 + 1.6
	40 + 50	90	2.31	2.89		5.20	1.9 ~ 6.9		1250	360 ~ 2160			4.16	A	625	5.5	1.5 + 1.7
3 Room	20 + 20 + 20	60	1.73	1.73	1.73	5.19	1.9 ~ 7.2		1220	360 ~ 2170			4.25	A	610	5.3	1.1 + 1.1 + 1.1
	20 + 20 + 25	65	1.60	1.60	2.00	5.20	1.9 ~ 7.2		1220	360 ~ 2170			4.26	A	610	5.3	1.0 + 1.0 + 1.3
	20 + 20 + 28	68	1.53	1.53	2.14	5.20	1.9 ~ 7.2		1220	360 ~ 2170			4.26	A	610	5.3	1.0 + 1.0 + 1.4
	20 + 20 + 32	72	1.44	1.44	2.32	5.20	1.9 ~ 7.2		1210	360 ~ 2180			4.30	A	605	5.3	0.9 + 0.9 + 1.5
	20 + 20 + 40	80	1.30	1.30	2.60	5.20	1.8 ~ 7.3		1210	360 ~ 2180			4.30	A	605	5.3	0.8 + 0.8 + 1.6
	20 + 20 + 50	90	1.16	1.16	2.88	5.20	1.8 ~ 7.3		1200	360 ~ 2180			4.33	A	600	5.3	0.7 + 0.7 + 1.7
	20 + 25 + 25	70	1.48	1.86	1.86	5.20	1.9 ~ 7.2		1220	360 ~ 2170			4.26	A	610	5.3	0.9 + 1.2 + 1.2
	20 + 25 + 28	73	1.42	1.78	2.00	5.20	1.9 ~ 7.2		1220	360 ~ 2170			4.26	A	610	5.3	0.9 + 1.1 + 1.3
	20 + 25 + 32	77	1.35	1.69	2.16	5.20	1.9 ~ 7.2		1210	360 ~ 2180			4.30	A	605	5.3	0.9 + 1.1 + 1.4
	20 + 25 + 40	85	1.23	1.53	2.45	5.20	1.8 ~ 7.3		1200	360 ~ 2180			4.33	A	600	5.3	0.8 + 1.0 + 1.5
	20 + 28 + 28	76	1.36	1.92	1.92	5.20	1.9 ~ 7.2		1220	360 ~ 2170			4.26	A	610	5.3	0.9 + 1.2 + 1.2
	20 + 28 + 32	80	1.30	1.82	2.08	5.20	1.9 ~ 7.2		1210	360 ~ 2180			4.30	A	605	5.3	0.8 + 1.2 + 1.3
	20 + 28 + 40	88	1.18	1.65	2.37	5.20	1.8 ~ 7.3		1200	360 ~ 2180			4.33	A	600	5.3	0.7 + 1.1 + 1.5
	20 + 32 + 32	84	1.24	1.98	1.98	5.20	1.8 ~ 7.3		1200	360 ~ 2180			4.33	A	600	5.3	0.8 + 1.3 + 1.3
	25 + 25 + 25	75	1.73	1.73	1.73	5.19	1.9 ~ 7.2		1220	360 ~ 2170			4.25	A	610	5.3	1.1 + 1.1 + 1.1
	25 + 25 + 28	78	1.67	1.67	1.86	5.20	1.9 ~ 7.2		1220	360 ~ 2170			4.26	A	610	5.3	1.1 + 1.1 + 1.2
	25 + 25 + 32	82	1.59	1.59	2.02	5.20	1.9 ~ 7.2		1210	360 ~ 2180			4.30	A	605	5.3	1.0 + 1.0 + 1.3
	25 + 25 + 40	90	1.44	1.44	2.32	5.20	1.8 ~ 7.3		1200	360 ~ 2180			4.33	A	600	5.3	0.9 + 0.9 + 1.5
	25 + 28 + 28	81	1.60	1.80	1.80	5.20	1.9 ~ 7.2		1220	360 ~ 2170			4.26	A	610	5.3	1.0 + 1.2 + 1.2
	25 + 28 + 32	85	1.53	1.71	1.96	5.20	1.9 ~ 7.2		1210	360 ~ 2180			4.30	A	605	5.3	1.0 + 1.1 + 1.3
	25 + 32 + 32	89	1.46	1.87	1.87	5.20	1.8 ~ 7.3		1200	360 ~ 2180			4.33	A	600	5.3	0.9 + 1.2 + 1.2
	28 + 28 + 28	84	1.73	1.73	1.73	5.19	1.9 ~ 7.2		1220	360 ~ 2170			4.25	A	610	5.3	1.1 + 1.1 + 1.1
	28 + 28 + 32	88	1.65	1.65	1.90	5.20	1.9 ~ 7.2		1210	360 ~ 2180			4.30	A	605	5.3	1.1 + 1.1 + 1.2

	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	Room C	Total	min ~ max		Rating	min ~ max			W/W	CLASS			
1 Room	20	20	3.20			3.20	1.2 ~ 4.1		740	300 ~ 1230			4.32	A	370	3.7	
	25	25	3.60			3.60	1.2 ~ 4.3		940	300 ~ 1230			3.83	A	470	4.5	
	28	28	4.00			4.00	1.2 ~ 4.3		1050	300 ~ 1230			3.81	A	525	5.0	
	32	32	4.50			4.50	1.2 ~ 5.8		1230	300 ~ 2100			3.66	A	615	5.8	
	40	40	5.60			5.60	1.2 ~ 6.8		1720	300 ~ 2930			3.26	C	860	7.7	
	50	50	6.80			6.80	1.2 ~ 6.9		2100	300 ~ 2520			3.24	C	1050	9.2	
2 Room	20 + 20	40	2.90	2.90		5.80	1.4 ~ 7.0		1450	310 ~ 2550			4.00	A	725	6.4	
	20 + 25	45	2.84	3.56		6.40	1.4 ~ 7.0		1720	310 ~ 2550			3.72	A	860	7.6	
	20 + 28	48	2.67	3.73		6.40	1.4 ~ 7.0		1720	310 ~ 2550			3.72	A	860	7.6	
	20 + 32	52	2.62	4.18		6.80	1.4 ~ 7.3		1840	310 ~ 2520			3.70	A	920	8.2	
	20 + 40	60	2.27	4.53		6.80	1.4 ~ 7.3		1800	310 ~ 2510			3.78	A	900	7.9	
	20 + 50	70	1.94	4.86		6.80	1.4 ~ 8.0		1520	310 ~ 2200			4.47	A	760	6.7	
	25 + 25	50	3.40	3.40		6.80	1.4 ~ 7.0		1930	310 ~ 2550			3.52	B	965	8.5	
	25 + 28	53	3.21	3.59		6.80	1.4 ~ 7.0		1930	310 ~ 2550			3.52	B	965	8.5	
	25 + 32	57	2.98	3.82		6.80	1.4 ~ 7.3		1840	310 ~ 2520			3.70	A	920	8.1	
	25 + 40	65	2.62	4.18		6.80	1.4 ~ 7.3		1800	310 ~ 2510			3.78	A	900	8.0	
	25 + 50	75	2.27	4.53		6.80	1.4 ~ 8.0		1520	310 ~ 2200			4.47	A	760	6.7	
	28 + 28	56	3.40	3.40		6.80	1.4 ~ 7.0		1930	310 ~ 2550			3.52	B	965	8.5	
	28 + 32	60	3.17	3.63		6.80	1.4 ~ 7.3		1840	310 ~ 2520			3.70	A	920	8.1	
	28 + 40	68	2.80	4.00		6.80	1.4 ~ 7.3		1800	310 ~ 2510			3.78	A	900	8.0	
	28 + 50	78	2.44	4.36		6.80	1.4 ~ 8.0		1520	310 ~ 2200			4.47	A	760	6.7	
	32 + 32	64	3.40	3.40		6.80	1.4 ~ 7.5		1750	310 ~ 2490			3.89	A	875	7.7	
	32 + 40	72	3.02	3.78		6.80	1.4 ~ 7.5		1750	310 ~ 2470			3.89	A	875	7.8	
	32 + 50	82	2.65	4.15		6.80	1.4 ~ 8.0		1500	310 ~ 2180			4.53	A	750	6.6	
	40 + 40	80	3.40	3.40		6.80	1.4 ~ 7.6		1710	310 ~ 2470			3.98	A	855	7.5	
	40 + 50	90	3.02	3.78		6.80	1.4 ~ 8.0		1500	310 ~ 2170			4.53	A	750	6.6	
3 Room	20 + 20 + 20	60	2.26	2.26	2.26	6.78	1.5 ~ 8.1		1510	320 ~ 2120			4.49	A	755	6.7	
	20 + 20 + 25	65	2.09	2.09	2.62	6.80	1.5 ~ 8.1		1510	320 ~ 2120			4.50	A	755	6.7	
	20 + 20 + 28	68	2.00	2.00	2.80	6.80	1.5 ~ 8.1		1510	320 ~ 2120			4.50	A	755	6.7	
	20 + 20 + 32	72	1.89	1.89	3.02	6.80	1.4 ~ 8.3		1470	320 ~ 2110			4.63	A	735	6.5	
	20 + 20 + 40	80	1.70	1.70	3.40	6.80	1.6 ~ 8.3		1440	320 ~ 2110			4.72	A	720	6.4	
	20 + 20 + 50	90	1.51	1.51	3.78	6.80	1.6 ~ 8.3		1400	320 ~ 2110			4.86	A	700	6.5	
	20 + 25 + 25	70	1.94	2.43	2.43	6.80	1.5 ~ 8.1		1510	320 ~ 2120			4.50	A	755	6.7	
	20 + 25 + 28	73	1.86	2.33	2.61	6.80	1.5 ~ 8.1		1510	320 ~ 2120			4.50	A	755	6.7	
	20 + 25 + 32	77	1.76	2.21	2.83	6.80	1.4 ~ 8.3		1470	320 ~ 2110			4.63	A	735	6.5	
	20 + 25 + 40	85	1.60	2.00	3.20	6.80	1.6 ~ 8.3		1400	320 ~ 2110			4.86	A	700	6.5	
	20 + 28 + 28	76	1.78	2.51	2.51	6.80	1.5 ~ 8.1		1510	320 ~ 2120			4.50	A	755	6.7	
	20 + 28 + 32	80	1.70	2.38	2.72	6.80	1.4 ~ 8.3		1470	320 ~ 2110			4.63	A	735	6.5	
	20 + 28 + 40	88	1.55	2.16	3.09	6.80	1.6 ~ 8.3		1400	320 ~ 2110			4.86	A	700	6.5	
	20 + 32 + 32	84	1.62	2.59	2.59	6.80	1.6 ~ 8.3		1410	320 ~ 2100			4.82	A	705	6.3	
	25 + 25 + 25	75	2.26	2.26	2.26	6.78	1.5 ~ 8.1		1510	320 ~ 2120			4.49	A	755	6.7	
	25 + 25 + 28	78	2.18	2.18	2.44	6.80	1.5 ~ 8.1		1510	320 ~ 2120			4.50	A	755	6.7	
	25 + 25 + 32	82	2.07	2.07	2.66	6.80	1.4 ~ 8.3		1470	320 ~ 2110			4.63	A	735	6.5	
	25 + 25 + 40	90	1.89	1.89	3.02	6.80	1.6 ~ 8.3		1400	320 ~ 2110			4.86	A	700	6.5	
	25 + 28 + 28	81	2.10	2.35	2.35	6.80	1.5 ~ 8.1		1510	320 ~ 2120			4.50	A	755	6.7	
	25 + 28 + 32	85	2.00	2.24	2.56	6.80	1.4 ~ 8.3		1470	320 ~ 2110			4.63	A	735	6.5	
	25 + 32 + 32	89	1.92	2.44	2.44	6.80	1.6 ~ 8.3		1410	320 ~ 2100			4.82	A	705	6.3	
	28 + 28 + 28	84	2.26	2.26	2.26	6.78	1.5 ~ 8.1		1510	320 ~ 2120			4.49	A	755	6.7	
	28 + 28 + 32	88	2.16	2.16	2.48	6.80	1.4 ~ 8.3		1470	320 ~ 2110			4.63	A	735	6.5	

• Outdoor Unit : CU-4E23LBE

	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	Room C	Room D	Total	min ~ max		Rating	min ~ max			W/W	CLASS			
1 Room	20	20	2.00				2.00	1.8 ~ 2.9		500	340 ~ 810			4.00	A	250	2.5	1.3
	25	25	2.50				2.50	1.8 ~ 2.9		630	340 ~ 810			4.00	A	315	3.2	1.6
	28	28	2.80				2.80	1.8 ~ 2.9		700	340 ~ 810			4.00	A	350	3.5	1.6
	32	32	3.20				3.20	1.8 ~ 3.8		800	340 ~ 1360			4.00	A	400	3.9	1.6
	40	40	4.00				4.00	1.8 ~ 4.3		1240	340 ~ 1990			3.23	A	620	5.8	2.5
	50	50	5.00				5.00	1.9 ~ 5.7		1550	340 ~ 2130			3.23	A	775	7.2	2.7
	60	60	6.00				6.00	1.9 ~ 6.2		2030	340 ~ 2330			2.96	C	1015	9.2	3.3
2 Room	20 + 20	40	2.00	2.00			4.00	1.9 ~ 6.4		1010	340 ~ 2150			3.96	A	505	4.5	1.3 + 1.3
	20 + 25	45	2.00	2.50			4.50	1.9 ~ 6.4		1270	340 ~ 2150			3.55	A	635	5.7	1.3 + 1.5
	20 + 28	48	2.00	2.80			4.80	1.9 ~ 6.4		1350	340 ~ 2150			3.55	A	675	6.1	1.3 + 1.6
	20 + 32	52	2.00	3.20			5.20	1.9 ~ 6.9		1510	340 ~ 2410			3.44	A	755	6.8	1.3 + 1.8
	20 + 40	60	2.00	4.00			6.00	1.9 ~ 6.9		1810	330 ~ 2410			3.32	A	905	8.1	1.3 + 2.3
	20 + 50	70	1.94	4.86			6.80	2.0 ~ 7.5		1800	320 ~ 2440			3.78	A	900	8.1	1.3 + 2.6
	20 + 60	80	1.70	5.10			6.80	2.0 ~ 7.5		1800	320 ~ 2440			3.78	A	900	8.1	1.1 + 2.8
	25 + 25	50	2.50	2.50			5.00	1.9 ~ 6.8		1380	340 ~ 2400			3.61	A	690	6.2	1.5 + 1.5
	25 + 28	53	2.50	2.80			5.30	1.9 ~ 6.8		1470	340 ~ 2400			3.61	A	735	6.6	1.5 + 1.6
	25 + 32	57	2.50	3.20			5.70	1.9 ~ 6.9		1660	340 ~ 2410			3.43	A	830	7.4	1.6 + 1.8
	25 + 40	65	2.50	4.00			6.50	1.9 ~ 6.9		2070	330 ~ 2410			3.13	B	1035	9.2	1.5 + 2.3
	25 + 50	75	2.27	4.53			6.80	1.9 ~ 7.5		1970	320 ~ 2440			3.45	A	985	8.8	1.5 + 2.5
	25 + 60	85	2.00	4.80			6.80	1.9 ~ 7.5		1970	320 ~ 2440			3.45	A	985	8.8	1.3 + 2.6
	28 + 28	56	2.80	2.80			5.60	1.9 ~ 6.8		1550	340 ~ 2400			3.61	A	775	6.9	1.6 + 1.6
	28 + 32	60	2.80	3.20			6.00	1.9 ~ 6.9		1750	340 ~ 2410			3.43	A	875	7.8	1.6 + 1.8
	28 + 40	68	2.80	4.00			6.80	1.9 ~ 6.9		2170	330 ~ 2410			3.13	B	1085	9.7	1.6 + 2.3
	28 + 50	78	2.44	4.36			6.80	1.9 ~ 7.5		1970	320 ~ 2440			3.45	A	985	8.8	1.5 + 2.4
	28 + 60	88	2.16	4.64			6.80	1.9 ~ 7.5		1970	320 ~ 2440			3.45	A	985	8.8	1.4 + 2.5
	32 + 32	64	3.20	3.20			6.40	1.9 ~ 7.0		1960	330 ~ 2420			3.27	A	980	8.8	1.8 + 1.8
	32 + 40	72	3.02	3.78			6.80	1.9 ~ 7.1		2070	330 ~ 2420			3.29	A	1035	9.3	1.7 + 2.2
	32 + 50	82	2.65	4.15			6.80	2.0 ~ 7.6		1890	320 ~ 2450			3.60	A	945	8.5	1.6 + 2.4
	32 + 60	92	2.37	4.43			6.80	2.0 ~ 7.6		1890	320 ~ 2450			3.60	A	945	8.5	1.5 + 2.5
	40 + 40	80	3.40	3.40			6.80	1.9 ~ 7.1		2270	330 ~ 2420			3.00	C	1135	10.2	1.9 + 1.9
	40 + 50	90	3.02	3.78			6.80	2.0 ~ 7.6		1890	320 ~ 2450			3.60	A	945	8.5	1.7 + 2.2
	40 + 60	100	2.72	4.08			6.80	2.0 ~ 7.6		1890	320 ~ 2450			3.60	A	945	8.5	1.6 + 2.3
	50 + 50	100	3.40	3.40			6.80	2.1 ~ 8.1		1780	310 ~ 2460			3.82	A	890	8.0	1.9 + 1.9
	50 + 60	110	3.09	3.71			6.80	2.1 ~ 8.1		1780	310 ~ 2460			3.82	A	890	8.0	1.7 + 2.2
3 Room	20 + 20 + 20	60	2.00	2.00	2.00		6.00	1.9 ~ 8.0		1650	340 ~ 2460			3.63	A	825	7.4	1.3 + 1.3 + 1.3
	20 + 20 + 25	65	2.00	2.00	2.50		6.50	1.9 ~ 8.0		1830	340 ~ 2460			3.56	A	915	8.2	1.3 + 1.3 + 1.5
	20 + 20 + 28	68	2.00	2.00	2.80		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.3 + 1.3 + 1.6
	20 + 20 + 32	72	1.89	1.89	3.02		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.2 + 1.2 + 1.7
	20 + 20 + 40	80	1.70	1.70	3.40		6.80	1.9 ~ 8.1		1860	340 ~ 2460			3.66	A	930	8.3	1.1 + 1.1 + 1.9
	20 + 20 + 50	90	1.51	1.51	3.78		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	1.0 + 1.0 + 2.2
	20 + 20 + 60	100	1.36	1.36	4.08		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	0.9 + 0.9 + 2.3
	20 + 25 + 25	70	1.94	2.43	2.43		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.3 + 1.5 + 1.5
	20 + 25 + 28	73	1.86	2.33	2.61		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.2 + 1.5 + 1.6
	20 + 25 + 32	77	1.76	2.21	2.83		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.1 + 1.4 + 1.7
	20 + 25 + 40	85	1.60	2.00	3.20		6.80	1.9 ~ 8.1		1860	340 ~ 2460			3.66	A	930	8.3	1.0 + 1.3 + 1.8
	20 + 25 + 50	95	1.43	1.79	3.58		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	0.9 + 1.2 + 2.1
	20 + 25 + 60	105	1.29	1.62	3.89		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	0.8 + 1.0 + 2.3
	20 + 28 + 28	76	1.78	2.51	2.51		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.1 + 1.5 + 1.5
	20 + 28 + 32	80	1.70	2.38	2.72		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.1 + 1.5 + 1.6
	20 + 28 + 40	88	1.55	2.16	3.09		6.80	1.9 ~ 8.1		1860	340 ~ 2460			3.66	A	930	8.3	1.0 + 1.4 + 1.7
	20 + 28 + 50	98	1.39	1.94	3.47		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	0.9 + 1.3 + 2.0
	20 + 28 + 60	108	1.26	1.76	3.78		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	0.8 + 1.1 + 2.2
	20 + 32 + 32	84	1.62	2.59	2.59		6.80	1.9 ~ 8.1		1860	340 ~ 2460			3.66	A	930	8.3	1.0 + 1.6 + 1.6
	20 + 32 + 40	92	1.47	2.37	2.96		6.80	1.9 ~ 8.2		1860	340 ~ 2460			3.66	A	930	8.3	0.9 + 1.5 + 1.7
	20 + 32 + 50	102	1.33	2.13	3.34		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	0.8 + 1.4 + 1.9
	20 + 40 + 40	100	1.36	2.72	2.72		6.80	1.9 ~ 8.2		1820	340 ~ 2460			3.74	A	910	8.2	0.9 + 1.6 + 1.6
	20 + 40 + 50	110	1.24	2.47	3.09		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	0.8 + 1.5 + 1.7
	25 + 25 + 25	75	2.26	2.26	2.26		6.78	1.9 ~ 8.0		1910	340 ~ 2460			3.55	A	955	8.6	1.5 + 1.5 + 1.5
	25 + 25 + 28	78	2.18	2.18	2.44		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.4 + 1.4 + 1.6
	25 + 25 + 32	82	2.07	2.07	2.66		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.3 + 1.3 + 1.6
	25 + 25 + 40	90	1.89	1.89	3.02		6.80	1.9 ~ 8.1		1860	340 ~ 2460			3.66	A	930	8.3	1.2 + 1.2 + 1.7
	25 + 25 + 50	100	1.70	1.70	3.40		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	1.1 + 1.1 + 1.9
	25 + 25 + 60	110	1.55	1.55	3.70		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	1.0 + 1.0 + 2.2
	25 + 28 + 28	81	2.10	2.35	2.35		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.4 + 1.5 + 1.5
	25 + 28 + 32	85	2.00	2.24	2.56		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.3 + 1.5 + 1.6
	25 + 28 + 40	93	1.83	2.05	2.92		6.80	1.9 ~ 8.1		1860	340 ~ 2460			3.66	A	930	8.3	1.2 + 1.3 + 1.7
	25 + 28 + 50	103	1.65	1.85	3.30		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	1.1 + 1.2 + 1.9
	25 + 32 + 32	89	1.92	2.44	2.44		6.80	1.9 ~ 8.1		1860	340 ~ 2460			3.66	A	930	8.3	1.2 + 1.5 + 1.5
	25 + 32 + 40	97	1.75	2.24	2.81		6.80	1.9 ~ 8.2		1860	340 ~ 2460			3.66	A	930	8.3	1.1 + 1.5 + 1.6
	25 + 32 + 50	107	1.59	2.03	3.18		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	1.0 + 1.3 + 1.8
	25 + 40 + 40	105	1.62	2.59	2.59		6.80	1.9 ~ 8.2		1820	340 ~ 2460			3.74	A	910	8.2	1.0 + 1.6 + 1.6
	28 + 28 + 28	84	2.26	2.26	2.26		6.78	1.9 ~ 8.0		1910	340 ~ 2460			3.55	A	955	8.6	1.5 + 1.5 + 1.5
	28 + 28 + 32	88	2.16	2.16	2.48		6.80	1.9 ~ 8.0		1910	340 ~ 2460			3.56	A	955	8.6	1.4 + 1.4 + 1.5
	28 + 28 + 40	96	1.98	1.98	2.84		6.80	1.9 ~ 8.1		1860	340 ~ 2460			3.66	A	930	8.3	1.3 + 1.3 + 1.7
	28 + 28 + 50	106	1.80	1.80	3.20		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	1.2 + 1.2 + 1.8
	28 + 32 + 32	92	2.06	2.37	2.37		6.80	1.9 ~ 8.1		1860	340 ~ 2460			3.66	A	930	8.3	1.3 + 1.5 + 1.5
	28 + 32 + 40	100	1.90	2.18	2.72		6.80	1.9 ~ 8.2		1860	340 ~ 2460			3.66	A	930	8.3	1.2 + 1.4 + 1.6
	28 + 32 + 50	110	1.73	1.98	3.09		6.80	2.0 ~ 8.5		1730	340 ~ 2460			3.93	A	865	7.8	1.1 + 1.3 + 1.7
	28 + 40 + 40	108	1.76	2.52	2.52		6.80	1.9 ~ 8.2		1820	340 ~ 2460			3.74	A	910	8.2	1.1 + 1.5 + 1.5
	32 + 32 + 32	96	2.26	2.26	2.26		6.78	1.9 ~ 8.2		1820	340 ~ 2460			3.73	A	910	8.2	1.5 + 1.5 + 1.5
	32 + 32 + 40	104	2.09	2.09	2.62		6.80	1.9 ~ 8.2		1820	340 ~ 2460			3.74	A	910	8.2	1.4 + 1.4 + 1.6
4 Room	20 + 20 + 20 + 20	80	1.70	1.70	1.70	1.70	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	1.1 + 1.1 + 1.1 + 1.1
	20 + 20 + 20 + 25	85	1.60	1.60	1.60	2.00	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	1.0 + 1.0 + 1.0 + 1.2
	20 + 20 + 20 + 28	88	1.55	1.55	1.55	2.15	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	1.0 + 1.0 + 1.0 + 1.4
	20 + 20 + 20 + 32	92	1.48	1.48	1.48	2.36	6.80	1.9 ~ 8.8		1650	340 ~ 2470			4.12	A	825	7.4	0.9 + 0.9 + 0.9 + 1.5
	20 + 20 + 20 + 40	100	1.36	1.36	1.36	2.72	6.80	1.9 ~ 8.8		1650	340 ~ 2470			4.12	A	825	7.4	0.9 + 0.9 + 0.9 + 1.6
	20 + 20 + 20 + 50	110	1.24	1.24	1.24	3.08	6.80	1.9 ~ 8.8		1680	340 ~ 2470			4.05	A	840	7.5	0.8 + 0.8 + 0.8 + 1.7
	20 + 20 + 25 + 25	90	1.51	1.51	1.89	1.89	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	1.0 + 1.0 + 1.2 + 1.2
	20 + 20 + 25 + 28	93	1.46	1.46	1.83	2.05	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	0.9 + 0.9 + 1.2 + 1.3
	20 + 20 + 25 + 32	97	1.40	1.40	1.75	2.25	6.80	1.9 ~ 8.8		1650	340 ~ 2470			4.12	A	825	7.4	0.9 + 0.9 + 1.1 + 1.5
	20 + 20 + 25 + 40	105	1.30	1.30	1.61	2.59	6.80	1.9 ~ 8.8		1650	340 ~ 2470			4.12	A	825	7.4	0.8 + 0.8 + 1.0 + 1.6
	20 + 20 + 28 + 28	96	1.42	1.42	1.98	1.98	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	0.9 + 0.9 + 1.3 + 1.3
	20 + 20 + 28 + 32	100	1.36	1.36	1.90	2.18	6.80	1.9 ~ 8.8		1650	340 ~ 2470			4.12	A	825	7.4	0.9 + 0.9 + 1.2 + 1.4
	20 + 20 + 28 + 40	108	1.26	1.26	1.76	2.52	6.80	1.9 ~ 8.8		1650	340 ~ 2470			4.12	A	825	7.4	0.8 + 0.8 + 1.1 + 1.5
	20 + 20 + 32 + 32	104	1.31	1.31	2.09	2.09	6.80	1.9 ~ 8.8		1650	340 ~ 2430			4.12	A	825	7.4	0.8 + 0.8 + 1.4 + 1.4
	20 + 25 + 25 + 25	95	1.43	1.79	1.79	1.79	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	0.9 + 1.2 + 1.2 + 1.2
	20 + 25 + 25 + 28	98	1.39	1.73	1.73	1.95	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	0.9 + 1.1 + 1.1 + 1.3
	20 + 25 + 25 + 32	102	1.33	1.67	1.67	2.13	6.80	1.9 ~ 8.8		1650	340 ~ 2470			4.12	A	825	7.4	0.8 + 1.1 + 1.1 + 1.4
	20 + 25 + 25 + 40	110	1.23	1.55	1.55	2.47	6.80	1.9 ~ 8.8		1680	340 ~ 2470			4.05	A	840	7.5	0.8 + 1.0 + 1.0 + 1.5
	20 + 25 + 28 + 28	101	1.34	1.68	1.89	1.89	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	0.8 + 1.1 + 1.2 + 1.2
	20 + 25 + 28 + 32	105	1.30	1.62	1.81	2.07	6.80	1.9 ~ 8.8		1650	340 ~ 2470			4.12	A	825	7.4	0.8 + 1.0 + 1.2 + 1.3
	20 + 25 + 32 + 32	109	1.24	1.55	2.00	2.00	6.80	1.9 ~ 8.8		1650	340 ~ 2430			4.12	A	825	7.4	0.8 + 1.0 + 1.3 + 1.3
	20 + 28 + 28 + 28	104	1.31	1.63	1.83	1.83	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	0.8 + 1.2 + 1.2 + 1.2
	20 + 28 + 28 + 32	108	1.26	1.76	1.76	2.02	6.80	1.9 ~ 8.8		1680	340 ~ 2470			4.05	A	840	7.5	0.8 + 1.1 + 1.1 + 1.3
	25 + 25 + 25 + 25	100	1.70	1.70	1.70	1.70	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	1.1 + 1.1 + 1.1 + 1.1
	25 + 25 + 25 + 28	103	1.65	1.65	1.85	1.85	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	1.1 + 1.1 + 1.1 + 1.2
	25 + 25 + 25 + 32	107	1.59	1.59	1.59	2.03	6.80	1.9 ~ 8.8		1650	340 ~ 2470			4.12	A	825	7.4	1.0 + 1.0 + 1.0 + 1.3
	25 + 25 + 28 + 28	106	1.60	1.60	1.80	1.80	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	1.0 + 1.0 + 1.2 + 1.2
	25 + 25 + 28 + 32	110	1.55	1.55	1.72	1.98	6.80	1.9 ~ 8.8		1680	340 ~ 2470			4.05	A	840	7.5	1.0 + 1.0 + 1.1 + 1.3
	25 + 28 + 28 + 28	109	1.55	1.75	1.75	1.75	6.80	1.9 ~ 8.7		1690	340 ~ 2460			4.02	A	845	7.6	1.0 + 1.1 + 1.1 + 1.1

	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	Room C	Room D	Total	min ~	max	Rating	min ~	max		W/W	CLASS			
1 Room	20	20	3.20				3.20	1.2 ~	4.1	740	300 ~	1230		4.32	A	370	3.7	
	25	25	3.60				3.60	1.2 ~	4.3	940	300 ~	1230		3.83	A	470	4.7	
	28	28	4.00				4.00	1.2 ~	4.3	1050	300 ~	1230		3.81	A	525	5.2	
	32	32	4.50				4.50	1.2 ~	5.8	1230	300 ~	2100		3.66	A	615	6.0	
	40	40	5.60				5.60	1.2 ~	6.8	1720	300 ~	2930		3.26	C	860	8.0	
	50	50	6.80				6.80	1.2 ~	6.9	2100	300 ~	2520		3.24	C	1050	9.7	
	60	60	8.50				8.50	1.3 ~	9.0	2400	620 ~	2530		3.54	B	1200	11.1	
2 Room	20 + 20	40	2.90	2.90			5.80	2.7 ~	9.8	1450	610 ~	2800		4.00	A	725	6.7	
	20 + 25	45	2.71	3.39			6.10	2.7 ~	9.8	1640	610 ~	2800		3.72	A	820	7.6	
	20 + 28	48	2.67	3.73			6.40	2.7 ~	9.8	1720	610 ~	2800		3.72	A	860	8.0	
	20 + 32	52	2.69	4.31			7.00	2.7 ~	9.9	1840	590 ~	2800		3.80	A	920	8.5	
	20 + 40	60	2.73	5.47			8.20	2.7 ~	9.9	2210	590 ~	2800		3.71	A	1105	10.2	
	20 + 50	70	2.46	6.14			8.60	2.8 ~	10.2	2140	530 ~	2760		4.02	A	1070	9.9	
	20 + 60	80	2.15	6.45			8.60	2.8 ~	10.2	2290	530 ~	2760		3.76	A	1145	10.6	
	25 + 25	50	3.20	3.20			6.40	2.7 ~	9.8	1700	610 ~	2800		3.77	A	850	7.8	
	25 + 28	53	3.30	3.70			7.00	2.7 ~	9.8	1860	610 ~	2800		3.77	A	930	8.6	
	25 + 32	57	3.56	4.55			8.10	2.7 ~	9.9	2170	590 ~	2800		3.73	A	1085	10.0	
	25 + 40	65	3.31	5.29			8.60	2.7 ~	9.9	2320	590 ~	2800		3.71	A	1160	10.7	
	25 + 50	75	2.87	5.73			8.60	2.8 ~	10.2	2140	530 ~	2760		4.02	A	1070	9.9	
	25 + 60	85	2.53	6.07			8.60	2.8 ~	10.2	2140	530 ~	2760		4.02	A	1070	9.9	
	28 + 28	56	4.00	4.00			8.00	2.7 ~	9.8	2120	610 ~	2800		3.77	A	1060	9.8	
	28 + 32	60	3.97	4.53			8.50	2.7 ~	9.9	2250	590 ~	2800		3.73	A	1140	10.5	
	28 + 40	68	3.54	5.06			8.60	2.7 ~	9.9	2320	590 ~	2800		3.71	A	1160	10.7	
	28 + 50	78	3.09	5.51			8.60	2.8 ~	10.2	2140	530 ~	2760		4.02	A	1070	9.9	
	28 + 60	88	2.74	5.86			8.60	2.8 ~	10.2	2140	530 ~	2760		4.02	A	1070	9.9	
	32 + 32	64	4.30	4.30			8.60	2.8 ~	10.0	2270	580 ~	2800		3.79	A	1135	10.5	
	32 + 40	72	3.82	4.78			8.60	2.8 ~	10.0	2270	570 ~	2800		3.79	A	1135	10.5	
	32 + 50	82	3.36	5.24			8.60	2.8 ~	10.3	2090	520 ~	2740		4.11	A	1045	9.7	
	32 + 60	92	2.99	5.61			8.60	2.8 ~	10.3	2090	520 ~	2740		4.11	A	1045	9.7	
	40 + 40	80	4.30	4.30			8.60	2.8 ~	10.0	2260	560 ~	2800		3.81	A	1130	10.5	
	40 + 50	90	3.82	4.78			8.60	2.8 ~	10.3	2080	510 ~	2740		4.13	A	1040	9.6	
	40 + 60	100	3.44	5.16			8.60	2.8 ~	10.3	2080	510 ~	2740		4.13	A	1040	9.6	
	50 + 50	100	4.30	4.30			8.60	2.8 ~	10.5	1960	480 ~	2650		4.39	A	980	9.1	
	50 + 60	110	3.91	4.69			8.60	2.8 ~	10.5	1960	480 ~	2650		4.39	A	980	9.1	
3 Room	20 + 20 + 20	60	2.86	2.86	2.86		8.58	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	20 + 20 + 25	65	2.65	2.65	3.30		8.60	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	20 + 20 + 28	68	2.53	2.53	3.54		8.60	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	20 + 20 + 32	72	2.39	2.39	3.82		8.60	3.3 ~	10.4	2070	590 ~	2820		4.15	A	1035	9.6	
	20 + 20 + 40	80	2.15	2.15	4.30		8.60	3.3 ~	10.5	2060	590 ~	2810		4.17	A	1030	9.5	
	20 + 20 + 50	90	1.91	1.91	4.78		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	20 + 20 + 60	100	1.72	1.72	5.16		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	20 + 25 + 25	70	2.46	3.07	3.07		8.60	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	20 + 25 + 28	73	2.35	2.95	3.30		8.60	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	20 + 25 + 32	77	2.23	2.79	3.58		8.60	3.3 ~	10.4	2070	590 ~	2820		4.15	A	1035	9.6	
	20 + 25 + 40	85	2.02	2.53	4.05		8.60	3.3 ~	10.5	2060	590 ~	2810		4.17	A	1030	9.5	
	20 + 25 + 50	95	1.81	2.26	4.53		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	20 + 25 + 60	105	1.64	2.05	4.91		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	20 + 28 + 28	76	2.26	3.17	3.17		8.60	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	20 + 28 + 32	80	2.15	3.01	3.44		8.60	3.3 ~	10.4	2070	590 ~	2820		4.15	A	1035	9.6	
	20 + 28 + 40	88	1.95	2.74	3.91		8.60	3.3 ~	10.5	2060	590 ~	2810		4.17	A	1030	9.5	
	20 + 28 + 50	98	1.75	2.46	4.39		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	20 + 28 + 60	108	1.59	2.23	4.78		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	20 + 32 + 32	84	2.04	3.28	3.28		8.60	3.3 ~	10.5	2050	590 ~	2800		4.20	A	1025	9.5	
	20 + 32 + 40	92	1.87	2.99	3.74		8.60	3.3 ~	10.5	2040	580 ~	2790		4.22	A	1020	9.4	
	20 + 32 + 50	102	1.68	2.70	4.22		8.60	3.2 ~	10.6	1910	570 ~	2680		4.50	A	955	8.8	
	20 + 40 + 40	100	1.72	3.44	3.44		8.60	3.3 ~	10.5	2030	580 ~	2780		4.24	A	1015	9.4	
	20 + 40 + 50	110	1.56	3.13	3.91		8.60	3.2 ~	10.6	1910	570 ~	2680		4.50	A	955	8.8	
	25 + 25 + 25	75	2.86	2.86	2.86		8.58	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	25 + 25 + 28	78	2.76	2.76	3.08		8.60	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	25 + 25 + 32	82	2.62	2.62	3.36		8.60	3.3 ~	10.4	2070	590 ~	2820		4.15	A	1035	9.6	
	25 + 25 + 40	90	2.39	2.39	3.82		8.60	3.3 ~	10.5	2060	590 ~	2810		4.17	A	1030	9.5	
	25 + 25 + 50	100	2.15	2.15	4.30		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	25 + 25 + 60	110	1.95	1.95	4.70		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	25 + 28 + 28	81	2.66	2.97	2.97		8.60	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	25 + 28 + 32	85	2.53	2.83	3.24		8.60	3.3 ~	10.4	2070	590 ~	2820		4.15	A	1035	9.6	
	25 + 28 + 40	93	2.31	2.59	3.70		8.60	3.3 ~	10.5	2060	590 ~	2810		4.17	A	1030	9.5	
	25 + 28 + 50	103	2.09	2.34	4.17		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	25 + 32 + 32	89	2.42	3.09	3.09		8.60	3.3 ~	10.5	2050	590 ~	2800		4.20	A	1025	9.5	
	25 + 32 + 40	97	2.21	2.84	3.55		8.60	3.3 ~	10.5	2040	580 ~	2790		4.22	A	1020	9.4	
	25 + 32 + 50	107	2.01	2.57	4.02		8.60	3.2 ~	10.6	1910	570 ~	2680		4.50	A	955	8.8	
	25 + 40 + 40	105	2.04	3.28	3.28		8.60	3.3 ~	10.5	2030	580 ~	2780		4.24	A	1015	9.4	
	28 + 28 + 28	84	2.86	2.86	2.86		8.58	3.3 ~	10.4	2090	600 ~	2840		4.11	A	1045	9.7	
	28 + 28 + 32	88	2.74	2.74	3.12		8.60	3.3 ~	10.4	2070	590 ~	2820		4.15	A	1035	9.6	
	28 + 28 + 40	96	2.51	2.51	3.58		8.60	3.3 ~	10.5	2060	590 ~	2810		4.17	A	1030	9.5	
	28 + 28 + 50	106	2.27	2.27	4.06		8.60	3.2 ~	10.6	1930	570 ~	2710		4.46	A	965	8.9	
	28 + 32 + 32	92	2.62	2.99	2.99		8.60	3.3 ~	10.5	2050	590 ~	2800		4.20	A	1025	9.5	
	28 + 32 + 40	100	2.41	2.75	3.44		8.60	3.3 ~	10.5	2040	580 ~	2790		4.22	A	1020	9.4	
	28 + 32 + 50	110	2.19	2.50	3.91		8.60	3.2 ~	10.6	1910	570 ~	2680		4.50	A	955	8.8	
	28 + 40 + 40	108	2.22	3.19	3.19		8.60	3.3 ~	10.5	2030	580 ~	2780		4.24	A	1015	9.4	
	32 + 32 + 32	96	2.86	2.86	2.86		8.58	3.3 ~	10.5	1990	580 ~	2770		4.31	A	995	9.2	
	32 + 32 + 40	104	2.65	2.65	3.30		8.60	3.3 ~	10.5	1980	580 ~	2760		4.34	A	990	9.2	
4 Room	20 + 20 + 20 + 20	80	2.15	2.15	2.15	2.15	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 20 + 20 + 25	85	2.02	2.02	2.02	2.54	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 20 + 20 + 28	88	1.95	1.95	1.95	2.75	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 20 + 20 + 32	92	1.87	1.87	1.87	2.99	8.60	3.0 ~	10.6	1850	580 ~	2600		4.65	A	925	8.6	
	20 + 20 + 20 + 40	100	1.72	1.72	1.72	3.44	8.60	3.0 ~	10.6	1840	590 ~	2590		4.67	A	920	8.5	
	20 + 20 + 20 + 50	110	1.56	1.56	1.56	3.92	8.60	3.0 ~	10.6	1850	580 ~	2600		4.65	A	925	8.6	
	20 + 20 + 25 + 25	90	1.91	1.91	2.39	2.39	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 20 + 25 + 28	93	1.85	1.85	2.31	2.59	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 20 + 25 + 32	97	1.77	1.77	2.22	2.84	8.60	3.0 ~	10.6	1850	580 ~	2600		4.65	A	925	8.6	
	20 + 20 + 25 + 40	105	1.64	1.64	2.04	3.28	8.60	3.0 ~	10.6	1840	590 ~	2590		4.67	A	920	8.5	
	20 + 20 + 28 + 28	96	1.79	1.79	2.51	2.51	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 20 + 28 + 32	100	1.72	1.72	2.41	2.75	8.60	3.0 ~	10.6	1850	580 ~	2600		4.65	A	925	8.6	
	20 + 20 + 28 + 40	108	1.59	1.59	2.23	3.19	8.60	3.0 ~	10.6	1840	590 ~	2590		4.67	A	920	8.5	
	20 + 20 + 32 + 32	104	1.65	1.65	2.65	2.65	8.60	3.0 ~	10.6	1830	590 ~	2570		4.70	A	915	8.5	
	20 + 25 + 25 + 25	95	1.82	2.26	2.26	2.26	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 25 + 25 + 28	98	1.76	2.19	2.19	2.46	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 25 + 25 + 32	102	1.68	2.11	2.11	2.70	8.60	3.0 ~	10.6	1850	580 ~	2600		4.65	A	925	8.6	
	20 + 25 + 25 + 40	110	1.56	1.95	1.95	3.14	8.60	3.0 ~	10.6	1850	590 ~	2600		4.65	A	925	8.6	
	20 + 25 + 28 + 28	101	1.70	2.14	2.38	2.38	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 25 + 28 + 32	105	1.64	2.05	2.29	2.62	8.60	3.0 ~	10.6	1850	580 ~	2600		4.65	A	925	8.6	
	20 + 25 + 32 + 32	109	1.58	1.98	2.52	2.52	8.60	3.0 ~	10.6	1830	590 ~	2570		4.70	A	915	8.5	
	20 + 28 + 28 + 28	104	1.64	2.32	2.32	2.32	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	20 + 28 + 28 + 32	108	1.59	2.23	2.23	2.55	8.60	3.0 ~	10.6	1850	580 ~	2600		4.65	A	925	8.6	
	25 + 25 + 25 + 25	100	2.15	2.15	2.15	2.15	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	25 + 25 + 25 + 28	103	2.09	2.09	2.09	2.33	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	25 + 25 + 25 + 32	107	2.01	2.01	2.01	2.57	8.60	3.0 ~	10.6	1850	580 ~	2600		4.65	A	925	8.6	
	25 + 25 + 28 + 28	106	2.03	2.03	2.27	2.27	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	
	25 + 25 + 28 + 32	110	1.95	1.95	2.19	2.51	8.60	3.0 ~	10.6	1850	580 ~	2600		4.65	A	925	8.6	
	25 + 28 + 28 + 28	109	1.97	2.21	2.21	2.21	8.60	3.1 ~	10.6	1870	580 ~	2620		4.60	A	935	8.6	

• Outdoor Unit : CU-4E27CBPG

	Indoor unit capacity Cooling	Total	Cooling Capacity (kW) Room A	Room B	Room C	Room D	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	20	20	2.00				2.00	1.9 ~ 2.7	440	380 ~ 620	4.52	A	220	2.10	1.3
	25	25	2.50				2.50	2.0 ~ 3.4	550	380 ~ 900	4.52	A	275	2.60	1.5
	28	28	2.80				2.80	2.0 ~ 3.4	620	380 ~ 900	4.52	A	310	2.95	1.6
	32	32	3.20				3.20	2.0 ~ 3.9	720	380 ~ 1090	4.44	A	360	3.40	1.8
	40	40	4.00				4.00	2.0 ~ 4.4	1030	380 ~ 1390	3.88	A	515	4.60	2.3
	50	50	5.00				5.00	2.1 ~ 5.2	1610	400 ~ 1800	3.11	B	805	7.15	2.7
2 Room	20 + 20	40	2.00	2.00			4.00	2.1 ~ 5.0	890	400 ~ 1280	4.49	A	445	3.95	1.3 + 1.3
	20 + 25	45	2.00	2.50			4.50	2.1 ~ 6.1	1110	400 ~ 1880	4.07	A	555	4.90	1.3 + 1.5
	20 + 28	48	2.00	2.80			4.80	2.1 ~ 6.1	1180	400 ~ 1880	4.07	A	590	5.20	1.3 + 1.6
	20 + 32	52	2.00	3.20			5.20	2.2 ~ 7.0	1320	400 ~ 2790	3.94	A	660	5.80	1.3 + 1.8
	20 + 40	60	2.00	4.00			6.00	2.2 ~ 7.1	1760	400 ~ 2790	3.41	A	880	7.75	1.3 + 2.3
	20 + 50	70	2.00	5.00			7.00	2.5 ~ 7.2	2500	460 ~ 2800	2.80	D	1250	11.00	1.3 + 2.7
	25 + 25	50	2.50	2.50			5.00	2.2 ~ 6.9	1380	400 ~ 2780	3.61	A	690	6.10	1.5 + 1.5
	25 + 28	53	2.50	2.80			5.30	2.2 ~ 6.9	1470	400 ~ 2780	3.61	A	735	6.50	1.5 + 1.6
	25 + 32	57	2.50	3.20			5.70	2.2 ~ 7.0	1620	400 ~ 2790	3.53	A	810	7.15	1.5 + 1.8
	25 + 40	65	2.50	4.00			6.50	2.2 ~ 7.1	2180	400 ~ 2790	2.98	C	1090	9.60	1.5 + 2.3
	25 + 50	75	2.35	4.75			7.10	2.5 ~ 7.2	2610	460 ~ 2800	2.72	D	1305	11.50	1.5 + 2.6
	28 + 28	56	2.80	2.80			5.60	2.2 ~ 6.9	1550	400 ~ 2780	3.61	A	775	6.85	1.6 + 1.6
	28 + 32	60	2.80	3.20			6.00	2.2 ~ 7.0	1700	400 ~ 2790	3.53	A	850	7.55	1.6 + 1.8
	28 + 40	68	2.80	4.00			6.80	2.2 ~ 7.1	2280	400 ~ 2790	2.98	C	1140	10.00	1.6 + 2.3
	28 + 50	78	2.55	4.55			7.10	2.5 ~ 7.2	2610	460 ~ 2800	2.72	D	1305	11.50	1.6 + 2.5
	32 + 32	64	3.20	3.20			6.40	2.2 ~ 7.3	1860	400 ~ 2810	3.44	A	930	8.15	1.8 + 1.8
	32 + 40	72	3.10	3.90			7.00	2.5 ~ 7.3	2410	460 ~ 2810	2.90	C	1205	10.60	1.7 + 2.3
	32 + 50	82	2.90	4.50			7.40	2.6 ~ 7.4	2820	460 ~ 2880	2.62	D	1410	12.30	1.7 + 2.5
	40 + 40	80	3.60	3.60			7.20	2.5 ~ 7.3	2620	460 ~ 2810	2.75	D	1310	11.50	2.1 + 2.1
	40 + 50	90	3.25	4.05			7.30	2.7 ~ 7.4	2670	480 ~ 2820	2.73	D	1335	11.70	1.8 + 2.3
	50 + 50	100	3.75	3.75			7.50	2.8 ~ 7.6	2860	480 ~ 2870	2.62	D	1430	12.50	2.2 + 2.2
3 Room	20 + 20 + 20	60	2.00	2.00	2.00		6.00	2.2 ~ 7.8	1510	410 ~ 2490	3.98	A	755	6.65	1.3 + 1.3 + 1.3
	20 + 20 + 25	65	2.00	2.00	2.50		6.50	2.5 ~ 8.1	1760	460 ~ 2850	3.70	A	880	7.75	1.3 + 1.3 + 1.5
	20 + 20 + 28	68	2.00	2.00	2.80		6.80	2.5 ~ 8.1	1840	460 ~ 2850	3.70	A	920	8.10	1.3 + 1.3 + 1.6
	20 + 20 + 32	72	2.05	2.05	3.20		7.30	2.5 ~ 8.2	1980	460 ~ 2790	3.69	A	990	8.70	1.3 + 1.3 + 1.8
	20 + 20 + 40	80	1.95	1.95	3.90		7.80	2.6 ~ 8.2	2330	460 ~ 2830	3.35	A	1165	10.30	1.3 + 1.3 + 2.3
	20 + 20 + 50	90	1.80	1.80	4.40		8.00	2.8 ~ 8.3	2460	490 ~ 2820	3.25	A	1230	10.80	1.2 + 1.2 + 2.4
	20 + 25 + 25	70	2.10	2.65	2.65		7.40	2.5 ~ 8.1	2140	460 ~ 2790	3.46	A	1070	9.40	1.4 + 1.6 + 1.6
	20 + 25 + 28	73	2.00	2.55	2.85		7.40	2.5 ~ 8.1	2140	460 ~ 2790	3.46	A	1070	9.40	1.3 + 1.6 + 1.7
	20 + 25 + 32	77	1.95	2.45	3.20		7.60	2.6 ~ 8.2	2240	460 ~ 2840	3.39	A	1120	9.85	1.3 + 1.5 + 1.9
	20 + 25 + 40	85	1.90	2.35	3.75		8.00	2.7 ~ 8.2	2510	490 ~ 2800	3.19	B	1255	11.00	1.2 + 1.5 + 2.2
	20 + 25 + 50	95	1.70	2.10	4.20		8.00	2.8 ~ 8.3	2460	490 ~ 2800	3.25	A	1230	10.80	1.1 + 1.4 + 2.4
	20 + 28 + 28	76	1.90	2.75	2.75		7.40	2.5 ~ 8.1	2140	460 ~ 2790	3.46	A	1070	9.40	1.2 + 1.6 + 1.6
	20 + 28 + 32	80	1.90	2.65	3.05		7.60	2.6 ~ 8.2	2240	460 ~ 2840	3.39	A	1120	9.85	1.2 + 1.6 + 1.7
	20 + 28 + 40	88	1.80	2.55	3.65		8.00	2.7 ~ 8.2	2510	490 ~ 2800	3.19	B	1255	11.00	1.2 + 1.6 + 2.1
	20 + 28 + 50	98	1.60	2.30	4.10		8.00	2.8 ~ 8.3	2460	490 ~ 2800	3.25	A	1230	10.80	1.0 + 1.5 + 2.3
	20 + 32 + 32	84	1.90	3.00	3.00		7.90	2.7 ~ 8.3	2290	460 ~ 2810	3.45	A	1145	10.10	1.2 + 1.7 + 1.7
	20 + 32 + 40	92	1.70	2.80	3.50		8.00	2.8 ~ 8.4	2380	490 ~ 2840	3.36	A	1190	10.40	1.1 + 1.6 + 2.0
	20 + 32 + 50	102	1.55	2.50	3.95		8.00	2.8 ~ 8.3	2470	490 ~ 2840	3.24	A	1235	10.90	1.0 + 1.5 + 2.3
	20 + 40 + 40	100	1.60	3.20	3.20		8.00	2.8 ~ 8.4	2380	490 ~ 2810	3.36	A	1190	10.40	1.0 + 1.8 + 1.8
	20 + 40 + 50	110	1.45	2.90	3.65		8.00	2.8 ~ 8.3	2470	490 ~ 2810	3.24	A	1235	10.90	0.9 + 1.7 + 2.1
	20 + 50 + 50	120	1.30	3.35	3.35		8.00	2.9 ~ 8.4	2430	490 ~ 2830	3.29	A	1215	10.70	0.8 + 1.9 + 1.9
	25 + 25 + 25	75	2.60	2.60	2.60		7.80	2.6 ~ 8.1	2450	460 ~ 2820	3.18	B	1225	10.80	1.6 + 1.6 + 1.6
	25 + 25 + 28	78	2.50	2.50	2.80		7.80	2.6 ~ 8.1	2450	460 ~ 2820	3.18	B	1225	10.80	1.5 + 1.5 + 1.6
	25 + 25 + 32	82	2.45	2.45	3.10		8.00	2.7 ~ 8.2	2510	490 ~ 2810	3.19	B	1255	11.00	1.5 + 1.5 + 1.7
	25 + 25 + 40	90	2.20	2.20	3.60		8.00	2.8 ~ 8.2	2510	490 ~ 2790	3.19	B	1255	11.00	1.4 + 1.4 + 2.1
	25 + 25 + 50	100	2.00	2.00	4.00		8.00	2.8 ~ 8.3	2460	490 ~ 2790	3.25	A	1230	10.80	1.3 + 1.3 + 2.3
	25 + 28 + 28	81	2.40	2.70	2.70		7.80	2.6 ~ 8.1	2450	460 ~ 2820	3.18	B	1225	10.80	1.5 + 1.6 + 1.6
	25 + 28 + 32	85	2.35	2.65	3.00		8.00	2.7 ~ 8.2	2510	490 ~ 2810	3.19	B	1255	11.00	1.5 + 1.6 + 1.7
	25 + 28 + 40	93	2.15	2.40	3.45		8.00	2.8 ~ 8.2	2510	490 ~ 2790	3.19	B	1255	11.00	1.4 + 1.5 + 2.0
	25 + 28 + 50	103	1.95	2.15	3.90		8.00	2.8 ~ 8.3	2460	490 ~ 2790	3.25	A	1230	10.80	1.3 + 1.4 + 2.3
	25 + 32 + 32	89	2.20	2.90	2.90		8.00	2.7 ~ 8.4	2380	490 ~ 2850	3.36	A	1190	10.40	1.4 + 1.7 + 1.7
	25 + 32 + 40	97	2.05	2.65	3.30		8.00	2.8 ~ 8.4	2380	490 ~ 2820	3.36	A	1190	10.40	1.3 + 1.6 + 1.9
	25 + 32 + 50	107	1.85	2.40	3.75		8.00	2.8 ~ 8.4	2340	490 ~ 2830	3.42	A	1170	10.30	1.2 + 1.5 + 2.2
	25 + 40 + 40	105	1.90	3.05	3.05		8.00	2.8 ~ 8.4	2380	490 ~ 2800	3.36	A	1190	10.40	1.2 + 1.7 + 1.7
	25 + 40 + 50	115	1.70	2.80	3.50		8.00	2.8 ~ 8.4	2340	490 ~ 2800	3.42	A	1170	10.30	1.1 + 1.6 + 2.0
	25 + 50 + 50	125	1.60	3.20	3.20		8.00	2.9 ~ 8.5	2340	520 ~ 2800	3.42	A	1170	10.30	1.0 + 1.8 + 1.8
	28 + 28 + 28	84	2.60	2.60	2.60		7.80	2.6 ~ 8.1	2450	460 ~ 2820	3.18	B	1225	10.80	1.6 + 1.6 + 1.6
	28 + 28 + 32	88	2.55	2.55	2.90		8.00	2.7 ~ 8.2	2510	490 ~ 2810	3.19	B	1255	11.00	1.6 + 1.6 + 1.7
	28 + 28 + 40	96	2.35	2.35	3.30		8.00	2.8 ~ 8.2	2510	490 ~ 2790	3.19	B	1255	11.00	1.5 + 1.5 + 1.9
	28 + 28 + 50	106	2.10	2.10	3.80		8.00	2.8 ~ 8.3	2460	490 ~ 2790	3.25	A	1230	10.80	1.4 + 1.4 + 2.2
	28 + 32 + 32	92	2.40	2.80	2.80		8.00	2.7 ~ 8.4	2380	490 ~ 2850	3.36	A	1190	10.40	1.5 + 1.6 + 1.6
	28 + 32 + 40	100	2.25	2.55	3.20		8.00	2.8 ~ 8.4	2380	490 ~ 2820	3.36	A	1190	10.40	1.5 + 1.6 + 1.9
	28 + 32 + 50	110	2.00	2.35	3.65		8.00	2.8 ~ 8.4	2340	490 ~ 2830	3.42	A	1170	10.30	1.3 + 1.5 + 2.1
	28 + 40 + 40	108	2.10	2.95	2.95		8.00	2.8 ~ 8.4	2380	490 ~ 2800	3.36	A	1190	10.40	1.4 + 1.7 + 1.7
	28 + 40 + 50	118	1.90	2.70	3.40		8.00	2.8 ~ 8.4	2340	490 ~ 2800	3.42	A	1170	10.30	1.2 + 1.6 + 1.9
	28 + 50 + 50	128	1.70	3.15	3.15		8.00	2.9 ~ 8.5	2340	520 ~ 2800	3.42	A	1170	10.30	1.1 + 1.8 + 1.8
	32 + 32 + 32	96	2.66	2.66	2.66		7.98	2.8 ~ 8.5	2300	490 ~ 2830	3.47	A	1150	10.10	1.6 + 1.6 + 1.6
	32 + 32 + 40	104	2.45	2.45	3.10		8.00	2.8 ~ 8.4	2390	490 ~ 2800	3.35	A	1195	10.50	1.5 + 1.5 + 1.7
	32 + 32 + 50	114	2.25	2.25	3.50		8.00	2.8 ~ 8.4	2390	490 ~ 2830	3.35	A	1195	10.50	1.5 + 1.5 + 2.0
	32 + 40 + 40	112	2.30	2.85	2.85		8.00	2.8 ~ 8.4	2390	490 ~ 2820	3.35	A	1195	10.50	1.5 + 1.7 + 1.7
	32 + 40 + 50	122	2.10	2.60	3.30		8.00	2.9 ~ 8.4	2350	490 ~ 2820	3.40	A	1175	10.30	1.4 + 1.6 + 1.9
	32 + 50 + 50	132	1.90	3.05	3.05		8.00	2.9 ~ 8.5	2350	520 ~ 2810	3.40	A	1175	10.30	1.2 + 1.7 + 1.7
	40 + 40 + 40	120	2.66	2.66	2.66		7.98	2.9 ~ 8.4	2390	490 ~ 2840	3.34	A	1195	10.50	1.6 + 1.6 + 1.6
	40 + 40 + 50	130	2.45	2.45	3.10		8.00	2.9 ~ 8.4	2390	520 ~ 2810	3.35	A	1195	10.50	1.5 + 1.5 + 1.7
4 Room	20 + 20 + 20 + 20	80	2.00	2.00	2.00	2.00	8.00	2.7 ~ 8.8	2150	490 ~ 2840	3.72	A	1075	9.50	1.3 + 1.3 + 1.3 + 1.3
	20 + 20 + 20 + 25	85	1.90	1.90	1.90	2.30	8.00	2.8 ~ 8.8	2140	490 ~ 2880	3.74	A	1070	9.40	1.2 + 1.2 + 1.2 + 1.5
	20 + 20 + 20 + 28	88	1.80	1.80	1.80	2.60	8.00	2.8 ~ 8.8	2140	490 ~ 2880	3.74	A	1070	9.40	1.2 + 1.2 + 1.2 + 1.6
	20 + 20 + 20 + 32	92	1.75	1.75	1.75	2.75	8.00	2.8 ~ 8.9	2130	490 ~ 2880	3.76	A	1065	9.40	1.1 + 1.1 + 1.1 + 1.6
	20 + 20 + 20 + 40	100	1.60	1.60	1.60	3.20	8.00	2.8 ~ 8.9	2110	490 ~ 2870	3.79	A	1055	9.30	1.0 + 1.0 + 1.0 + 1.8
	20 + 20 + 20 + 50	110	1.45	1.45	1.45	3.65	8.00	2.8 ~ 8.9	2110	490 ~ 2840	3.79	A	1055	9.30	0.9 + 0.9 + 0.9 + 2.1
	20 + 20 + 25 + 25	90	1.80	1.80	2.20	2.20	8.00	2.8 ~ 8.8	2130	490 ~ 2870	3.76	A	1065	9.40	1.2 + 1.2 + 1.4 + 1.4
	20 + 20 + 25 + 28	93	1.70	1.70	2.15	2.45	8.00	2.8 ~ 8.8	2130	490 ~ 2870	3.76	A	1065	9.40	1.1 + 1.1 + 1.4 + 1.5
	20 + 20 + 25 + 32	97	1.65	1.65	2.05	2.65	8.00	2.8 ~ 8.9	2120	490 ~ 2870	3.77	A	1060	9.30	1.1 + 1.1 + 1.3 + 1.6
	20 + 20 + 25 + 40	105	1.50	1.50	1.90	3.10	8.00	2.8 ~ 8.9	2090	490 ~ 2840	3.83	A	1045	9.20	1.0 + 1.0 + 1.2 + 1.7
	20 + 20 + 25 + 50	115	1.40	1.40	1.70	3.50	8.00	2.9 ~ 8.9	2110	520 ~ 2880	3.79	A	1055	9.30	0.9 + 0.9 + 1.1 + 2.0
	20 + 20 + 28 + 28	96	1.65	1.65	2.35	2.35	8.00	2.8 ~ 8.8	2130	490 ~ 2870	3.76	A	1065	9.40	1.1 + 1.1 + 1.5 + 1.5
	20 + 20 + 28 + 32	100	1.60	1.60	2.25	2.55	8.00	2.8 ~ 8.9	2120	490 ~ 2870	3.77	A	1060	9.30	1.0 + 1.0 + 1.5 + 1.6
	20 + 20 + 28 + 40	108	1.50	1.50	2.05	2.95	8.00	2.8 ~ 8.9	2090	490 ~ 2840	3.83	A	1045	9.20	1.0 + 1.0 + 1.3 + 1.7
	20 + 20 + 28 + 50	118	1.35	1.35	1.90	3.40	8.00	2.9 ~ 8.9	2110	520 ~ 2880	3.79	A	1055	9.30	0.9 + 0.9 + 1.2 + 1.9
	20 + 20 + 32 + 32	104	1.55	1.55	2.45	2.45	8.00	2.8 ~ 8.9	2090	500 ~ 2870	3.83	A	1045	9.20	1.0 + 1.0 + 1.5 + 1.5
	20 + 20 + 32 + 40	112	1.45	1.45	2.25	2.85	8.00	2.8 ~ 8.9	2080	500 ~ 2840	3.85	A	1040	9.15	0.9 + 0.9 + 1.5 + 1.7
	20 + 20 + 32 + 50	122	1.30	1.30	2.10	3.30	8.00	2.9 ~ 9.0	2040	520 ~ 2860	3.92	A	1020	8.95	0.8 + 0.8 + 1.4 + 1.9
	20 + 20 + 40 + 40	120	1.35	1.35	2.65	2.65	8.00	2.9 ~ 9.0	2060	520 ~ 2850	3.88	A	1030	9.05	0.9 + 0.9 + 1.6 + 1.6
	20 + 20 + 40 + 50	130	1.25	1.25	2.40	3.10	8.00	2.9 ~ 9.0	2020	520 ~ 2880	3.96	A	1010	8.85	0.8 + 0.8 + 1.5 + 1.7
	20 + 25 + 25 + 25	95	1.70	2.10	2.10	2.10	8.00	2.8 ~ 8.8	2120	490 ~ 2850	3.77	A	1060	9.30	1.1 + 1.4 + 1.4 + 1.4
	20 + 25 + 25 + 28	98	1.60	2.05	2.05	2.30	8.00	2.8 ~ 8.8	2120	490 ~ 2850	3.77	A	1060	9.30	1.0 + 1.3 + 1.3 + 1.5
	20 + 25 + 25 + 32	102	1.55	1.95	1.95	2.55	8.00	2.8 ~ 8.9	2100	490 ~ 2850	3.81	A	1050	9.20	1.0 + 1.3 + 1.3 + 1.6
	20 + 25 + 25 + 40	110	1.45	1.80	1.80	2.95	8.00	2.8 ~ 8.9	2130	490 ~ 2860	3.76	A	1065	9.40	0.9 + 1.2 + 1.2 + 1.7
	20 + 25 + 25 + 50	120	1.35	1.65	1.65	3.35	8.00	2.9 ~ 8.9	2110	520 ~ 2860	3.79	A	1055	9.30	0.9 + 1.1 + 1.1 + 1.9
	20 + 25 + 28 + 28	101	1.60	2.00	2.20	2.20	8.00	2.8 ~ 8.8	2120	490 ~ 2850	3.77	A	1060	9.30	1.0 + 1.3 + 1.4 + 1.4
	20 + 25 + 28 + 32	105	1.50	1.90	2.15	2.45	8.00	2.8 ~ 8.9	2100	490 ~ 2850	3.81	A	1050	9.20	1.0 + 1.2 + 1.4 + 1.5
	20 + 25 + 28 + 40	113	1.40	1.75	2.00	2.85	8.00	2.8 ~ 8.9	2130	490 ~ 2860	3.76	A	1065	9.40	0.9 + 1.1 + 1.3 + 1.7
	20 + 25 + 28 + 50	123	1.30	1.65	1.80	3.25	8.00	2.9 ~ 8.9	2110	520 ~ 2860	3.79	A	1055	9.30	0.8 + 1.1 + 1.2 + 1.8
	20 + 25 + 32 + 32	109	1.45	1.85	2.35	2.35	8.00	2.8 ~ 8.9	2130	500 ~ 2850	3.76	A	1065	9.40	0.9 + 1.2 + 1.5 + 1.5
	20 + 25 + 32 + 40	117	1.35	1.70	2.20	2.75	8.00	2.9 ~ 9.0	2070	520 ~ 2860	3.86	A	1035	9.15	0.9 + 1.1 + 1.4 + 1.6
	20 + 25 + 32 + 50	127	1.25	1.55	2.00	3.20	8.00	2.9 ~ 9.0	2030	520 ~ 2840	3.94	A	1015	8.95	0.8 + 1.0 + 1.3 + 1.8
	20 + 25 + 40 + 40	125	1.30	1.60	2.55	2.55	8.00	2.9 ~ 9.0	2040	520 ~ 2870	3.92	A	1020	8.95	0.8 + 1.0 + 1.6 + 1.6
	20 + 25 + 40 + 50	135	1.20	1.50	2.35	2.95	8.00	2.9 ~ 9.0	2020	520 ~ 2880	3.96	A	1010	8.85	0.7 + 1.0 + 1.5 + 1.7
	20 + 28 + 28 + 28	104	1.55	2.15	2.15	2.15	8.00	2.8 ~ 8.8	2120	490 ~ 2850	3.77	A	1060	9.30	1.0 + 1.4 + 1.4 + 1.4
	20 + 28 + 28 + 32	108	1.50	2.05	2.05	2.40	8.00	2.8 ~ 8.9	2100	490 ~ 2850	3.81	A	1050	9.20	1.0 + 1.3 + 1.3 + 1.5
	20 + 28 + 28 + 40	116	1.35	1.95	1.95	2.75	8.00	2.8 ~ 8.9	2130	490 ~ 2860	3.76	A	1065	9.40	0.9 + 1.3 + 1.3 + 1.6
	20 + 28 + 28 + 50	126	1.25	1.80	1.80	3.15	8.00	2.9 ~ 8.9	2110	520 ~ 2860	3.79	A	1055	9.30	0.8 + 1.2 + 1.2 + 1.8
	20 + 28 + 32 + 32	112	1.40	2.00	2.30	2.30	8.00	2.8 ~ 8.9	2130	500 ~ 2850	3.76	A	1065	9.40	0.9 + 1.3 + 1.5 + 1.5
	20 + 28 + 32 + 40	120	1.35	1.85	2.15	2.65	8.00	2.9 ~ 9.0	2070	520 ~ 2860	3.86	A	1035	9.15	0.9 + 1.2 + 1.4 + 1.6
	20 + 28 + 32 + 50	130	1.25	1.70	1.95	3.10	8.00	2.9 ~ 9.0	2030	520 ~ 2840	3.94	A	1015	8.95	0.8 + 1.1 + 1.3 + 1.7
	20 + 28 + 40 + 40	128	1.25	1.75	2.50	2.50	8.00	2.9 ~ 9.0	2040	520 ~ 2870	3.92	A	1020	8.95	0.8 + 1.1 + 1.6 + 1.6
	20 + 32 + 32 + 32	116	1.40	2.20	2.20	2.20	8.00	2.8 ~ 9.1	2040	500 ~ 2870	3.92	A	1020	8.95	0.9 + 1.4 + 1.4 + 1.4
	20 + 32 + 32 + 40	124	1.30	2.05	2.05	2.60	8.00	2.9 ~ 9.1	2020	520 ~ 2840	3.96	A	1010	8.85	0.8 + 1.3 + 1.3 + 1.6
	20 + 32 + 32 + 50	134	1.20	1.90	1.90	3.00	8.00	3.0 ~ 9.2	2000	530 ~ 2870	4.00	A	1000	8.80	0.7 + 1.2 + 1.2 + 1.7
	20 + 32 + 40 + 40	132	1.20	2.00	2.40	2.40	8.00	2.9 ~ 9.1	2090	520 ~ 2860	3.83	A	1045	9.20	0.7 + 1.3 + 1.5 + 1.5
	25 + 25 + 25 + 25	100	2.00	2.00	2.00	2.00	8.00	2.8 ~ 8.8	2110	490 ~ 2840	3.79	A	1055	9.30	1.3 + 1.3 + 1.3 + 1.3
	25 + 25 + 25 + 28	103	1.95	1.95	1.95	2.15	8.00	2.8 ~ 8.8	2110	490 ~ 2840	3.79	A	1055	9.30	1.3 + 1.3 + 1.3 + 1.4
	25 + 25 + 25 + 32	107	1.85	1.85	1.85	2.45	8.00	2.8 ~ 8.9	2090	490 ~ 2870	3.83	A	1045	9.20	1.2 + 1.2 + 1.2 + 1.5
	25 + 25 + 25 + 40	115	1.75	1.75	1.75	2.75	8.00	2.9 ~ 8.9	2120	520 ~ 2850	3.77	A	1060	9.30	1.1 + 1.1 + 1.1 + 1.6
	25 + 25 + 25 + 50	125	1.60	1.60	1.60	3.20	8.00	2.9 ~ 8.9	2110	520 ~ 2850	3.79	A	1055	9.30	1.0 + 1.0 + 1.0 + 1.8
	25 + 25 + 28 + 28	106	1.90	1.90	2.10	2.10	8.00	2.8 ~ 8.8	2110	490 ~ 2840	3.79	A	1055	9.30	1.2 + 1.2 + 1.4 + 1.4
	25 + 25 + 28 + 32	110	1.80	1.80	2.05	2.35	8.00	2.8 ~ 8.9	2090	490 ~ 2870	3.83	A	1045	9.20	1.2 + 1.2 + 1.3 + 1.5
	25 + 25 + 28 + 40	118	1.70	1.70	1.90	2.70	8.00	2.9 ~ 8.9	2120	520 ~ 2850	3.77	A	1060	9.30	1.1 + 1.1 + 1.2 + 1.6
	25 + 25 + 28 + 50	128	1.55	1.55	1.75	3.15	8.00	2.9 ~ 8.9	2110	520 ~ 2850	3.79	A	1055	9.30	1.0 + 1.0 + 1.1 + 1.8
	25 + 25 + 32 + 32	114	1.75	1.75	2.25	2.25	8.00	2.9 ~ 9.0	2080	500 ~ 2870	3.85	A	1040	9.15	1.1 + 1.1 + 1.5 + 1.5
	25 + 25 + 32 + 40	122	1.65	1.65	2.10	2.60	8.00	2.9 ~ 9.0	2050	520 ~ 2880	3.90	A	1025	9.05	1.1 + 1.1 + 1.4 + 1.6
	25 + 25 + 32 + 50	132	1.50	1.50	1.95	3.05	8.00	2.9 ~ 9.0	2030	520 ~ 2840	3.94	A	1015	8.95	1.0 + 1.0 + 1.3 + 1.7
	25 + 25 + 40 + 40	130	1.55	1.55	2.45	2.45	8.00	3.0 ~ 9.0	2040	520 ~ 2860	3.92	A	1020	8.95	1.0 + 1.0 + 1.5 + 1.5
	25 + 28 + 28 + 28	109	1.85	2.05	2.05	2.05	8.00	2.8 ~ 8.8	2110	490 ~ 2840	3.79	A	1055	9.30	1.2 + 1.3 + 1.3 + 1.3
	25 + 28 + 28 + 32	113	1.75	2.00	2.00	2.25	8.00	2.8 ~ 8.9	2090	490 ~ 2870	3.83	A	1045	9.20	1.1 + 1.3 + 1.3 + 1.5
	25 + 28 + 28 + 40	121	1.65	1.85	1.85	2.65	8.00	2.9 ~ 8.9	2120	520 ~ 2850	3.77	A	1060	9.30	1.1 + 1.2 + 1.2 + 1.6
	25 + 28 + 28 + 50	131	1.55	1.70	1.70	3.05	8.00	2.9 ~ 8.9	2110	520 ~ 2850	3.79	A	1055	9.30	1.0 + 1.1 + 1.1 + 1.7
	25 + 28 + 32 + 32	117	1.70	1.90	2.20	2.20	8.00	2.8 ~ 8.9	2130	500 ~ 2850	3.76	A	1065	9.40	1.1 + 1.2 + 1.4 + 1.4
	25 + 28 + 32 + 40	125	1.60	1.80	2.05	2.55	8.00	2.9 ~ 9.0	2070	520 ~ 2860	3.86	A	1035	9.15	1.0 + 1.2 + 1.3 + 1.6
	25 + 28 + 32 + 50	135	1.50	1.65	1.90	2.95	8.00	2.9 ~ 9.0	2030	520 ~ 2840	3.94	A	1015	8.95	1.0 + 1.1 + 1.2 + 1.7
	25 + 28 + 40 + 40	133	1.50	1.70	2.40	2.40	8.00	2.9 ~ 9.0	2040	520 ~ 2870	3.92	A	1020	8.95	1.0 + 1.1 + 1.5 + 1.5
	25 + 32 + 32 + 32	121	1.70	2.10	2.10	2.10	8.00	2.9 ~ 9.1	2030	520 ~ 2860	3.94	A	1015	8.95	1.1 + 1.4 + 1.4 + 1.4
	25 + 32 + 32 + 40	129	1.50	2.00	2.00	2.50	8.00	2.9 ~ 9.1	2020	520 ~ 2840	3.96	A	1010	8.85	1.0 + 1.3 + 1.3 + 1.5
	28 + 28 + 28 + 28	112	2.00	2.00	2.00	2.00	8.00	2.8 ~ 8.8	2110	490 ~ 2840	3.79	A	1055	9.30	1.3 + 1.3 + 1.3 + 1.3
	28 + 28 + 28 + 32	116	1.95	1.95	1.95	2.15	8.00	2.8 ~ 8.9	2090	490 ~ 2870	3.83	A	1045	9.20	1.3 + 1.3 + 1.3 + 1.4
	28 + 28 + 28 + 40	124	1.80	1.80	1.80	2.60	8.00	2.9 ~ 8.9	2120	520 ~ 2850	3.77	A	1060	9.30	1.2 + 1.2 + 1.2 + 1.6
	28 + 28 + 28 + 50	134	1.65	1.65	1.65	3.05	8.00	2.9 ~ 8.9	2110	520 ~ 2850	3.79	A	1055	9.30	1.1 + 1.1 + 1.1 + 1.7
	28 + 28 + 32 + 32	120	1.85	1.85	2.15	2.15	8.00	2.9 ~ 9.0	2080	500 ~ 2870	3.85	A	1040	9.15	1.2 + 1.2 + 1.4 + 1.4
	28 + 28 + 32 + 40	128	1.75	1.75	2.00	2.50	8.00	2.9 ~ 9.0	2050	520 ~ 2880	3.90	A	1025	9.05	1.1 + 1.1 + 1.3 + 1.5
	28 + 28 + 40 + 40	136	1.65	1.65	2.35	2.35	8.00	3.0 ~ 9.0	2040	520 ~ 2860	3.92	A	1020	8.95	1.1 + 1.1 + 1.5 + 1.5
	28 + 32 + 32 + 32	124	1.85	2.05	2.05	2.05	8.00	2.9 ~ 9.1	2030	520 ~ 2860	3.94	A	1015	8.95	1.2 + 1.3 + 1.3 + 1.3
	28 + 32 + 32 + 40	132	1.70	1.95	1.95	2.40	8.00	2.9 ~ 9.1	2010	520 ~ 2880	3.98	A	1005	8.85	1.1 + 1.3 + 1.3 + 1.5
	32 + 32 + 32 + 32	128	2.00	2.00	2.00	2.00	8.00	2.9 ~ 9.2	2000	530 ~ 2850	4.00	A	1000	8.80	1.3 + 1.3 + 1.3 + 1.3
	32 + 32 + 32 + 40	136	1.90	1.90	1.90	2.30	8.00	3.0 ~ 9.2	1980	530 ~ 2870	4.04	A	990	8.70	1.2 + 1.2 + 1.2 + 1.5

Rooms	Indoor unit capacity Heating	Total	Heating Capacity (kW) Room A	Room B	Room C	Room D	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	20	20	3.20				3.20	1.7	4.7	840	370	1830	3.81	A	420	3.85	
	25	25	3.60				3.60	1.7	4.8	1090	370	1900	3.31	C	545	4.85	
	28	28	4.00				4.00	1.7	4.8	1210	370	1900	3.31	C	605	5.40	
	32	32	4.50				4.50	1.7	5.8	1310	370	2290	3.44	B	655	5.85	
	40	40	5.60				5.60	1.8	7.2	1900	370	3560	2.95	D	950	8.35	
	50	50	7.10				7.10	2.1	7.3	2840	430	3580	2.50	F	1420	12.40	
2 Room	20 + 20	40	3.20	3.20			6.40	1.8	9.4	1480	400	3550	4.32	A	740	6.50	
	20 + 25	45	3.15	3.95			7.10	2.1	9.4	1700	420	3510	4.18	A	850	7.55	
	20 + 28	48	2.95	4.15			7.10	2.1	9.4	1700	420	3510	4.18	A	850	7.55	
	20 + 32	52	2.90	4.60			7.50	2.2	9.8	1740	420	3490	4.31	A	870	7.65	
	20 + 40	60	2.75	5.55			8.30	2.4	9.8	2060	440	3440	4.03	A	1030	9.05	
	20 + 50	70	2.50	6.30			8.80	3.2	9.9	2260	530	3400	3.89	A	1130	9.90	
	25 + 25	50	3.55	3.55			7.10	2.3	9.4	1860	440	3480	3.81	A	930	8.15	
	25 + 28	53	3.55	3.95			7.50	2.3	9.4	1970	440	3480	3.81	A	985	8.65	
	25 + 32	57	3.55	4.55			8.10	2.4	9.8	1980	440	3460	4.09	A	990	8.70	
	25 + 40	65	3.30	5.30			8.60	2.1	9.8	2175	530	3390	3.95	A	1088	9.65	
	25 + 50	75	3.00	6.00			9.00	3.2	9.9	2390	530	3370	3.77	A	1195	10.50	
	28 + 28	56	3.85	3.85			7.70	2.3	9.4	2020	440	3480	3.81	A	1010	9.85	
	28 + 32	60	3.80	4.30			8.10	2.4	9.8	1980	440	3460	4.09	A	990	8.70	
	28 + 40	68	3.55	5.05			8.60	2.1	9.8	2175	530	3390	3.95	A	1088	9.65	
	28 + 50	78	3.25	5.75			9.00	3.2	9.9	2390	530	3370	3.77	A	1195	10.50	
	32 + 32	64	4.25	4.25			8.50	2.5	10.1	2110	470	3390	4.03	A	1055	9.30	
	32 + 40	72	3.90	4.90			8.80	3.2	10.1	2230	530	3340	3.95	A	1115	9.85	
	32 + 50	82	3.60	5.60			9.20	3.2	10.1	2390	530	3300	3.85	A	1195	10.60	
	40 + 40	80	4.55	4.55			9.10	3.2	10.1	2360	530	3320	3.86	A	1180	10.30	
	40 + 50	90	4.20	5.20			9.40	3.2	10.2	2480	530	3300	3.79	A	1240	10.90	
	50 + 50	100	4.70	4.70			9.40	3.5	10.2	2470	590	3290	3.81	A	1235	10.90	
3 Room	20 + 20 + 20	60	2.87	2.87	2.87		8.61	3.1	10.4	1990	500	3250	4.33	A	995	8.80	
	20 + 20 + 25	65	2.70	2.70	3.40		8.80	3.2	10.4	2010	510	3220	4.38	A	1005	8.85	
	20 + 20 + 28	68	2.60	2.60	3.60		8.80	3.2	10.4	2010	510	3220	4.38	A	1005	8.85	
	20 + 20 + 32	72	2.45	2.45	4.00		8.90	3.2	10.4	2030	510	3220	4.38	A	1015	8.95	
	20 + 20 + 40	80	2.30	2.30	4.60		9.20	3.2	10.4	2150	510	3180	4.28	A	1075	9.50	
	20 + 20 + 50	90	2.10	2.10	5.20		9.40	3.2	10.4	2120	510	3180	4.43	A	1060	9.30	
	20 + 25 + 25	70	2.60	3.20	3.20		9.00	3.2	10.4	2090	510	3190	4.31	A	1045	9.20	
	20 + 25 + 28	73	2.45	3.10	3.45		9.00	3.2	10.4	2090	510	3190	4.31	A	1045	9.20	
	20 + 25 + 32	77	2.40	3.00	3.60		9.20	3.2	10.4	2110	510	3180	4.36	A	1055	9.30	
	20 + 25 + 40	85	2.20	2.75	4.45		9.40	3.2	10.4	2160	510	3140	4.35	A	1080	9.50	
	20 + 25 + 50	95	2.00	2.45	4.95		9.40	3.5	10.4	2080	560	3150	4.52	A	1040	9.15	
	20 + 28 + 28	76	2.40	3.30	3.30		9.00	3.2	10.4	2090	510	3190	4.31	A	1045	9.20	
	20 + 28 + 32	80	2.30	3.20	3.70		9.20	3.2	10.4	2110	510	3180	4.36	A	1055	9.30	
	20 + 28 + 40	88	2.15	3.00	4.25		9.40	3.2	10.4	2160	510	3140	4.35	A	1080	9.50	
	20 + 28 + 50	98	1.90	2.70	4.80		9.40	3.5	10.4	2080	560	3150	4.52	A	1040	9.15	
	20 + 32 + 32	84	2.20	3.55	3.55		9.30	3.2	10.5	2130	500	3180	4.37	A	1065	9.40	
	20 + 32 + 40	92	2.05	3.25	4.10		9.40	3.2	10.5	2150	500	3140	4.37	A	1075	9.50	
	20 + 32 + 50	102	1.85	2.95	4.60		9.40	3.7	10.5	2170	620	3140	4.33	A	1085	9.55	
	20 + 40 + 40	100	1.90	3.75	3.75		9.40	3.6	10.5	2110	620	3110	4.45	A	1055	9.30	
	20 + 40 + 50	110	1.70	3.40	4.30		9.40	3.9	10.5	2120	660	3110	4.43	A	1060	9.30	
	20 + 50 + 50	120	1.60	3.90	3.90		9.40	4.1	10.5	2170	700	3120	4.33	A	1085	9.55	
	25 + 25 + 25	75	3.08	3.08	3.08		9.24	3.2	10.4	2170	510	3160	4.26	A	1085	9.55	
	25 + 25 + 28	78	2.96	2.96	3.32		9.24	3.2	10.4	2170	510	3160	4.26	A	1085	9.55	
	25 + 25 + 32	82	2.85	2.85	3.70		9.40	3.2	10.4	2190	510	3150	4.29	A	1095	9.65	
	25 + 25 + 40	90	2.60	2.60	4.20		9.40	3.3	10.4	2140	530	3130	4.39	A	1070	9.40	
	25 + 25 + 50	100	2.35	2.35	4.70		9.40	3.8	10.4	2100	640	3120	4.48	A	1050	9.20	
	25 + 28 + 28	81	2.84	3.20	3.20		9.24	3.2	10.4	2170	510	3160	4.26	A	1085	9.55	
	25 + 28 + 32	85	2.75	3.10	3.55		9.40	3.2	10.4	2190	510	3150	4.29	A	1095	9.65	
	25 + 28 + 40	93	2.50	2.85	4.05		9.40	3.3	10.4	2140	530	3130	4.39	A	1070	9.40	
	25 + 28 + 50	103	2.30	2.55	4.55		9.40	3.8	10.4	2100	640	3120	4.48	A	1050	9.20	
	25 + 32 + 32	89	2.60	3.40	3.40		9.40	3.2	10.5	2170	500	3150	4.33	A	1085	9.55	
	25 + 32 + 40	97	2.40	3.10	3.90		9.40	3.5	10.5	2130	560	3120	4.41	A	1065	9.40	
	25 + 32 + 50	107	2.20	2.80	4.40		9.40	3.9	10.5	2150	660	3120	4.37	A	1075	9.50	
	25 + 40 + 40	105	2.20	3.60	3.60		9.40	3.8	10.5	2060	640	3080	4.56	A	1030	9.05	
	25 + 40 + 50	115	2.05	3.25	4.10		9.40	4.0	10.5	2100	680	3080	4.48	A	1050	9.20	
	25 + 50 + 50	125	1.90	3.75	3.75		9.40	4.2	10.5	2140	700	3080	4.39	A	1070	9.40	
	28 + 28 + 28	84	3.08	3.08	3.08		9.24	3.2	10.4	2170	510	3160	4.26	A	1085	9.55	
	28 + 28 + 32	88	3.00	3.00	3.40		9.40	3.2	10.4	2190	510	3150	4.29	A	1095	9.65	
	28 + 28 + 40	96	2.75	2.75	3.90		9.40	3.3	10.4	2140	530	3130	4.39	A	1070	9.40	
	28 + 28 + 50	106	2.50	2.50	4.40		9.40	3.8	10.4	2100	640	3120	4.48	A	1050	9.20	
	28 + 32 + 32	92	2.90	3.25	3.25		9.40	3.2	10.5	2170	500	3150	4.33	A	1085	9.55	
	28 + 32 + 40	100	2.65	3.00	3.75		9.40	3.5	10.5	2130	560	3120	4.41	A	1065	9.40	
	28 + 32 + 50	110	2.40	2.75	4.25		9.40	3.9	10.5	2150	660	3120	4.37	A	1075	9.50	
	28 + 40 + 40	108	2.40	3.50	3.50		9.40	3.8	10.5	2060	640	3080	4.56	A	1030	9.05	
	28 + 40 + 50	118	2.20	3.20	4.00		9.40	4.0	10.5	2100	680	3080	4.48	A	1050	9.20	
	28 + 50 + 50	128	2.10	3.65	3.65		9.40	4.2	10.5	2140	700	3080	4.39	A	1070	9.40	
	32 + 32 + 32	96	3.13	3.13	3.13		9.39	3.3	10.5	2160	520	3180	4.35	A	1080	9.50	
	32 + 32 + 40	104	2.90	2.90	3.60		9.40	3.7	10.5	2140	620	3150	4.39	A	1070	9.40	
	32 + 32 + 50	114	2.65	2.65	4.10		9.40	4.0	10.5	2130	680	3120	4.41	A	1065	9.40	
	32 + 40 + 40	112	2.70	3.35	3.35		9.40	3.9	10.5	2120	660	3120	4.43	A	1060	9.30	
	32 + 40 + 50	122	2.45	3.10	3.85		9.40	4.1	10.5	2100	700	3100	4.48	A	1050	9.20	
	32 + 50 + 50	132	2.30	3.55	3.55		9.40	4.2	10.5	2060	700	3080	4.56	A	1030	9.05	
	40 + 40 + 40	120	3.13	3.13	3.13		9.39	4.0	10.5	2100	680	3080	4.47	A	1050	9.20	
	40 + 40 + 50	130	2.90	2.90	3.60		9.40	4.2	10.5	2080	700	3080	4.52	A	1040	9.15	
4 Room	20 + 20 + 20 + 20	80	2.35	2.35	2.35	2.35	9.40	3.2	10.5	2080	550	3140	4.52	A	1040	9.15	
	20 + 20 + 20 + 25	85	2.20	2.20	2.20	2.80	9.40	3.2	10.5	2060	550	3120	4.56	A	1030	9.05	
	20 + 20 + 20 + 28	88	2.15	2.15	2.15	2.95	9.40	3.2	10.5	2060	550	3120	4.56	A	1030	9.05	
	20 + 20 + 20 + 32	92	2.05	2.05	2.05	3.25	9.40	3.4	10.5	2120	590	3180	4.43	A	1060	9.30	
	20 + 20 + 20 + 40	100	1.90	1.90	1.90	3.70	9.40	3.8	10.5	2090	640	3140	4.50	A	1045	9.20	
	20 + 20 + 20 + 50	110	1.70	1.70	1.70	4.30	9.40	4.0	10.5	2120	680	3110	4.43	A	1060	9.30	
	20 + 20 + 25 + 25	90	2.10	2.10	2.60	2.60	9.40	3.5	10.5	2050	610	3110	4.59	A	1025	9.05	
	20 + 20 + 25 + 28	93	2.00	2.00	2.55	2.85	9.40	3.5	10.5	2050	610	3110	4.59	A	1025	9.05	
	20 + 20 + 25 + 32	97	1.95	1.95	2.40	3.10	9.40	3.7	10.5	2100	620	3160	4.48	A	1050	9.20	
	20 + 20 + 25 + 40	105	1.80	1.80	2.20	3.60	9.40	3.9	10.5	2070	660	3110	4.54	A	1035	9.10	
	20 + 20 + 25 + 50	115	1.65	1.65	2.00	4.10	9.40	4.1	10.5	2090	700	3100	4.50	A	1045	9.20	
	20 + 20 + 28 + 28	96	1.95	1.95	2.75	2.75	9.40	3.5	10.5	2050	610	3110	4.59	A	1025	9.05	
	20 + 20 + 28 + 32	100	1.90	1.90	2.60	3.00	9.40	3.7	10.5	2100	620	3160	4.48	A	1050	9.20	
	20 + 20 + 28 + 40	108	1.75	1.75	2.40	3.50	9.40	3.9	10.5	2070	660	3110	4.54	A	1035	9.10	
	20 + 20 + 28 + 50	118	1.60	1.60	2.20	4.00	9.40	4.1	10.5	2090	700	3100	4.50	A	1045	9.20	
	20 + 20 + 32 + 32	104	1.80	1.80	2.90	2.90	9.40	3.8	10.5	2110	640	3190	4.45	A	1055	9.30	
	20 + 20 + 32 + 40	112	1.70	1.70	2.65	3.35	9.40	4.0	10.5	2080	660	3150	4.52	A	1040	9.15	
	20 + 20 + 32 + 50	122	1.55	1.55	2.45	3.85	9.40	4.1	10.5	2110	700	3080	4.45	A	1055	9.30	
	20 + 20 + 40 + 40	120	1.55	1.55	3.15	3.15	9.40	4.1	10.5	2050	700	3110	4.59	A	1025	9.05	
	20 + 20 + 40 + 50	130	1.45	1.45	2.90	3.60	9.40	4.2	10.5	2080	700	3060	4.52	A	1040	9.15	
	20 + 25 + 25 + 25	95	2.05	2.45	2.45	2.45	9.40	3.8	10.5	2040	640	3080	4.61	A	1020	8.95	
	20 + 25 + 25 + 28	98	1.90	2.40	2.40	2.70	9.40	3.8	10.5	2040	640	3080	4.61	A	1020	8.95	
	20 + 25 + 25 + 32	102	1.85	2.30	2.30	2.95	9.40	3.9	10.5	2080	660	3130	4.52	A	1040	9.15	
	20 + 25 + 25 + 40	110	1.70	2.15	2.15	3.40	9.40	4.0	10.5	2050	680	3080	4.59	A	1025	9.05	
	20 + 25 + 25 + 50	120	1.55	1.95	1.95	3.95	9.40	4.2	10.5	2080	700	3080	4.52	A	1040	9.15	
	20 + 25 + 28 + 28	101	1.85	2.35	2.60	2.60	9.40	3.8	10.5	2040	640	3080	4.61	A	1020	8.95	
	20 + 25 + 28 + 32	106	1.80	2.25	2.50	2.85	9.40	3.9	10.5	2080	660	3130	4.52	A	1040	9.15	
	20 + 25 + 28 + 40	113	1.60	2.10	2.35	3.35	9.40	4.0	10.5	2050	680	3080	4.59	A	1025	9.05	
	20 + 25 + 28 + 50	123	1.55	1.90	2.15	3.80	9.40	4.2	10.5	2080	700	3080	4.52	A	1040	9.15	
	20 + 25 + 32 + 32	109	1.70	2.20	2.75	2.75	9.40	4.0	10.5	2090	680	3180	4.50	A	1045	9.20	
	20 + 25 + 32 + 40	117	1.60	2.00	2.55	3.25	9.40	4.1	10.5	2060	700	3120	4.56	A	1030	9.05	
	20 + 25 + 32 + 50	127	1.50	1.85	2.35	3.70	9.40	4.2	10.5	2090	700	3080	4.50	A	1045	9.20	
	20 + 25 + 40 + 40	125	1.50	1.90	3.00	3.00	9.40	4.2	10.5	2030	700	3080	4.63	A	1015	8.95	
	20 + 25 + 40 + 50	135	1.35	1.75	2.80	3.50	9.40	4.2	10.5	2080	700	3060	4.52	A	1040	9.15	
	20 + 28 + 28 + 28	104	1.75	2.55	2.55	2.55	9.40	3.8	10.5	2040	640	3080	4.61	A	1020	8.95	
	20 + 28 + 28 + 32	108	1.70	2.45	2.45	2.80	9.40	3.9	10.5	2080	660	3130	4.52	A	1040	9.15	
	20 + 28 + 28 + 40	116	1.60	2.25	2.25	3.30	9.40	4.0	10.5	2050	680	3080	4.59	A	1025	9.05	
	20 + 28 + 28 + 50	126	1.45	2.10	2.10	3.75	9.40	4.2	10.5	2080	700	3080	4.52	A	1040	9.15	
	20 + 28 + 32 + 32	112	1.65	2.35	2.70	2.70	9.40	4.0	10.5	2090	680	3180	4.50	A	1045	9.20	
	20 + 28 + 32 + 40	120	1.55	2.20	2.50	3.15	9.40	4.1	10.5	2060	700	3120	4.56	A	1030	9.05	
	20 + 28 + 32 + 50	130	1.45	2.00	2.30	3.65	9.40	4.2	10.5	2090	700	3080	4.50	A	1045	9.20	
	20 + 28 + 40 + 40	128	1.45	2.05	2.95	2.95	9.40	4.2	10.5	2030	700	3080	4.63	A	1015	8.95	
	20 + 32 + 32 + 32	116	1.60	2.60	2.60	2.60	9.40	4.0	10.6	2110	680	3120	4.45	A	1055	9.30	
	20 + 32 + 32 + 40	124	1.45	2.45	2.45	3.05	9.40	4.1	10.6	2080	700	3060	4.52	A	1040	9.15	
	20 + 32 + 32 + 50	134	1.40	2.25	2.25	3.50	9.40	4.2	10.6	2110	700	3060	4.45	A	1055	9.30	
	20 + 32 + 40 + 40	132	1.40	2.30	2.85	2.85	9.40	4.2	10.6	2060	700	3060	4.56	A	1030	9.05	
	25 + 25 + 25 + 25	100	2.35	2.35	2.35	2.35	9.40	3.9	10.5	2030	660	3080	4.63	A	1015	8.95	
	25 + 25 + 25 + 28	103	2.30	2.30	2.30	2.50	9.40	3.9	10.5	2030	660	3080	4.63	A	1015	8.95	
	25 + 25 + 25 + 32	107	2.20	2.20	2.20	2.80	9.40	4.0	10.5	2060	680	3100	4.56	A	1030	9.05	
	25 + 25 + 25 + 40	115	2.05	2.05	2.05	3.25	9.40	4.1	10.5	2040	700	3070	4.61	A	1020	8.95	
	25 + 25 + 25 + 50	125	1.90	1.90	1.90	3.70	9.40	4.2	10.5	2070	700	3070	4.54	A	1035	9.15	
	25 + 25 + 28 + 28	106	2.20	2.20	2.50	2.50	9.40	3.9	10.5	2030	660	3080	4.63	A	1015	8.95	
	25 + 25 + 28 + 32	110	2.15	2.15	2.35	2.75	9.40	4.0	10.5	2060	680	3100	4.56	A	1030	9.05	
	25 + 25 + 28 + 40	118	2.00	2.00	2.20	3.20	9.40	4.1	10.5	2040	700	3070	4.61	A	1020	8.95	
	25 + 25 + 28 + 50	128	1.85	1.85	2.05	3.65	9.40	4.2	10.5	2070	700	3070	4.54	A	1035	9.15	
	25 + 25 + 32 + 32	114	2.05	2.05	2.65	2.65	9.40	4.0	10.5	2070	680	3140	4.54	A	1035	9.15	
	25 + 25 + 32 + 40	122	1.95	1.95	2.40	3.10	9.40	4.2	10.5	2040	700	3080	4.61	A	1020	8.95	
	25 + 25 + 32 + 50	132	1.80	1.80	2.25	3.55	9.40	4.2	10.5	2090	700	3080	4.50	A	1045	9.20	
	25 + 25 + 40 + 40	130	1.80	1.80	2.90	2.90	9.40	4.2	10.5	2020	700	3070	4.65	A	1010	8.85	
	25 + 28 + 28 + 28	109	2.20	2.40	2.40	2.40	9.40	3.9	10.5	2030	660	3080	4.63	A	1015	8.95	
	25 + 28 + 28 + 32	113	2.05	2.35	2.35	2.65	9.40	4.0	10.5	2060	680	3100	4.56	A	1030	9.05	
	25 + 28 + 28 + 40	121	1.90	2.20	2.20	3.10	9.40	4.1	10.5	2040	700	3070	4.61	A	1020	8.95	
	25 + 28 + 28 + 50	131	1.80	2.00	2.00	3.60	9.40	4.2	10.5	2070	700	3070	4.54	A	1035	9.15	
	25 + 28 + 32 + 32	117	2.00	2.30	2.55	2.55	9.40	4.0	10.5	2090	680	3180	4.50	A	1045	9.20	
	25 + 28 + 32 + 40	125	1.90	2.10	2.40	3.00	9.40	4.1	10.5	2060	700	3120	4.56	A	1030	9.05	
	25 + 28 + 32 + 50	135	1.70	1.95	2.25	3.50	9.40	4.2	10.5	2090	700	3080	4.50	A	1045	9.20	
	25 + 28 + 40 + 40	133	1.70	2.00	2.85	2.85	9.40	4.2	10.5	2030	700	3080	4.63	A	1015	8.95	
	25 + 32 + 32 + 32	121	1.90	2.50	2.50	2.50	9.40	4.1	10.6	2090	700	3100	4.50	A	1045	9.20	
	25 + 32 + 32 + 40	129	1.80	2.35	2.35	2.90	9.40	4.1	10.6	2080	700	3080	4.52	A	1040	9.15	
	28 + 28 + 28 + 28	112	2.35	2.35	2.35	2.35	9.40	3.9	10.5	2030	660	3080	4.63	A	1015	8.95	
	28 + 28 + 28 + 32	116	2.25	2.25	2.25	2.65	9.40	4.0	10.5	2060	680	3100	4.56	A	1030	9.05	
	28 + 28 + 28 + 40	124	2.10	2.10	2.10	3.10	9.40	4.1	10.5	2040	700	3070	4.61	A	1020	8.95	
	28 + 28 + 28 + 50	134	1.95	1.95	1.95	3.55	9.40	4.2	10.5	2070	700	3070	4.54	A	1035	9.15	
	28 + 28 + 32 + 32	120	2.20	2.20	2.50	2.50	9.40	4.0	10.5	2070	680	3140	4.54	A	1035	9.15	
	28 + 28 + 32 + 40	128	2.05	2.05	2.35	2.95	9.40	4.2	10.5	2040	700	3080	4.61	A	1020	8.95	
	28 + 28 + 40 + 40	136	1.95	1.95	2.75	2.75	9.40	4.2	10.5	2020	700	3070	4.65	A	1010	8.85	
	28 + 32 + 32 + 32	124	2.05	2.45	2.45	2.45	9.40	4.1	10.6	2090	700	3100	4.50	A	1045	9.20	
	28 + 32 + 32 + 40	132	1.95	2.30	2.30	2.85	9.40	4.2	10.6	2070	700	3080	4.54	A	1035	9.15	
	32 + 32 + 32 + 32	128	2.35	2.35	2.35	2.35	9.40	4.2	10.6	2110	700	3080	4.45	A	1055	9.30	
	32 + 32 + 32 + 40	136	2.20	2.20	2.20	2.80	9.40	4.2	10.6	2080	700	3060	4.52	A	1040	9.10	

3 Features

• **Inverter Technology**
- Wider output power range
- Energy saving
- Quick Cooling
- Quick Heating
- More precise temperature control

• **E-ion Air Purifying System with Patrol Sensor**
- Active e-ions are released to catch dust particles and bring them back the large positively charged filter

• **Environment Protection**
- Non-ozone depletion substances refrigerant (R410A)

• **Long Installation Piping**
- Long piping up to 15 meters (0.75 ~ 1.75HP) and 20 meters (2.0 ~ 2.25HP) during single split connection only

• **Easy to use remote control**

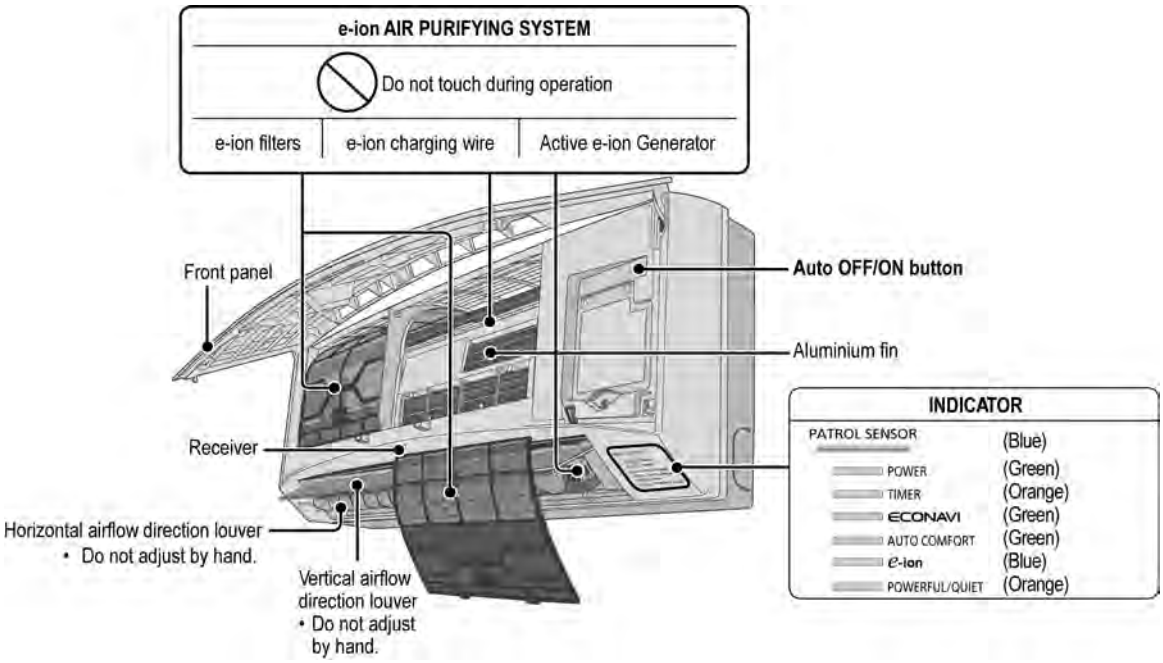
• **Quality Improvement**
- Random auto restart after power failure for safety restart operation
- Gas leakage protection
- Prevent compressor reverse cycle
- Inner protector to protect Compressor
- Noise prevention during soft dry operation

• **Operation Improvement**
- Quiet mode to reduce the indoor unit operating sound
- Powerful mode to reach the desired room temperature quickly
- 24-hour timer setting

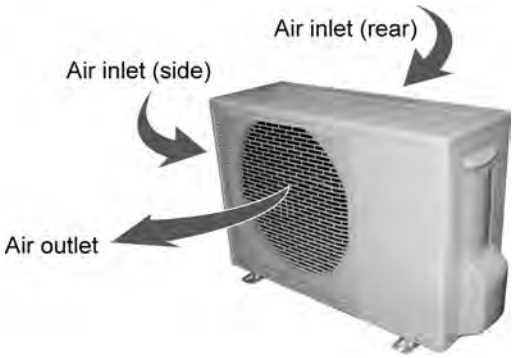
• **Serviceability Improvement**
- Breakdown Self Diagnosis function

4 Location of Controls and Components

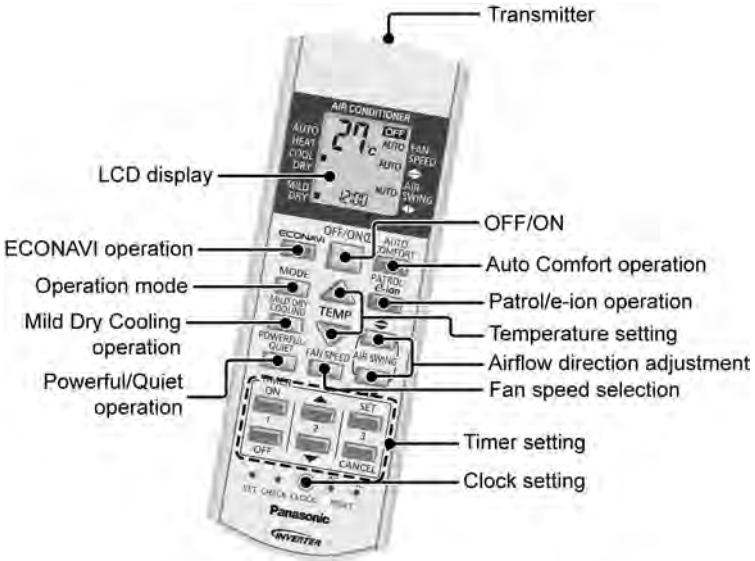
4.1. Indoor Unit



4.2. Outdoor Unit



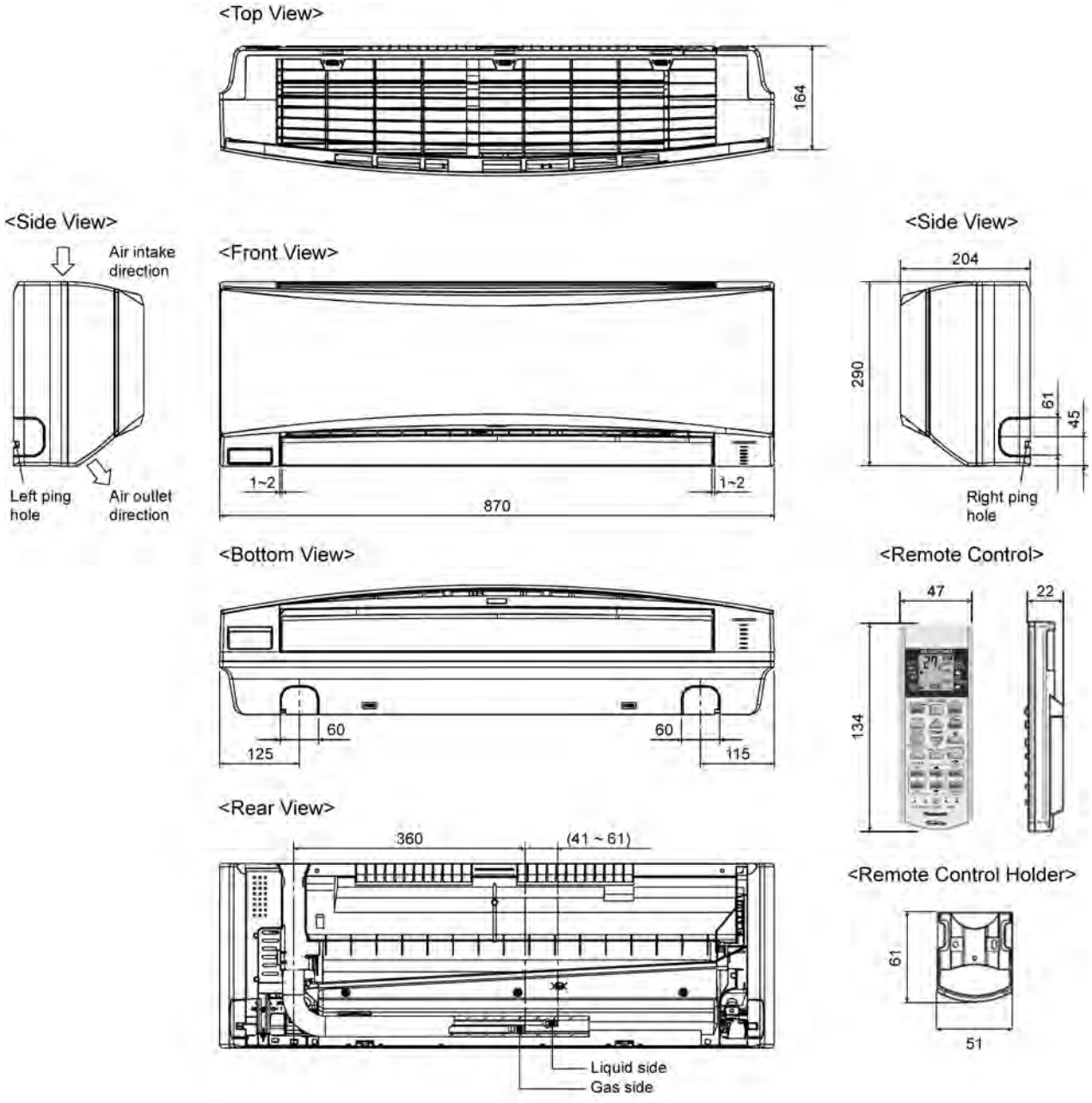
4.3. Remote Control



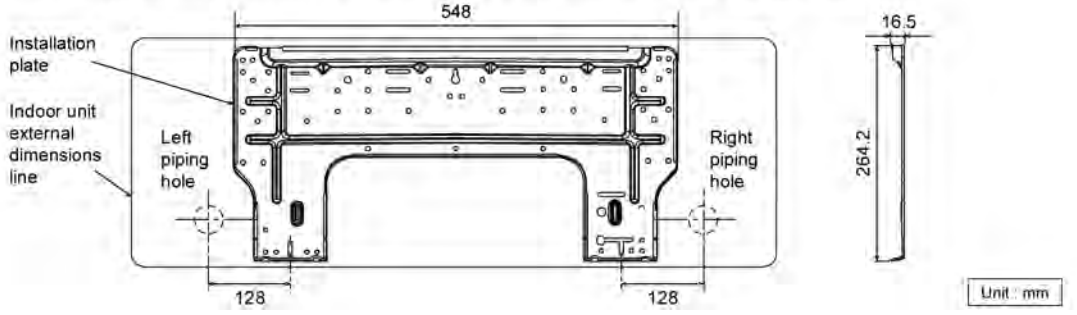
5 Dimensions

5.1. Indoor Unit

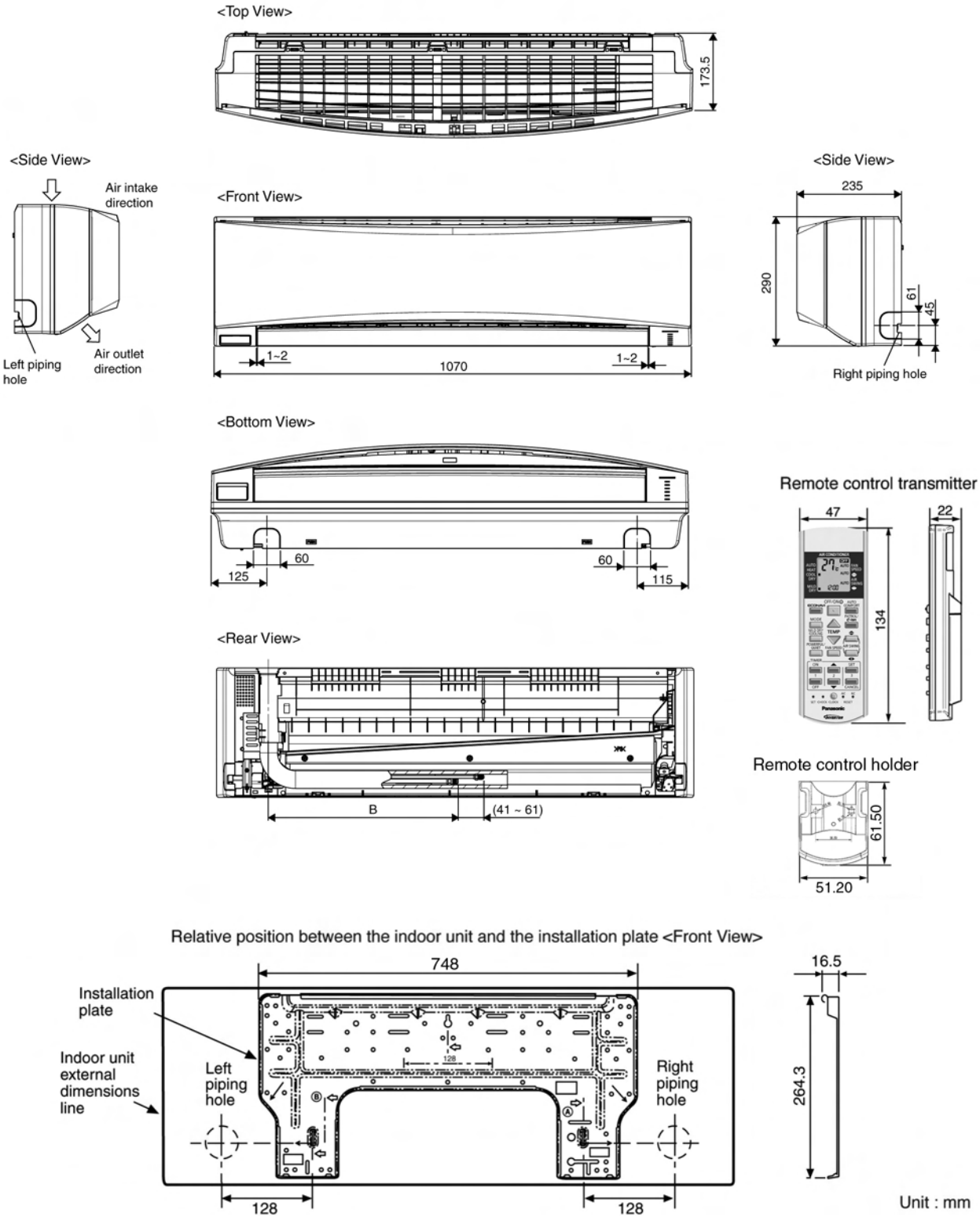
5.1.1. CS-E7MK CS-E9MK CS-E12MK CS-E15MK CS-XE7MK CS-XE9MK CS-XE12MK CS-XE15MK



Relative position between the indoor unit and the installation plate <Front View>



5.1.2. CS-E18MK CS-E21MK CS-XE18MK CS-XE21MK

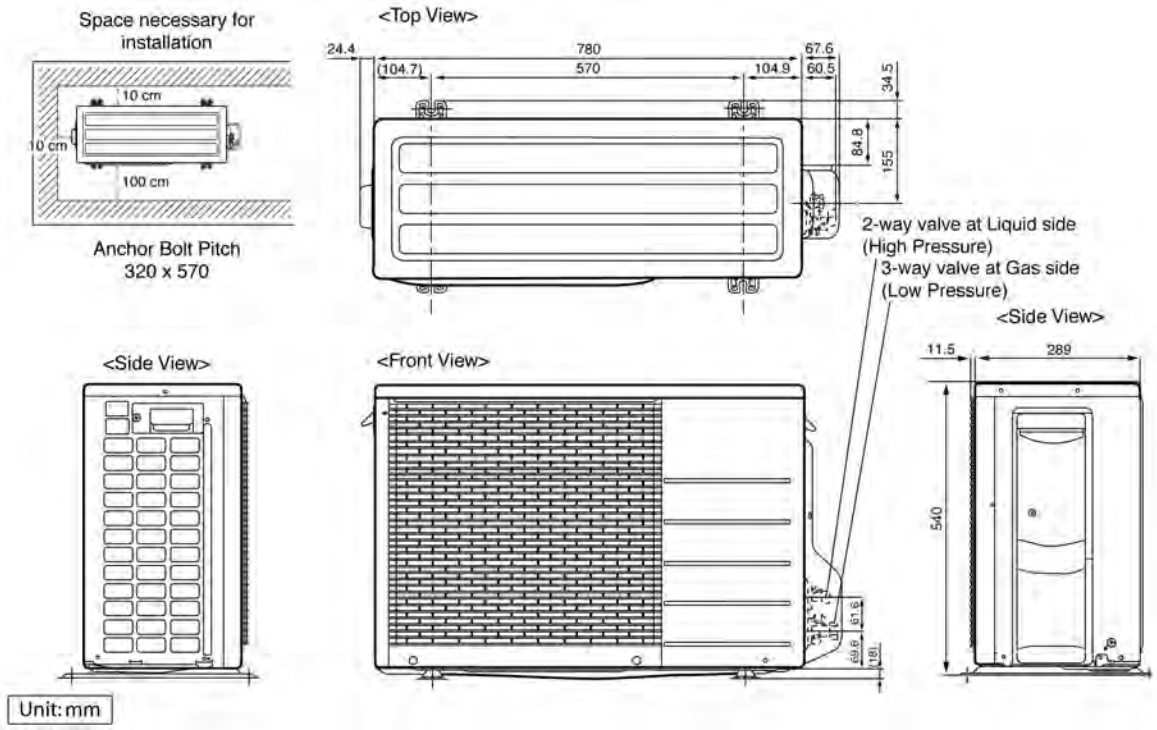


Relative position between the indoor unit and the installation plate <Front View>

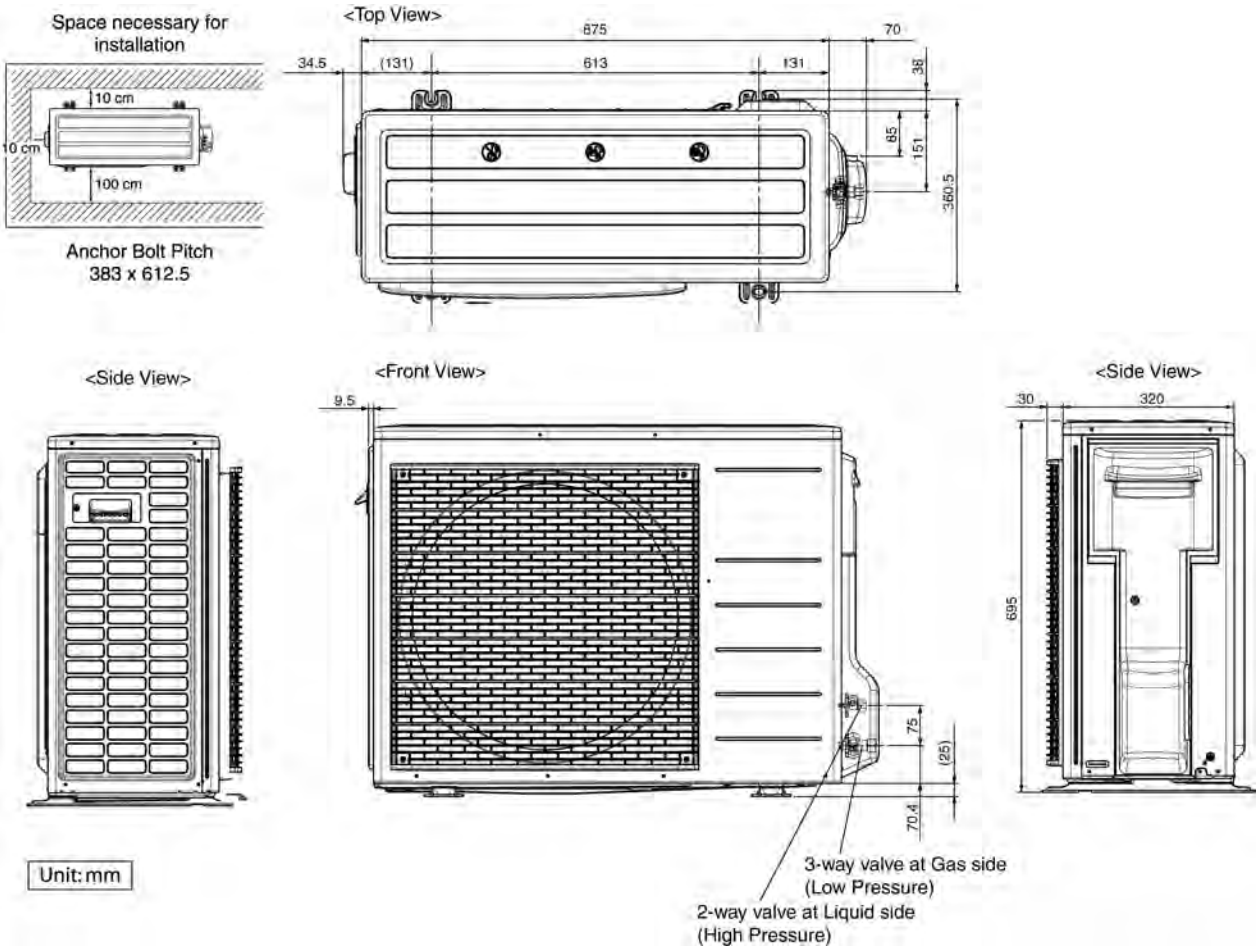
Unit : mm

5.2. Outdoor Unit

5.2.1. CU-E7MKE CU-E9MKE CU-E12MKE CU-E15MKE CU-E7MKE-3 CU-E9MKE-3 CU-E12MKE-3

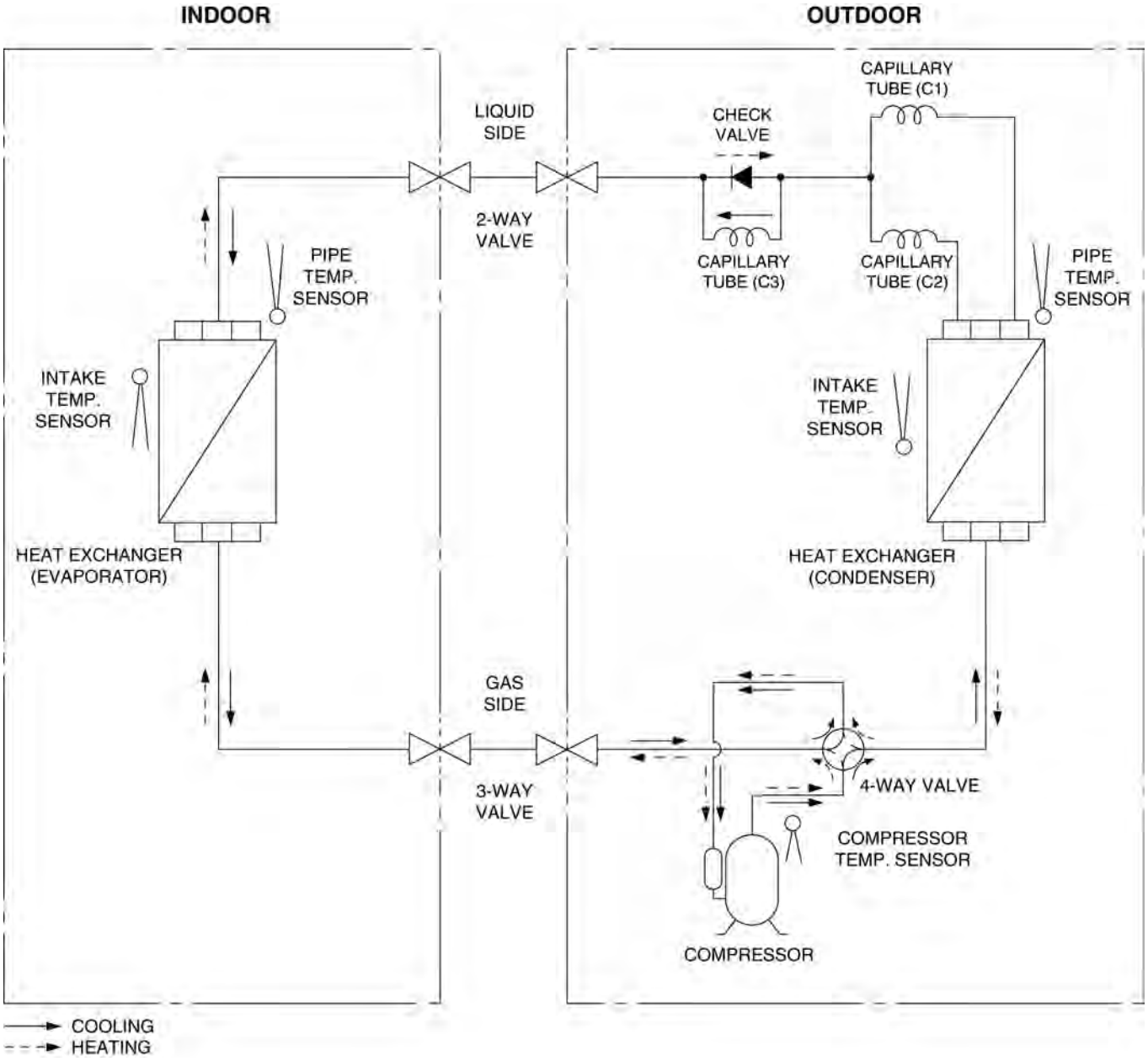


5.2.2. CU-E18MKE CU-E21MKE

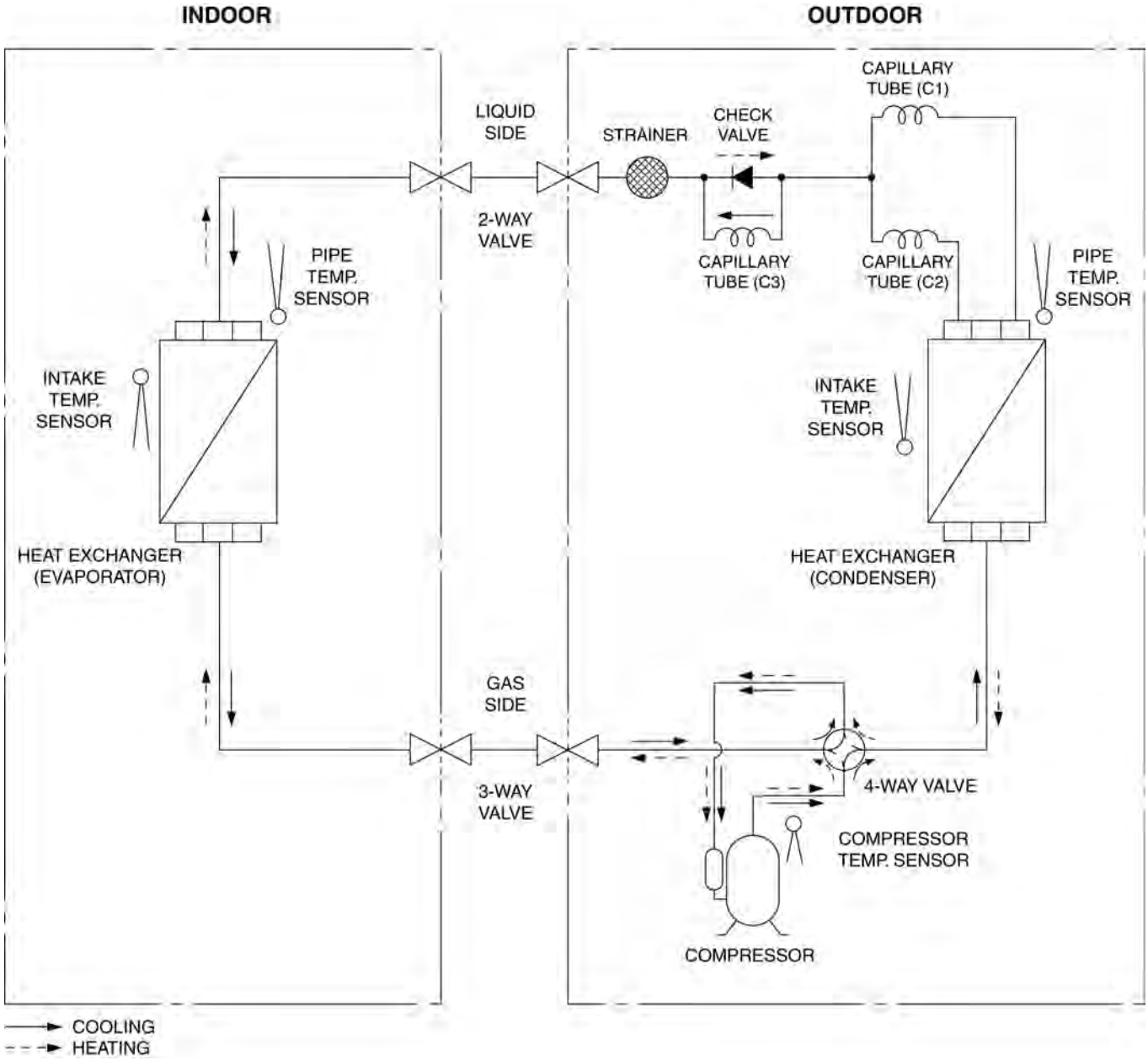


6 Refrigeration Cycle Diagram

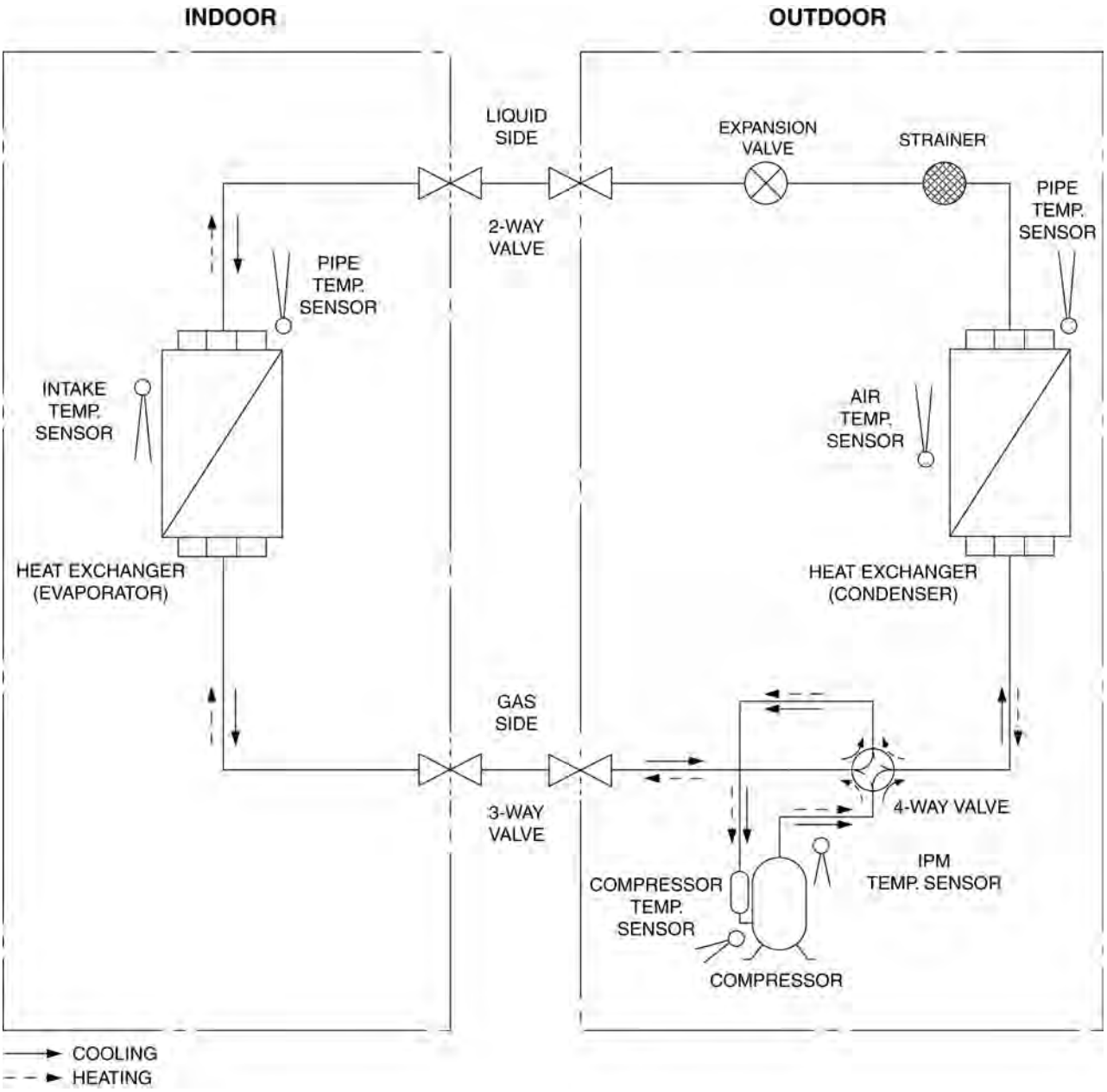
6.1. CU-E7MKE CU-E9MKE CU-E12MKE CU-E15MKE



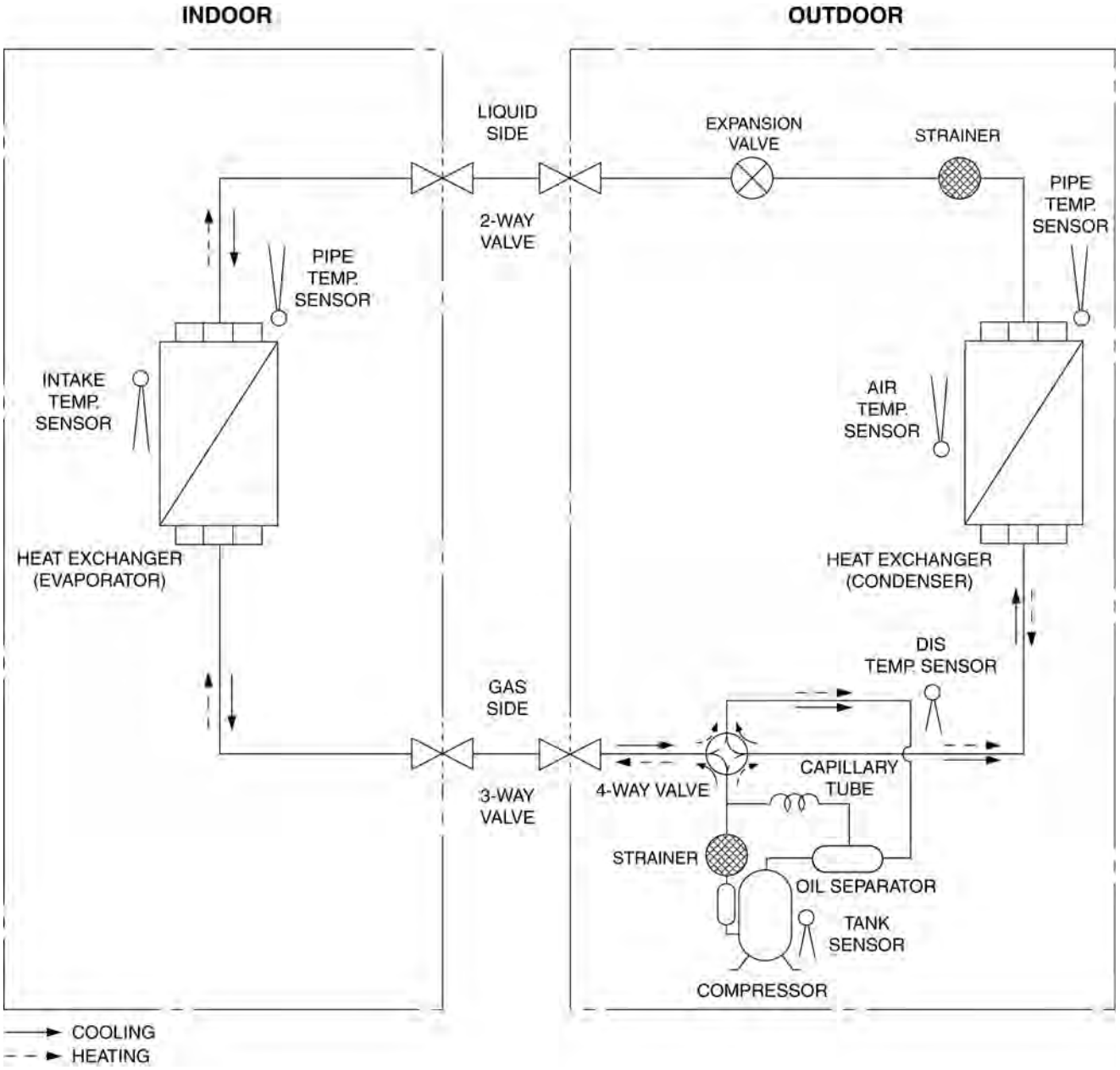
6.2. CU-E7MKE-3 CU-E9MKE-3 CU-E12MKE-3



6.3. CU-E18MKE

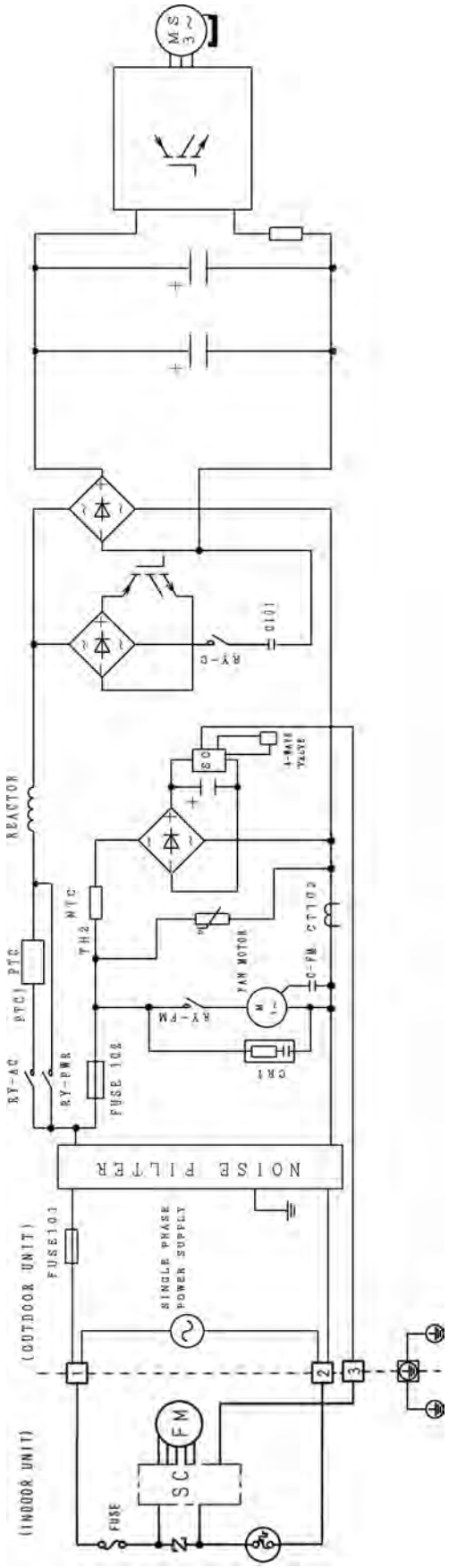

INDOOR
OUTDOOR
LIQUID SIDE
EXPANSION VALVE
STRAINER
PIPE TEMP. SENSOR
2-WAY VALVE
PIPE TEMP. SENSOR
INTAKE TEMP. SENSOR
AIR TEMP. SENSOR
HEAT EXCHANGER (EVAPORATOR)
HEAT EXCHANGER (CONDENSER)
GAS SIDE
4-WAY VALVE
3-WAY VALVE
IPM TEMP. SENSOR
COMPRESSOR TEMP. SENSOR
COMPRESSOR
COOLING
HEATING

6.4. CU-E21MKE

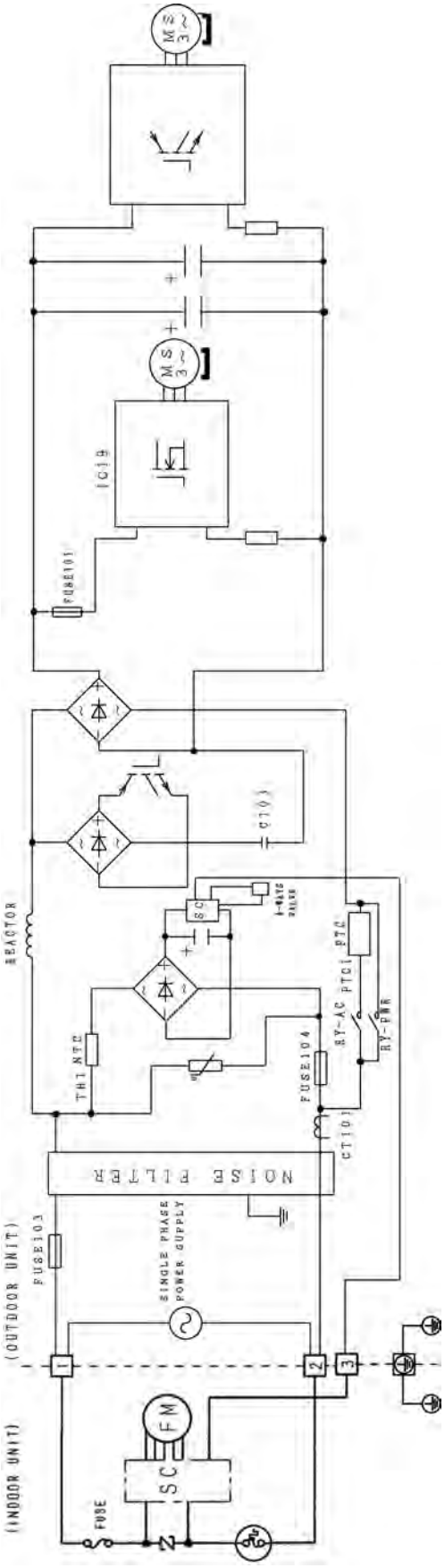

INDOOR
OUTDOOR
LIQUID SIDE
EXPANSION VALVE
STRAINER
PIPE TEMP. SENSOR
2-WAY VALVE
PIPE TEMP. SENSOR
INTAKE TEMP. SENSOR
AIR TEMP. SENSOR
HEAT EXCHANGER (EVAPORATOR)
HEAT EXCHANGER (CONDENSER)
DIS TEMP. SENSOR
GAS SIDE
CAPILLARY TUBE
4-WAY VALVE
3-WAY VALVE
STRAINER
OIL SEPARATOR
TANK SENSOR
COMPRESSOR
COOLING
HEATING

7 Block Diagram

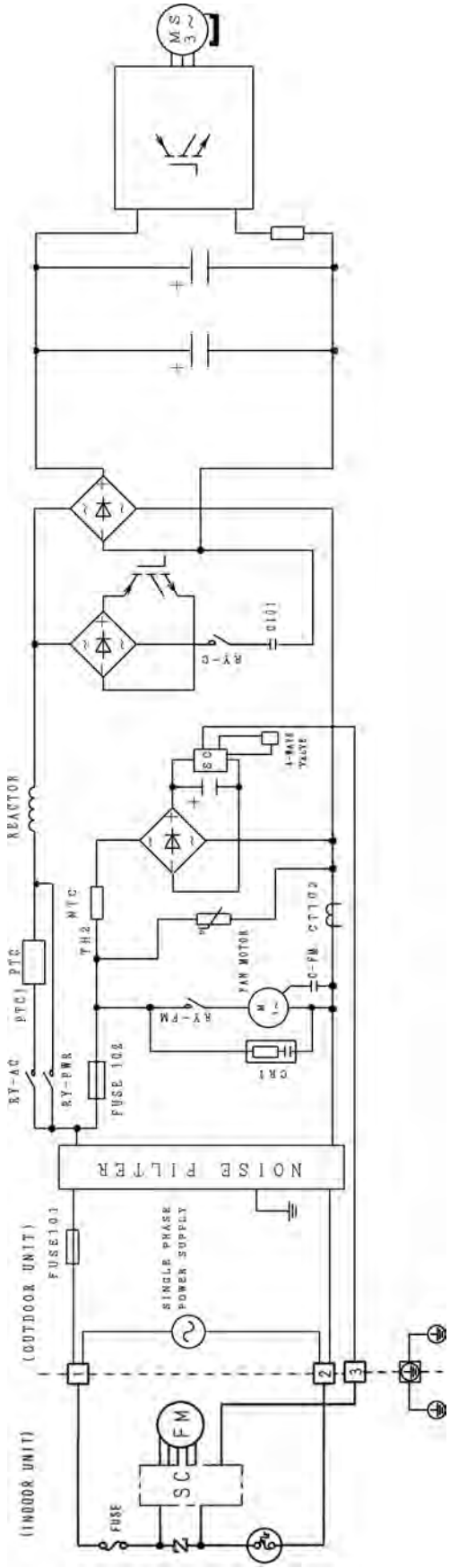
7.1. CU-E7MKE CU-E9MKE CU-E15MKE



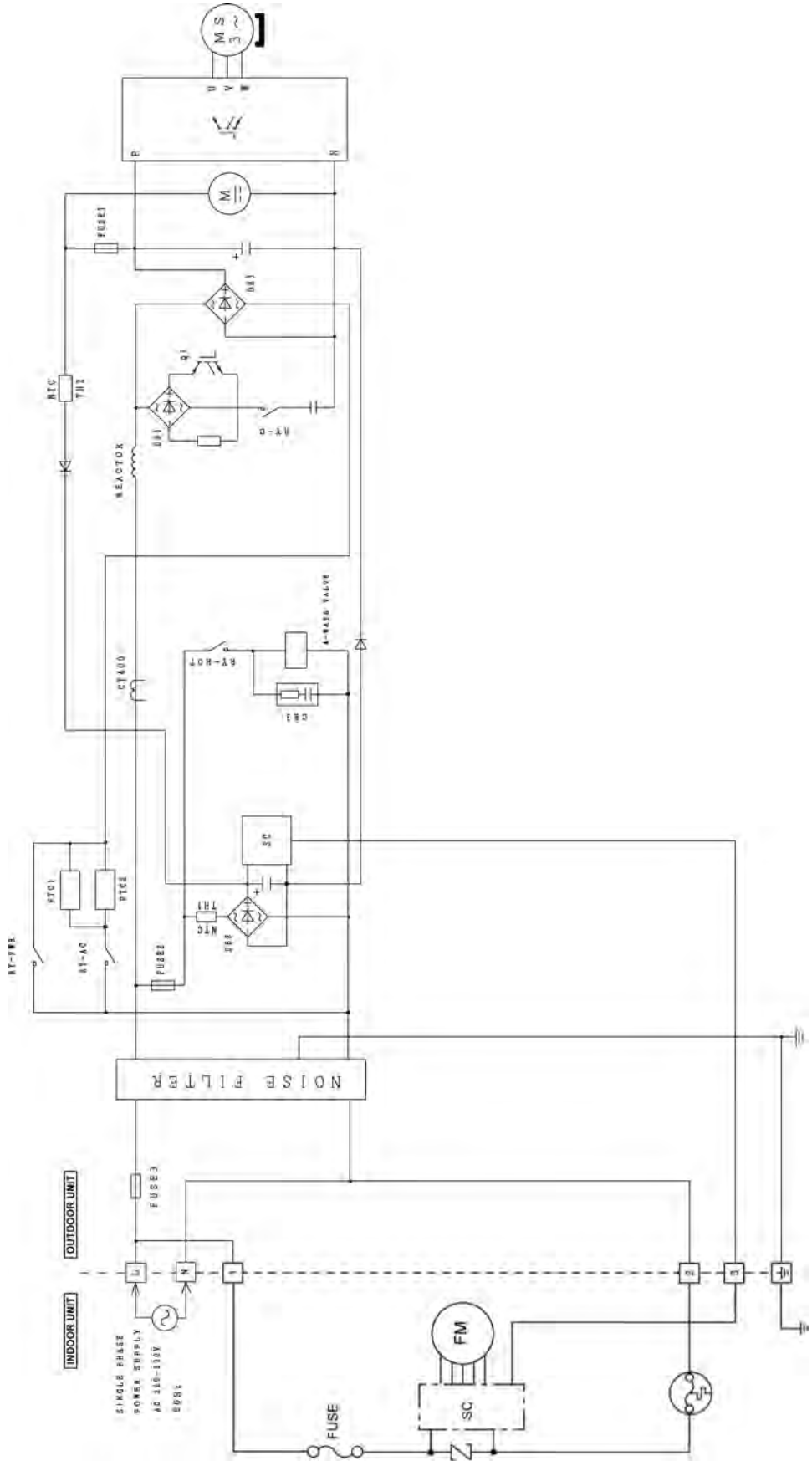
7.2. CU-E12MKE


MS 3~
IC19
FUSE101
C101
REACTOR
TH1 NTC
FUSE104
RY-AC PTC1
PTC2
RY-PWR
CT101
NOISE FILTER
FUSE103
SINGLE PHASE POWER SUPPLY
(OUTDOOR UNIT)
(INDOOR UNIT)
FM
SC
FUSE
1
2
3

7.3. CU-E7MKE-3 CU-E9MKE-3 CU-E12MKE-3

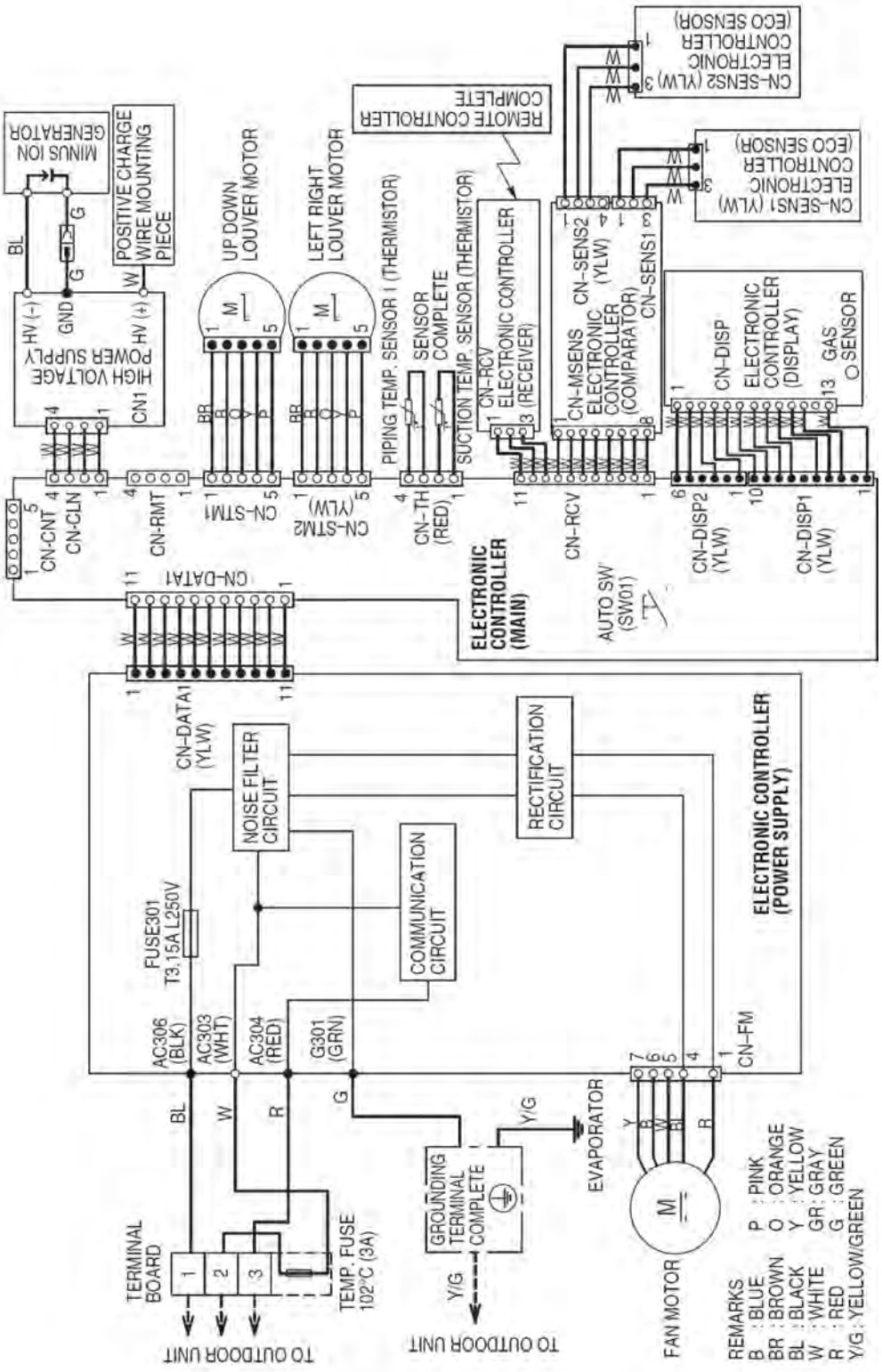


7.4. CU-E18MKE CU-E21MKE



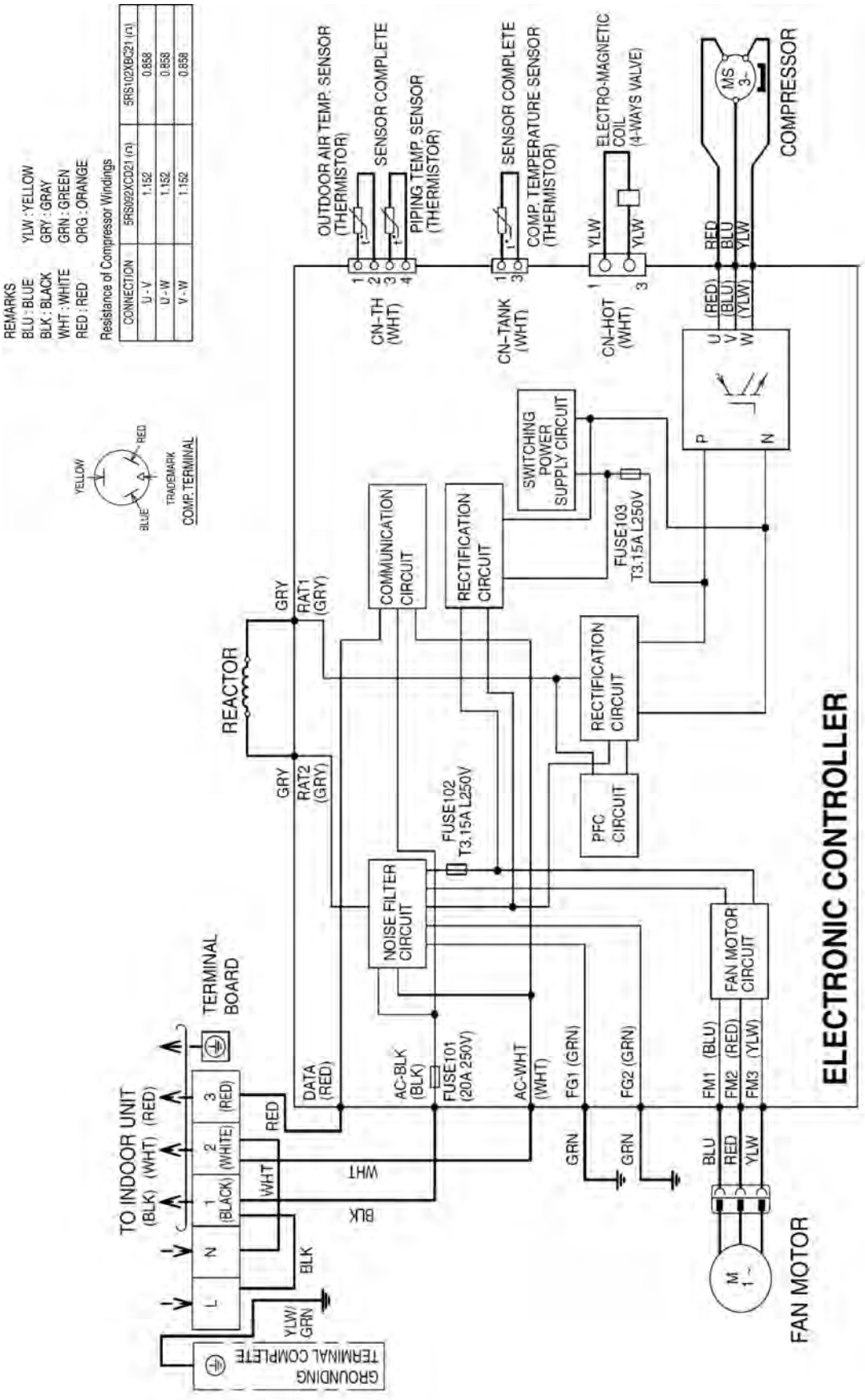
8 Wiring Connection Diagram

8.1. Indoor Unit

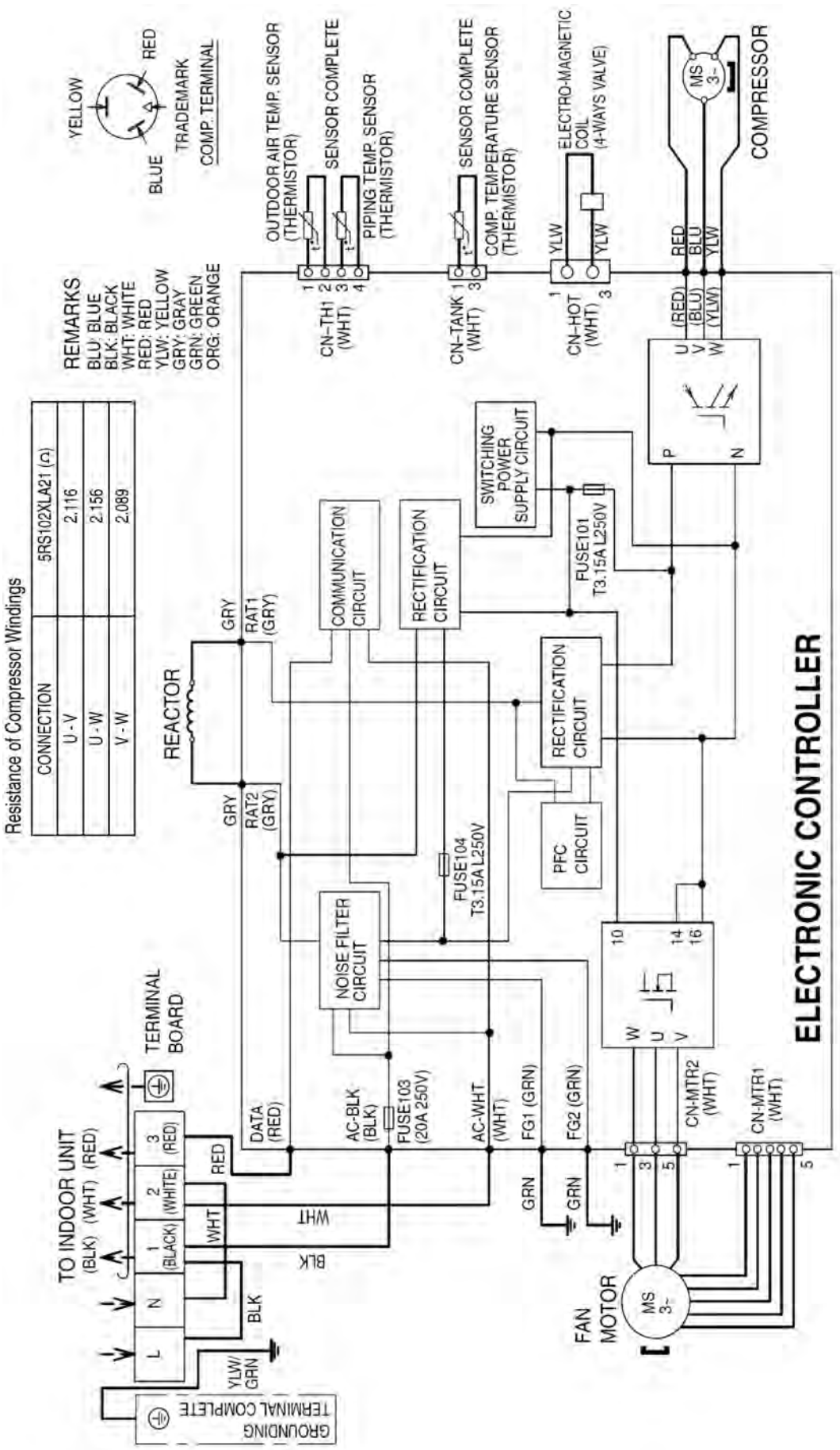


8.2. Outdoor Unit

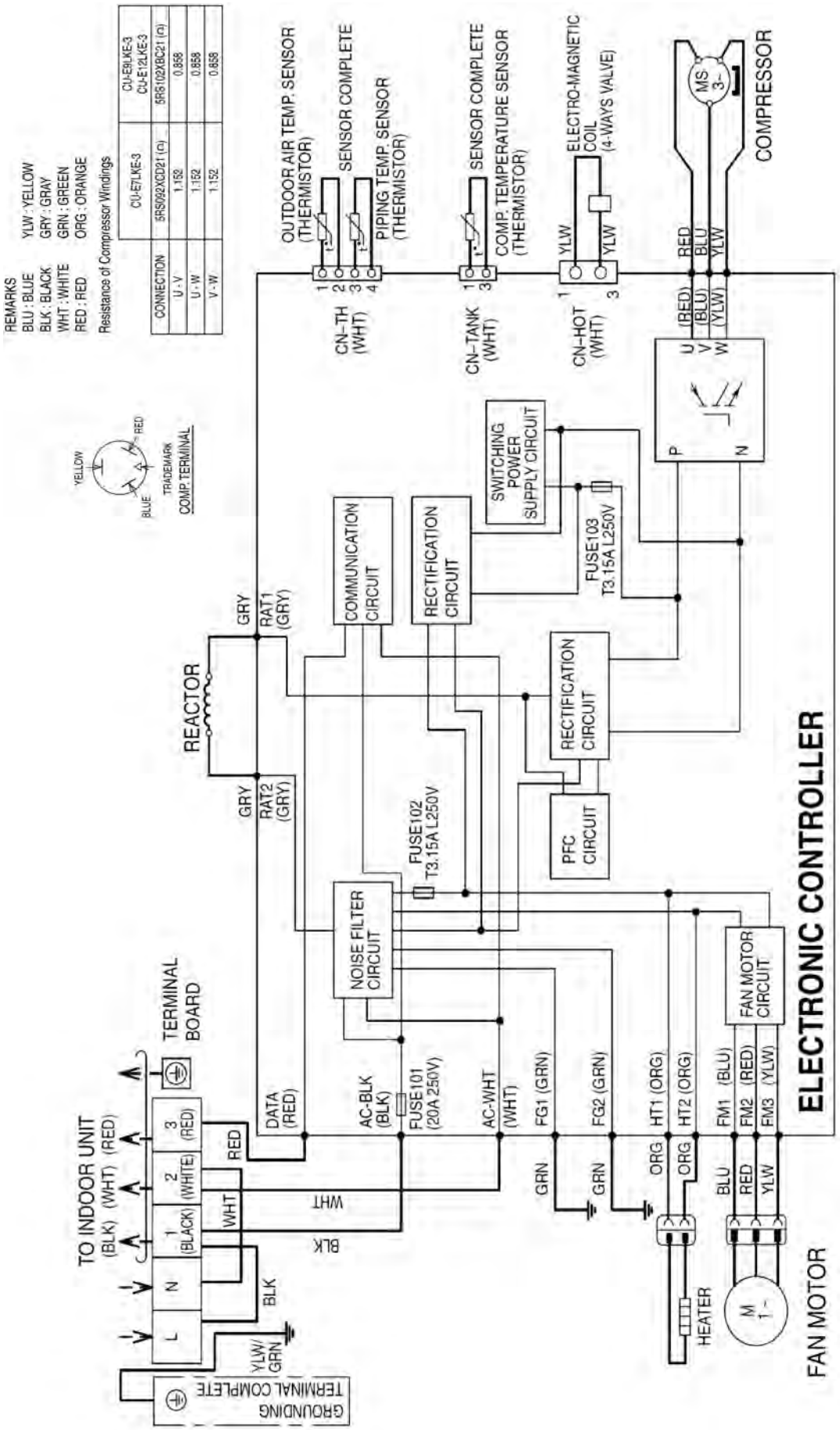
8.2.1. CU-E7MKE CU-E9MKE CU-E15MKE



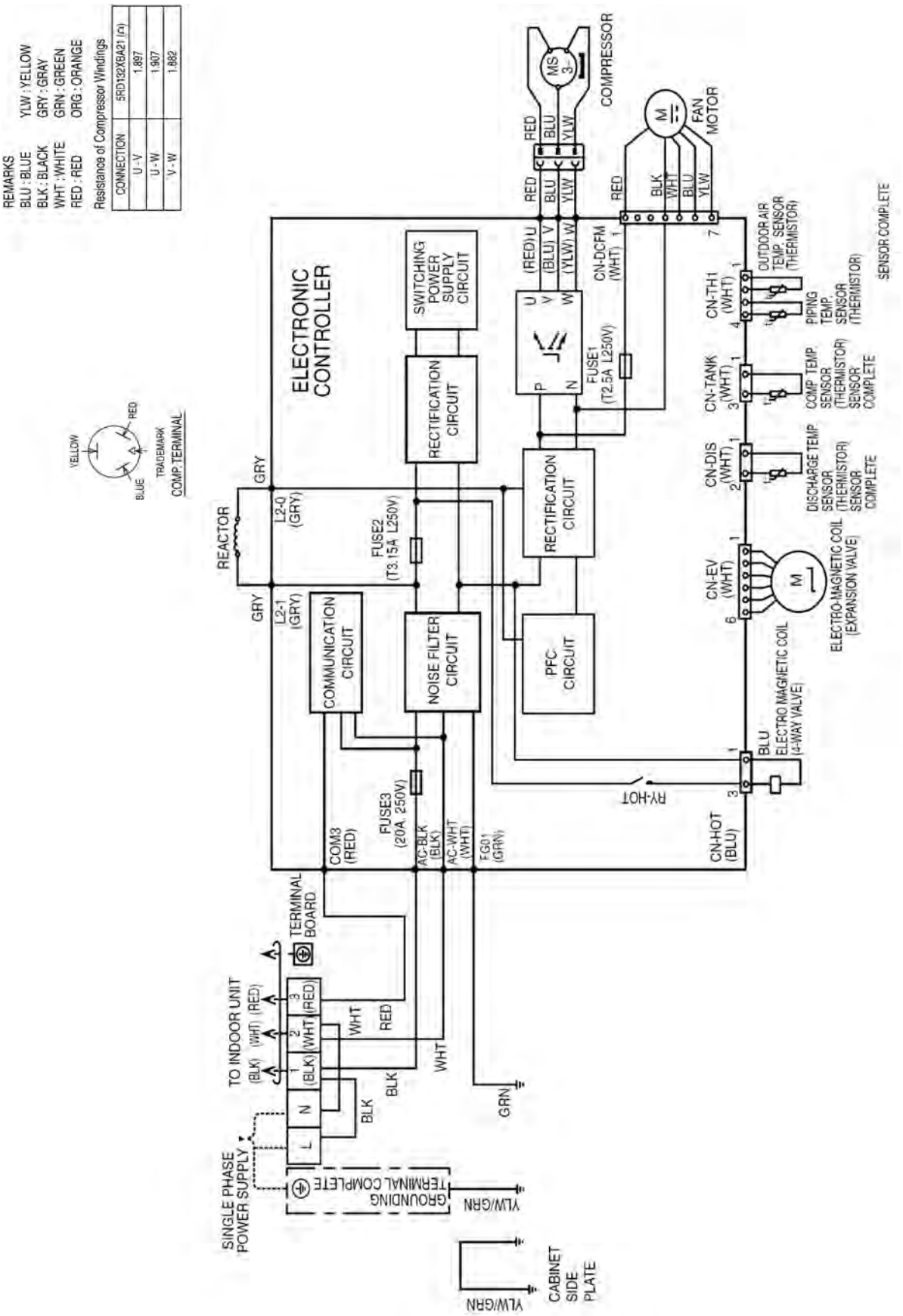
8.2.2. CU-E12MKE



8.2.3. CU-E7MKE-3 CU-E9MKE-3 CU-E12MKE-3

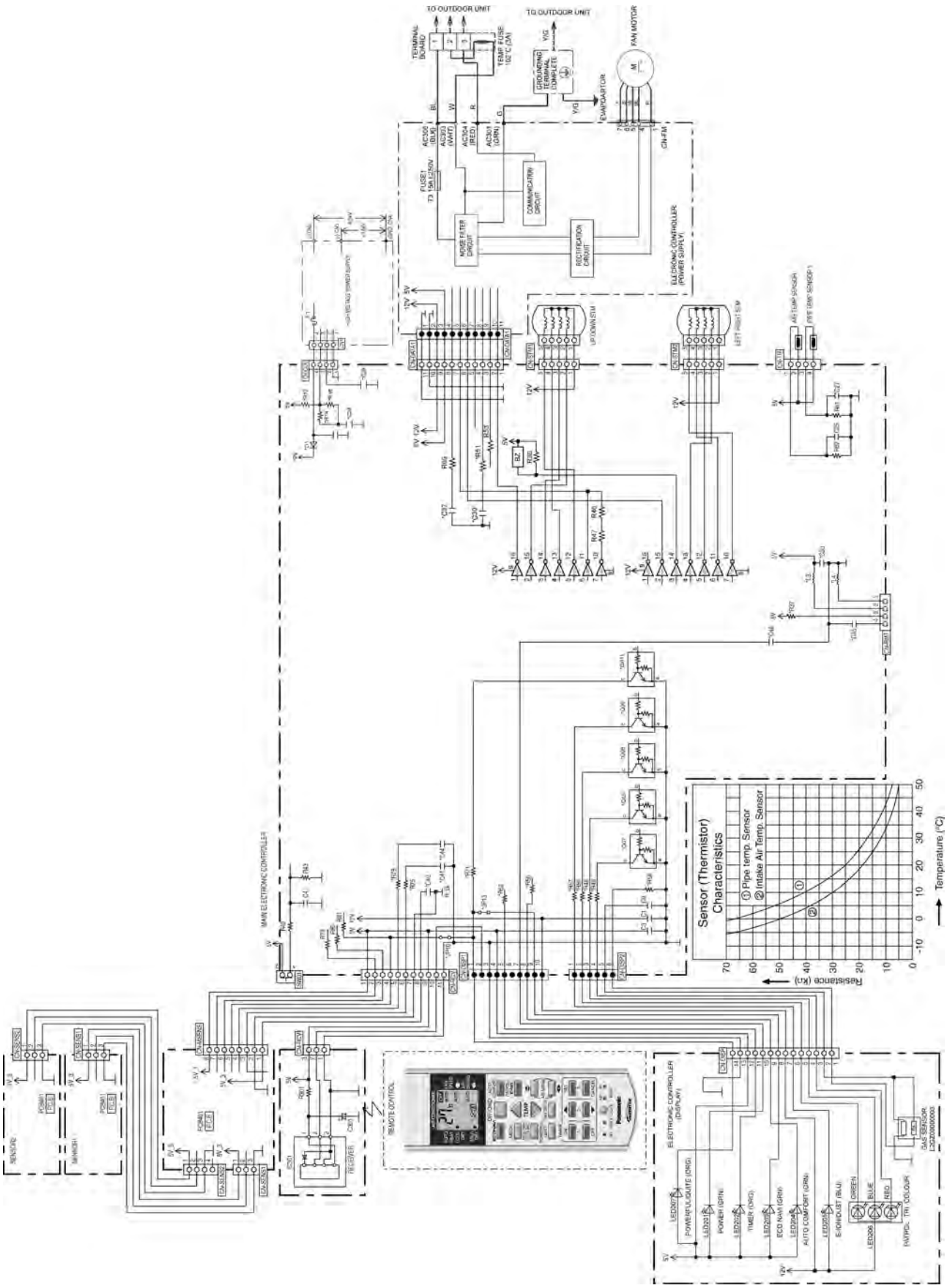


8.2.4. CU-E18MKE CU-E21MKE



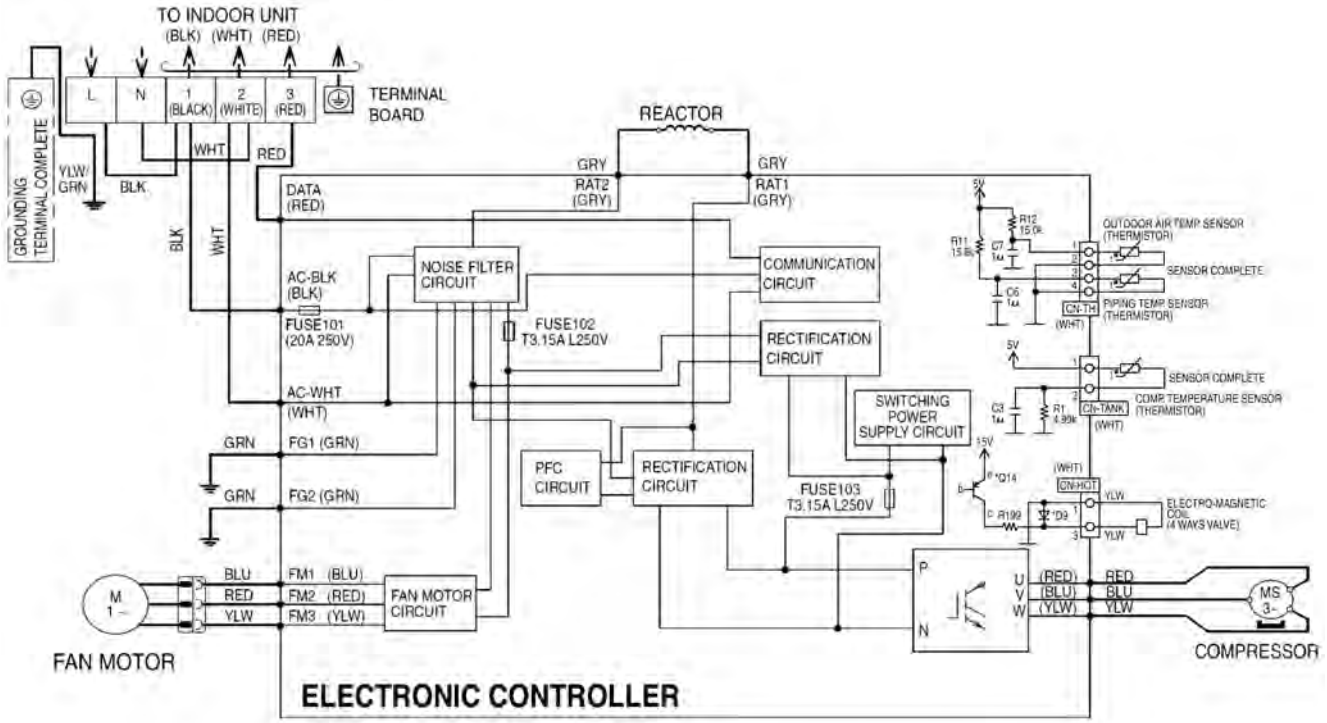
9 Electronic Circuit Diagram

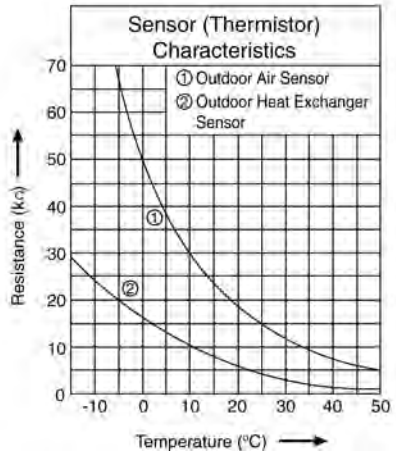
9.1. Indoor Unit

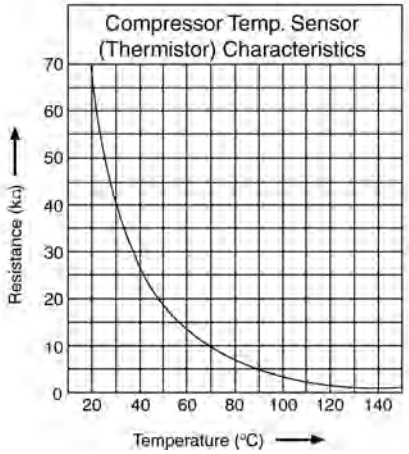


9.2. Outdoor Unit

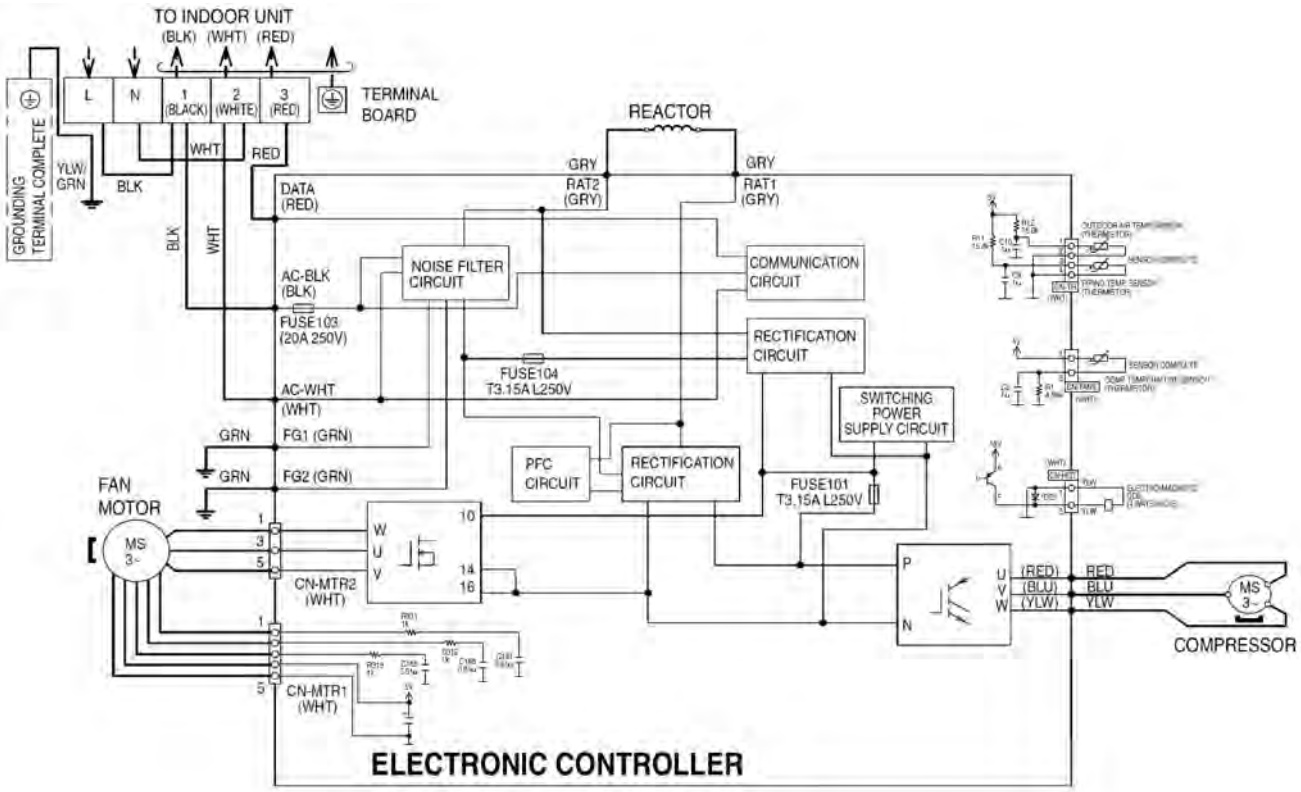
9.2.1. CU-E7MKE CU-E9MKE CU-E15MKE

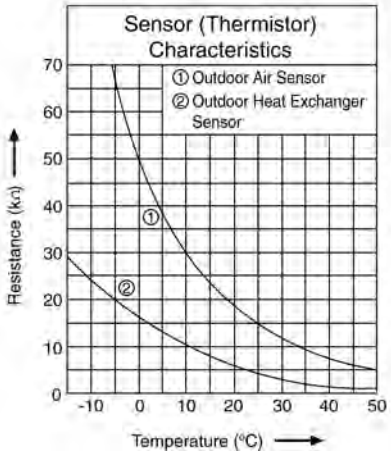


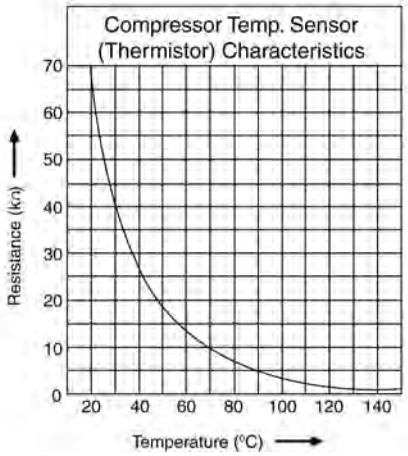




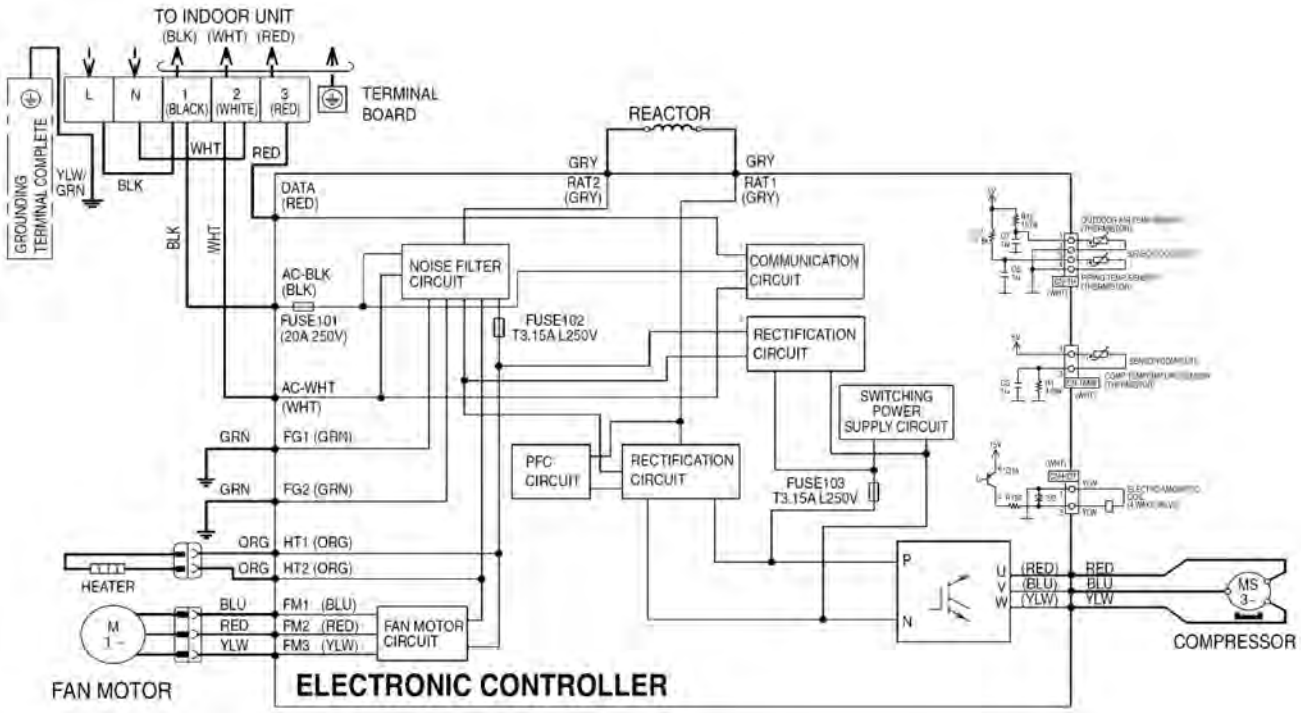
9.2.2. CU-E12MKE

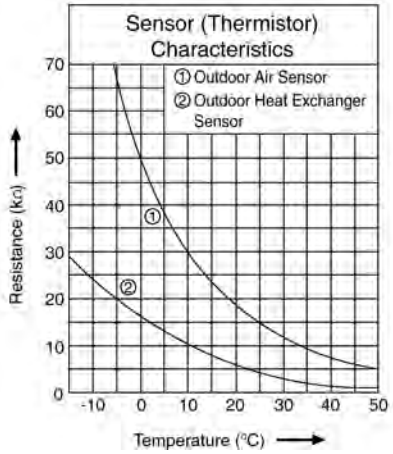


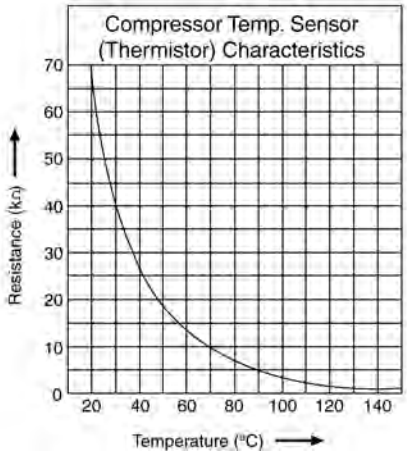




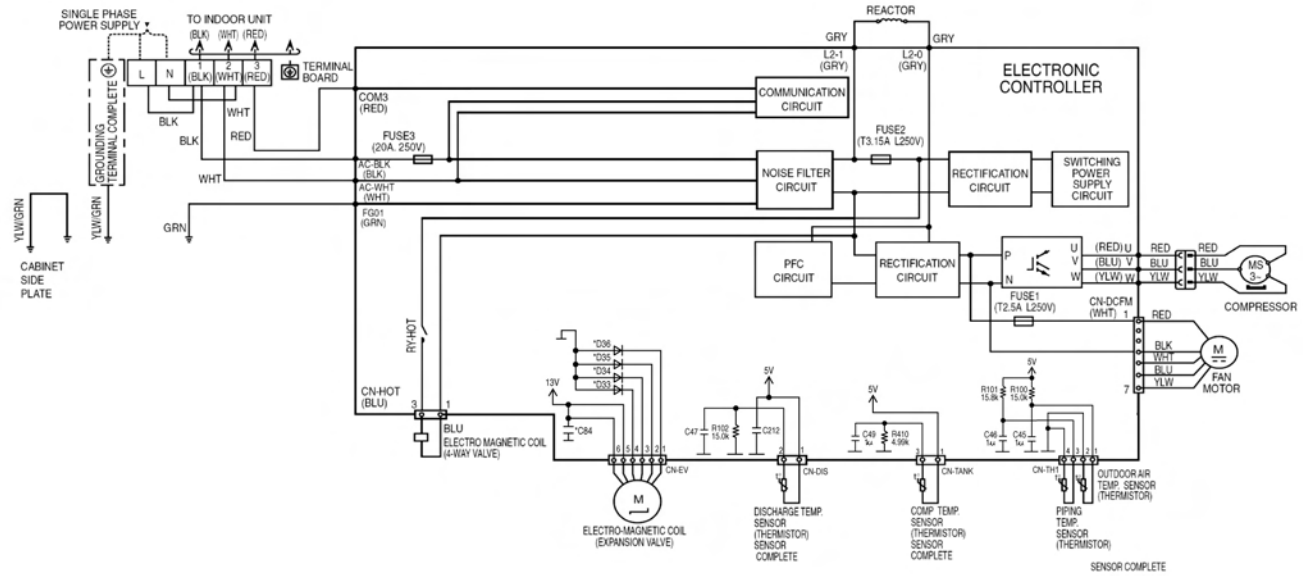
9.2.3. CU-E7MKE-3 CU-E9MKE-3 CU-E12MKE-3

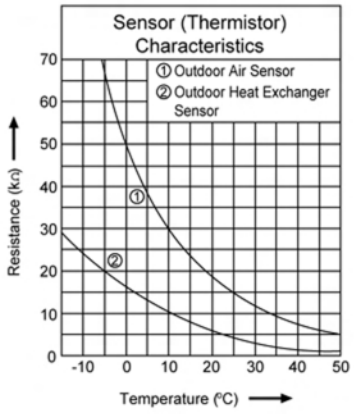


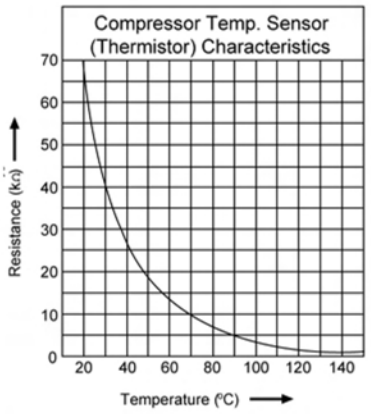




9.2.4. CU-E18MKE CU-E21MKE



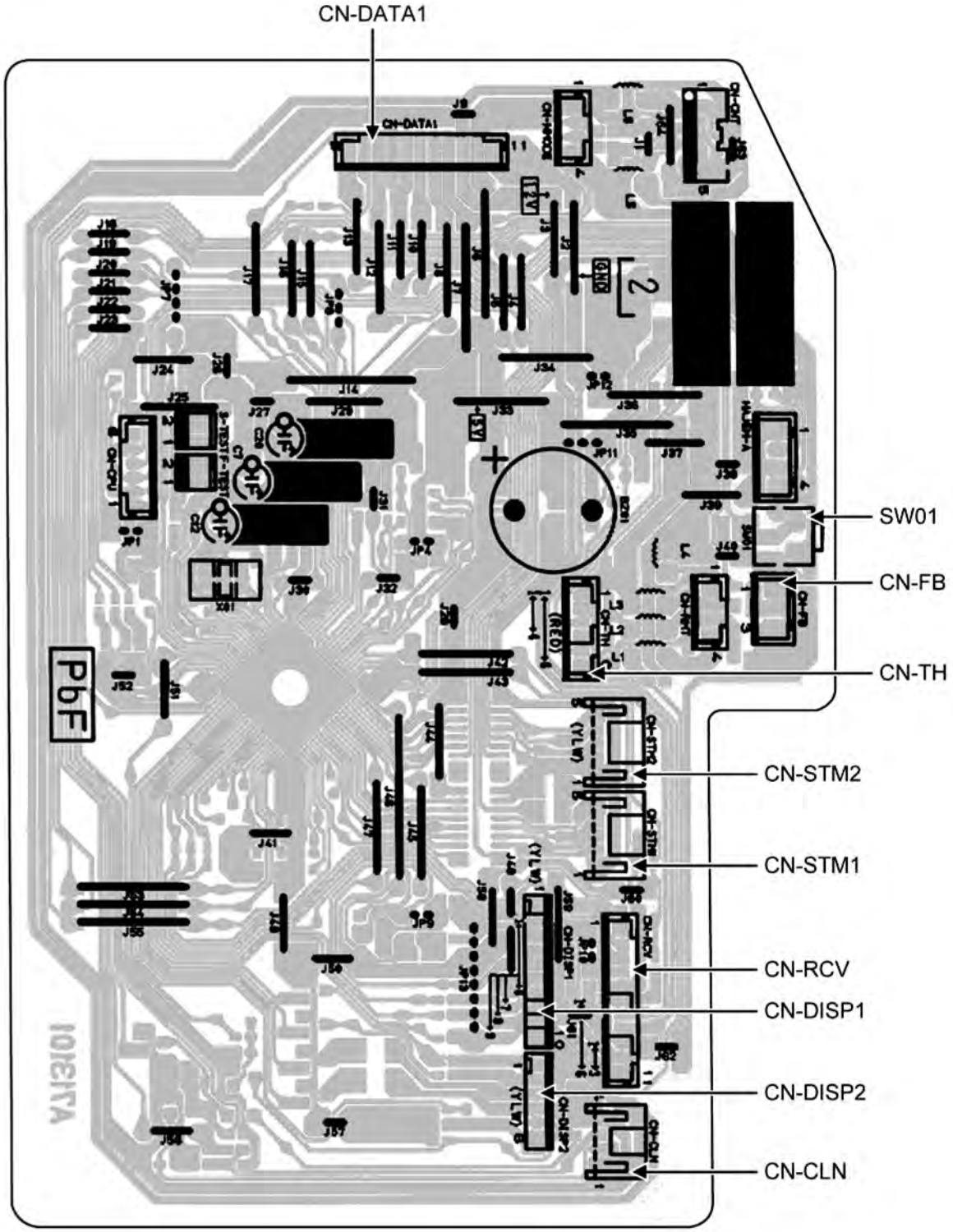




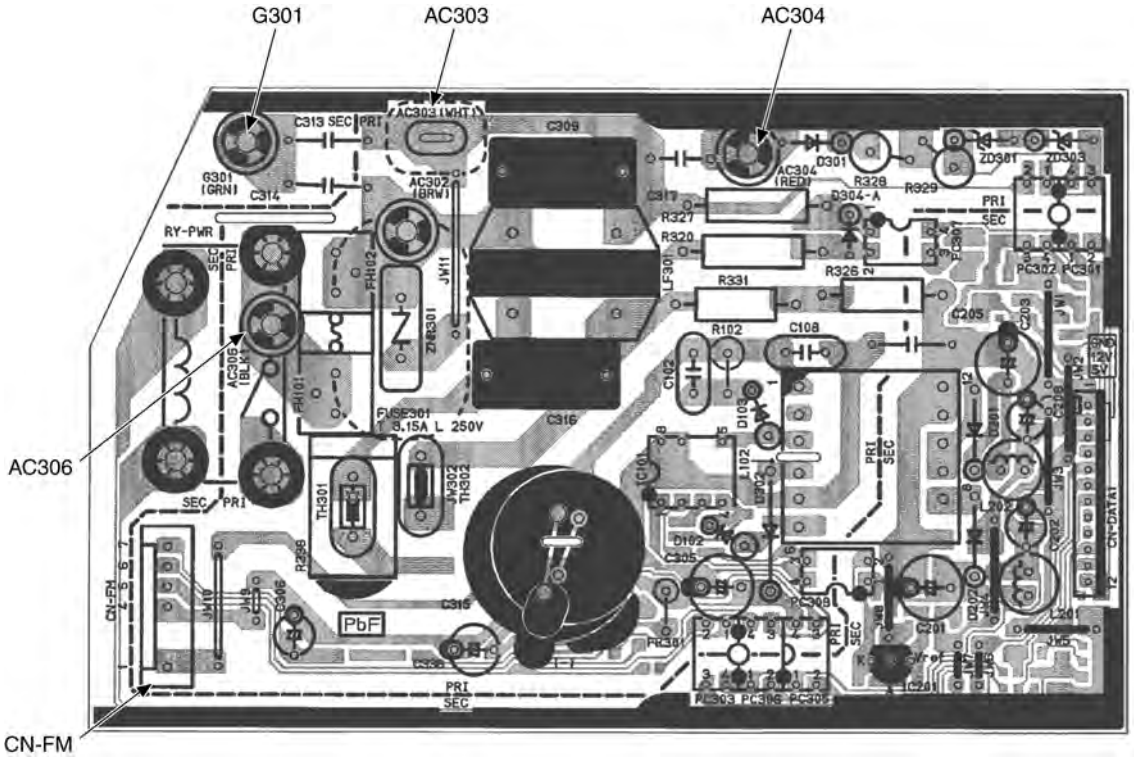
10 Printed Circuit Board

10.1. Indoor Unit

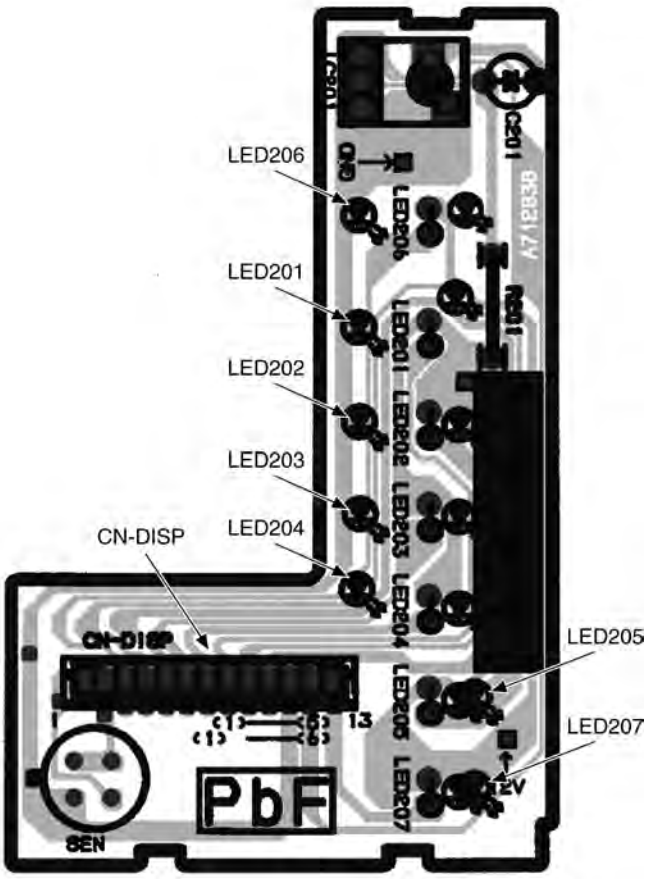
10.1.1. Main Printed Circuit Board



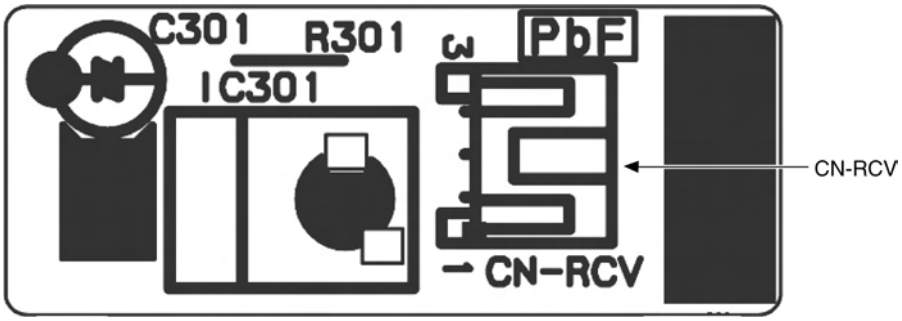
10.1.2. Power Printed Circuit Board



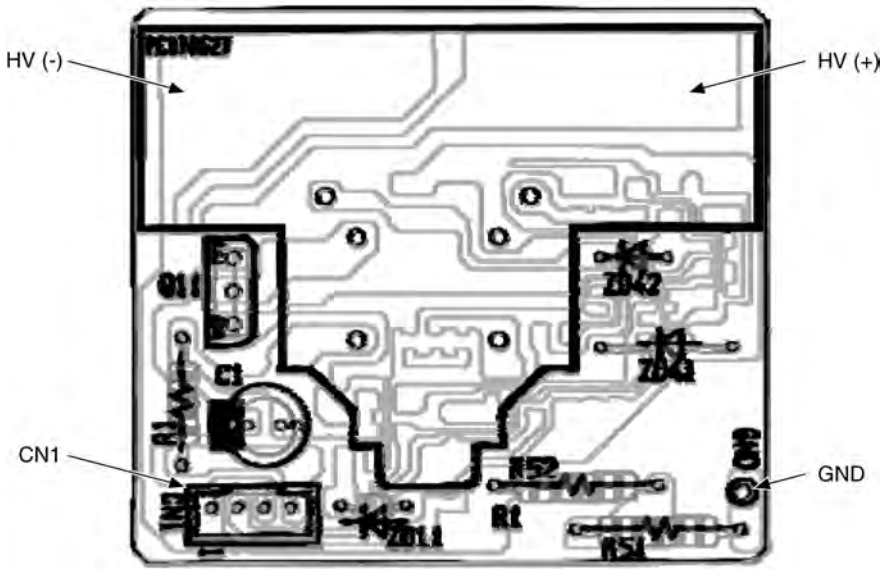
10.1.3. Indicator Printed Circuit Board



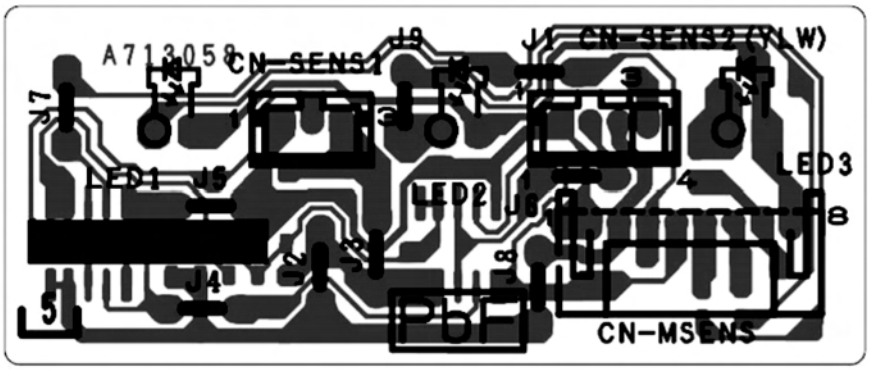
10.1.4. Receiver Printed Circuit Board



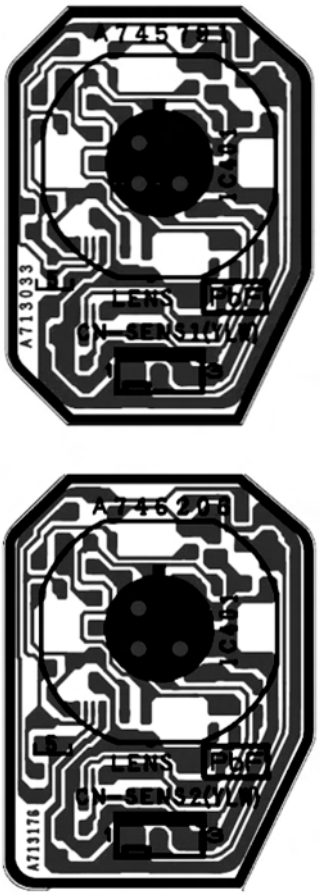
10.1.5. High Voltage Power Supply Printed Circuit Board



10.1.6. Comparator Printed Circuit Board

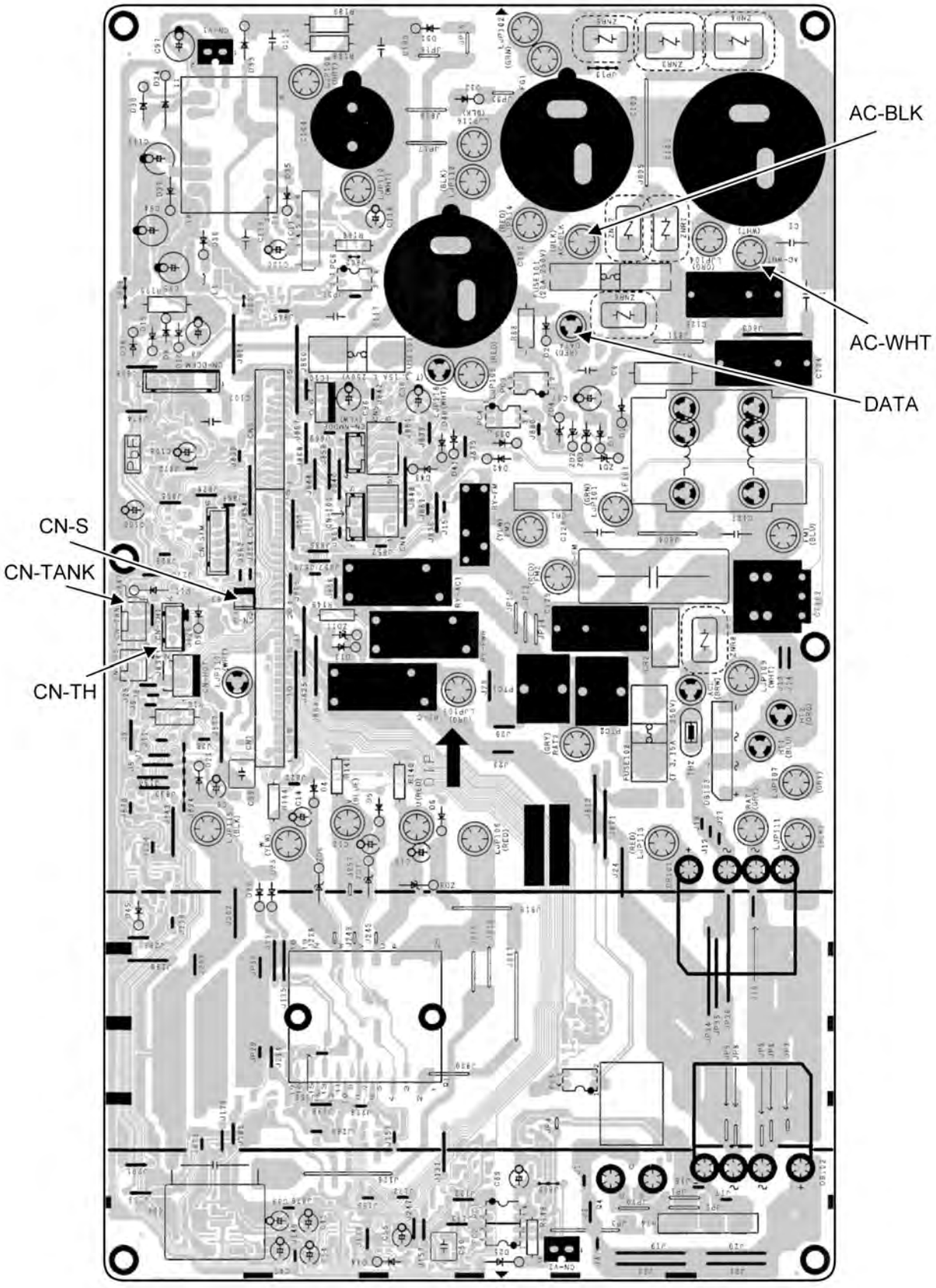


10.1.7. Human Activity Sensor Printed Circuit Board

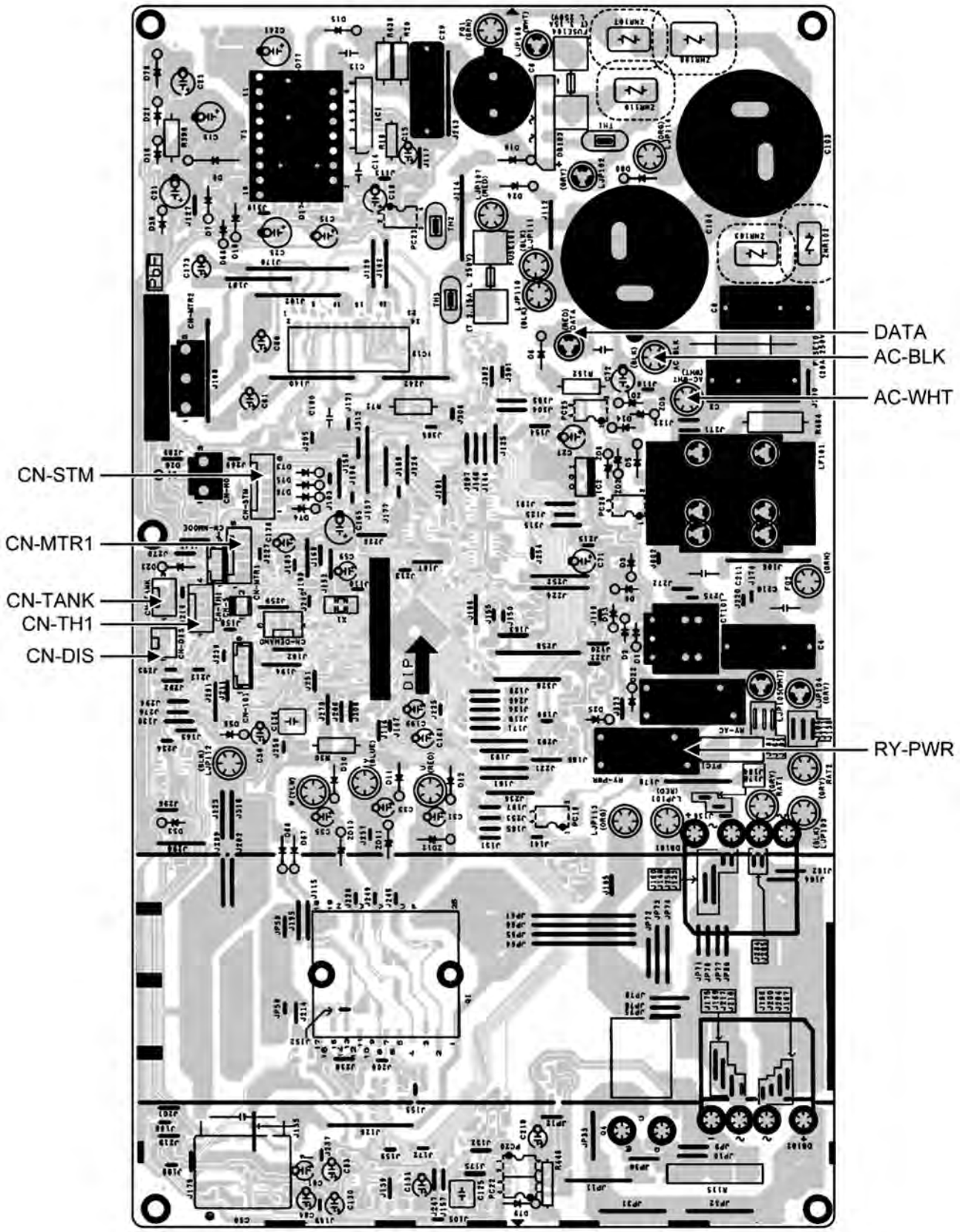


10.2. Outdoor Unit

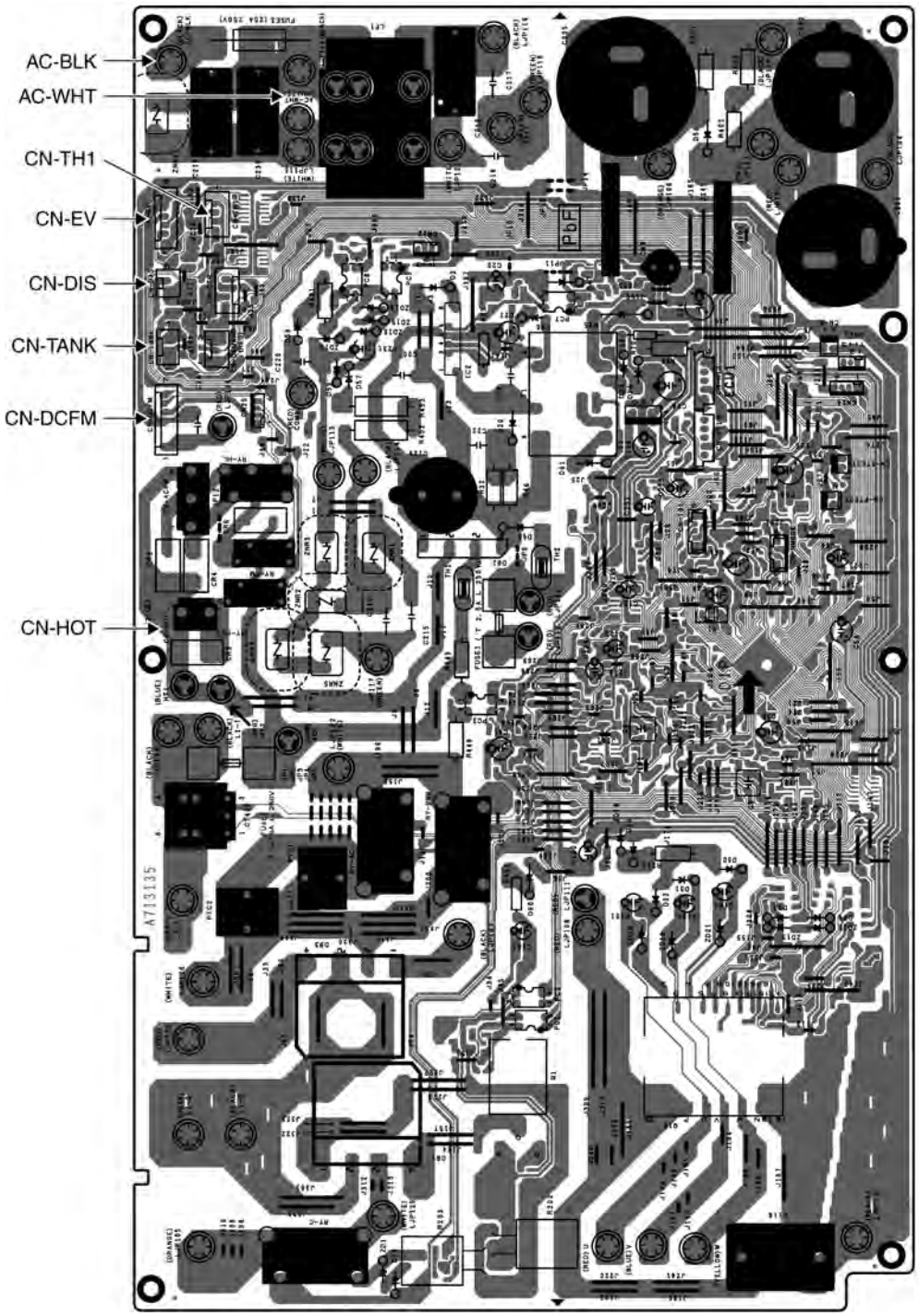
10.2.1. CU-E7MKE CU-E9MKE CU-E15MKE CU-E7MKE-3 CU-E9MKE-3 CU-E12MKE-3



10.2.2. CU-E12MKE



10.2.3. CU-E18MKE CU-E21MKE



11 Installation Instruction

11.1. Select the Best Location

11.1.1. Indoor Unit

- Do not install the unit in excessive oil fume area such as kitchen, workshop and etc.
- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
- Recommended installation height for indoor unit shall be at least 2.5 m.

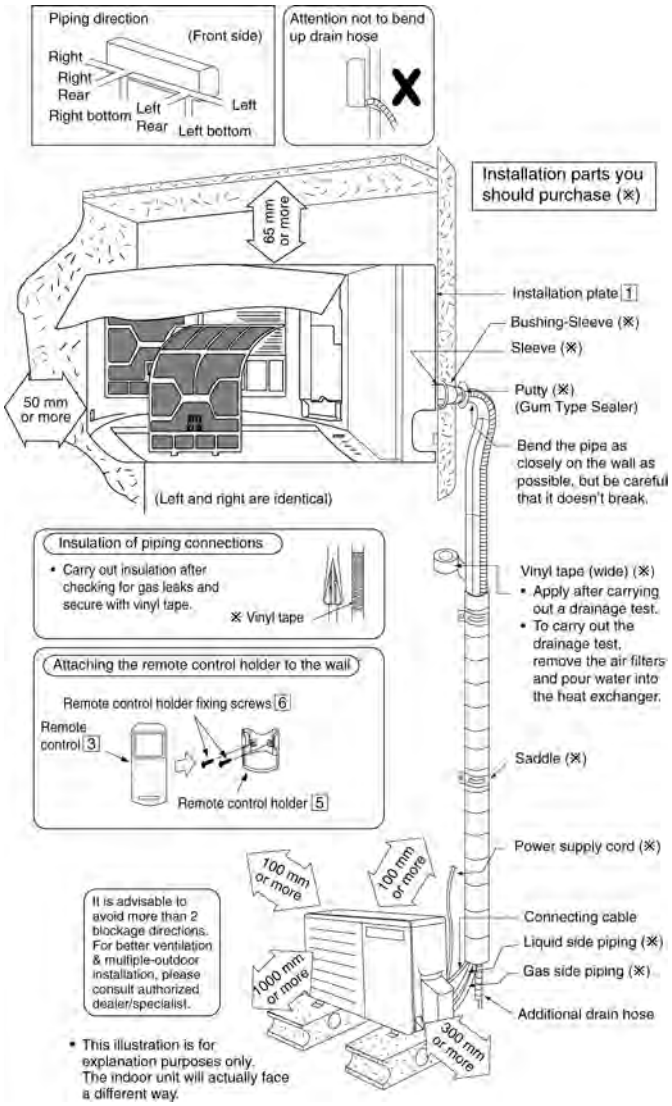
11.1.2. Outdoor Unit

- 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.

Model	Horse Power (HP)	Piping size		Std. Length (m)	Max. Elevation (m)	Min. Piping Length (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)	Piping Length for add. gas (m)
		Gas	Liquid						
E7***, XE7***	3/4 ~ 1.75HP	9.52mm (3/8")	6.35mm (1/4")	5	15	3	15	20	7.5
E9***, XE9***					15	3	15	20	7.5
E12***, XE12***					15	3	15	20	7.5
E15***, XE15***		12.7mm (1/2")			15	3	15	20	7.5
E18***, XE18***	2.0 ~ 2.25HP				15	3	20	20	7.5
E21***, XE21***					15	3	20	20	7.5
E24***	2.5HP	15.88mm (5/8")			20	3	30	30	10
E28***	3.0HP				20	3	30	30	10

Example: For E9***
If the unit is installed at 10 m distance, the quantity of additional refrigerant should be 50 g .... (10-7.5) m x 20 g/m = 50 g

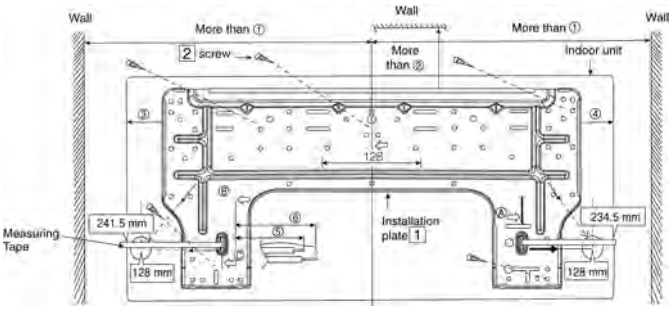
11.1.3. Indoor/Outdoor Unit Installation Diagram



11.2. Indoor Unit

11.2.1. How to Fix Installation Plate

The mounting wall shall be strong and solid enough to prevent it from the vibration.



Model	Dimension					
	①	②	③	④	⑤	⑥
E7***, XE7*** E9***, XE9*** E12***, XE12*** E15***, XE15***	485 mm	82 mm	165 mm	158 mm	43 mm	95 mm
E18***, XE18*** E21***, XE21*** E24***, E28***	585 mm	82 mm	165 mm	158 mm	169 mm	219 mm

The center of installation plate should be at more than ① at right and left of the wall.

The distance from installation plate edge to ceiling should more than ②.

From installation plate left edge to unit's left side is ③.

From installation plate right edge to unit's right is ④.

Ⓑ : For left side piping, piping connection for liquid should be about ⑤ from this line.

: For left side piping, piping connection for gas should be about ⑥ from this line.

1. Mount the installation plate on the wall with 5 screws or more (at least 5 screws).
   (If mounting the unit on the concrete wall, consider using anchor bolts.)
   - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.

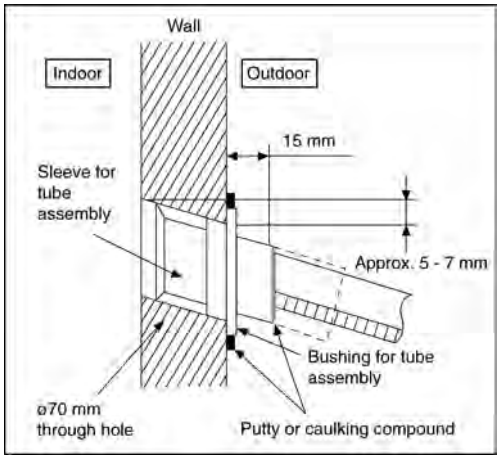
2. Drill the piping plate hole with ø70 mm hole-core drill.
   - Line according to the left and right side of the installation plate. The meeting point of the extended line is the center of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole center is obtained by measuring the distance namely 128 mm for left and right hole respectively.
   - Drill the piping hole at either the right or the left and the hole should be slightly slanting to the outdoor side.

11.2.2. To Drill a Hole in the Wall and Install a Sleeve of Piping

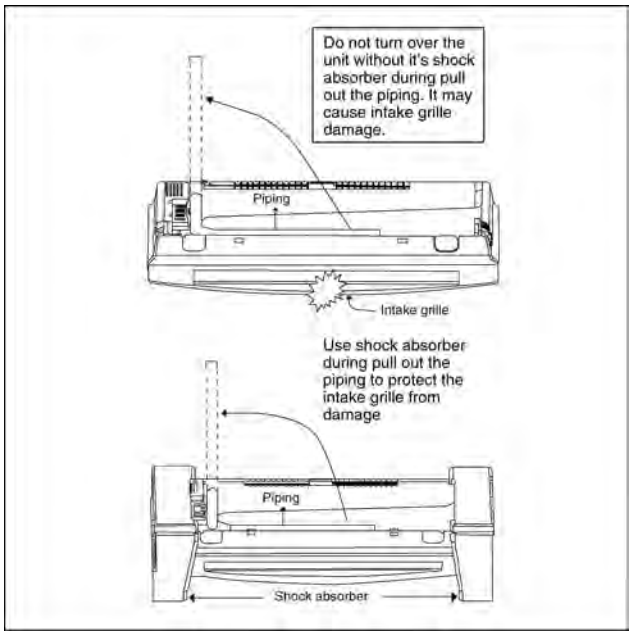
1. Insert the piping sleeve to the hole.
2. Fix the bushing to the sleeve.
3. Cut the sleeve until it extrudes about 15 mm from the wall.

> **⚠ CAUTION**
>
> When the wall is hollow, please be sure to use the sleeve for tube assembly to prevent dangers caused by mice biting the connection cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.



11.2.3. Indoor Unit Installation



1. **For the right rear piping**

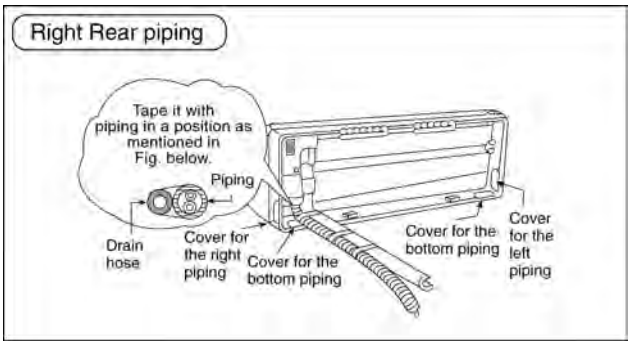
- Step-1 Pull out the Indoor piping
- Step-2 Install the Indoor Unit
- Step-3 Secure the Indoor Unit
- Step-4 Insert the connecting cable

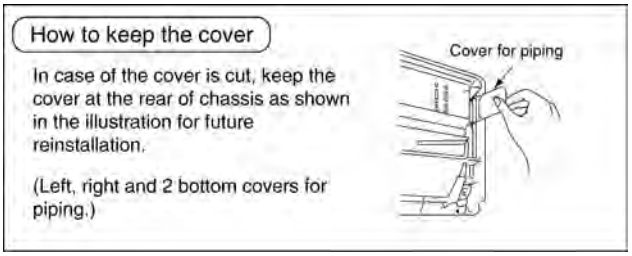
2. **For the right and right bottom piping**

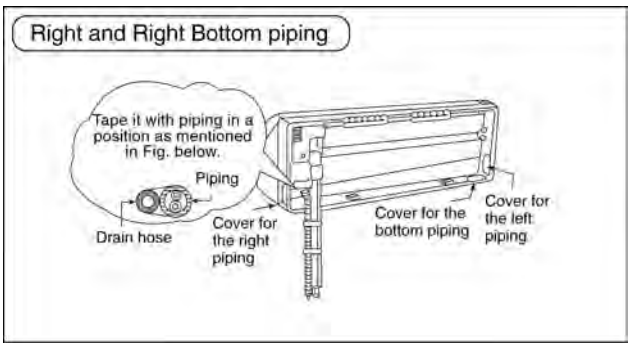
- Step-1 Pull out the Indoor piping
- Step-2 Install the Indoor Unit
- Step-3 Insert the connecting cable
- Step-4 Secure the Indoor Unit

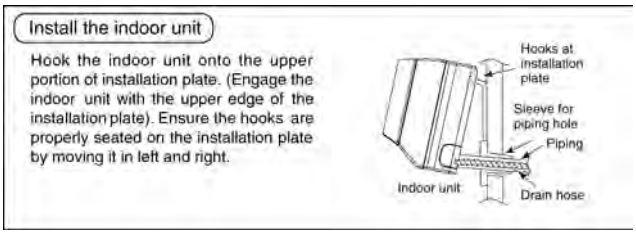
3. **For the embedded piping**

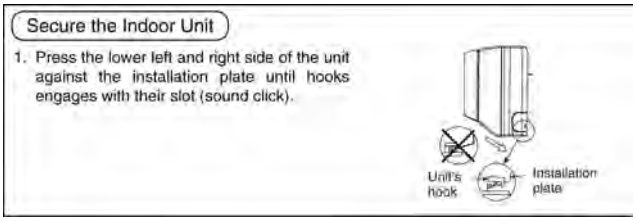
- Step-1 Replace the drain hose
- Step-2 Bend the embedded piping
  - Use a spring bender or equivalent to bend the piping so that the piping is not crushed.
- Step-3 Pull the connecting cable into Indoor Unit
  - The inside and outside connecting cable can be connected without removing the front grille.
- Step-4 Cut and flare the embedded piping
  - When determining the dimensions of the piping, slide the unit all the way to the left on the installation plate.
  - Refer to the section "Cutting and flaring the piping".
- Step-5 Install the Indoor Unit
- Step-6 Connect the piping
  - Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)
- Step-7 Insulate and finish the piping
  - Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connection" column as mentioned in indoor/outdoor unit installation.
- Step-8 Secure the Indoor Unit

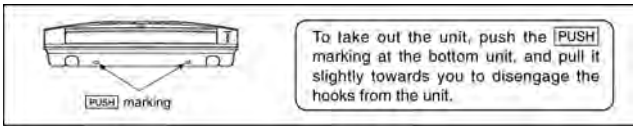


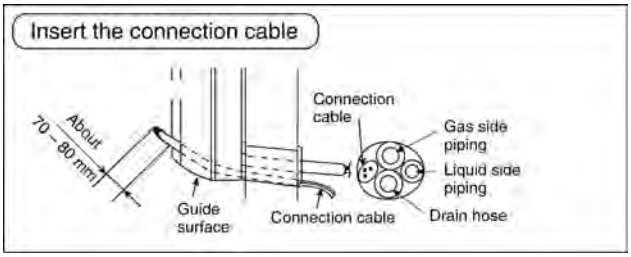




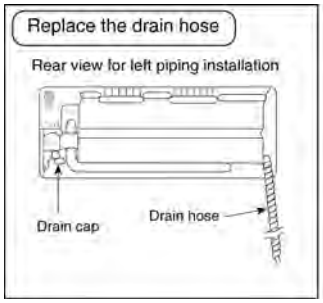


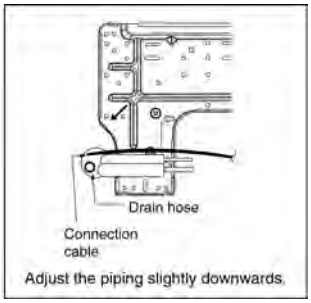


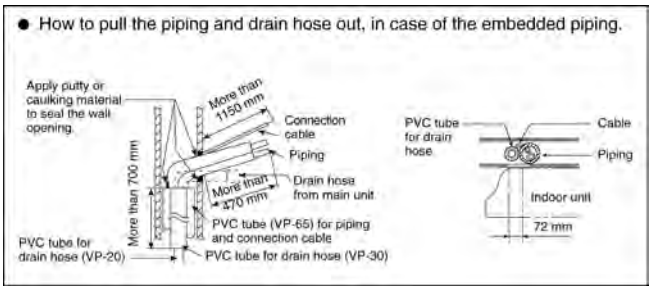


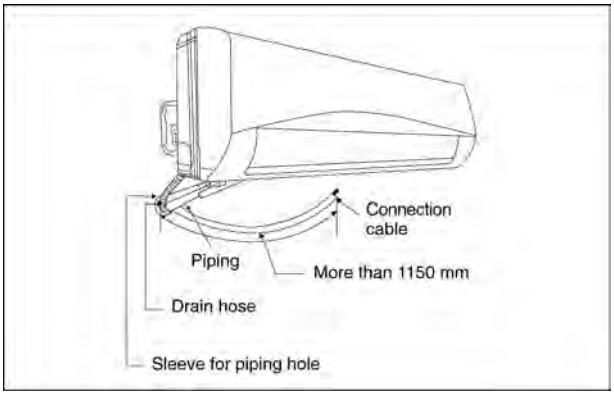


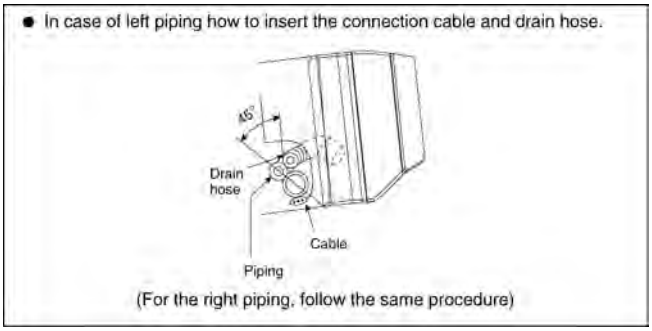
(This can be used for left rear piping and bottom piping also.)





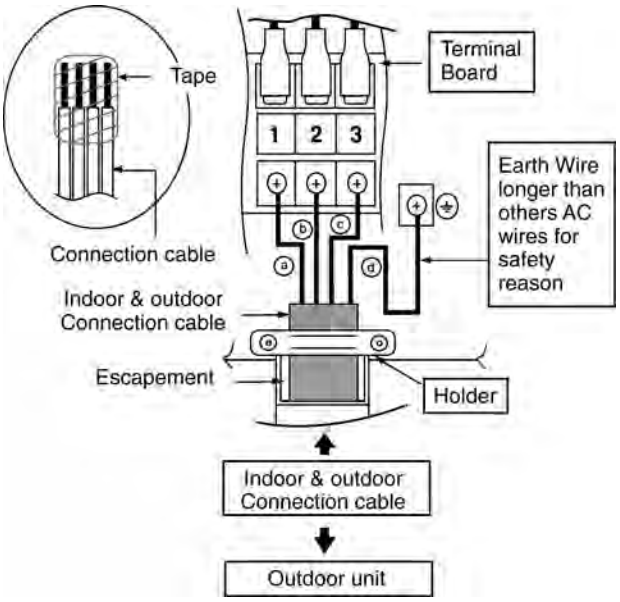




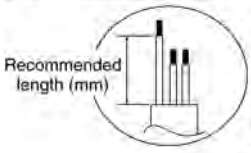


11.2.4. Connect the Cable to the Indoor Unit

1. The inside and outside connection cable can be connected without removing the front grille.
2. **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm^2 flexible cord, type designation 245 IEC 57 or heavier cord.
3. Bind all the indoor and outdoor connection cable with tape and route the connection cable via the escapement.
4. Remove the tapes and connect the connection cable between indoor unit and outdoor unit according to the diagram below.



Terminals on the indoor unit	1	2	3	⏚
Colour of wires				
Terminals on the outdoor unit	1	2	3	⏚

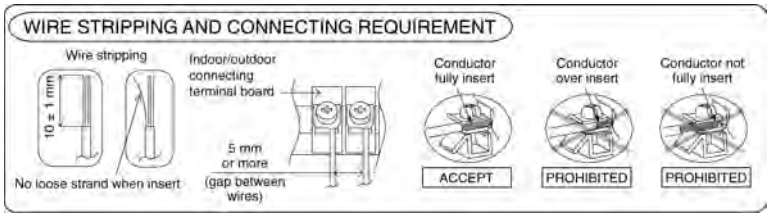


Recommended length (mm)	a	b	c	d
	35	35	35	55

⚠ WARNING

⏚ This equipment must be properly earthed.

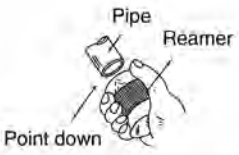
5. Secure the connecting cable onto the control board with the holder (clamper).
   - Ensure the colour of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.
   - Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason.



CUTTING AND FLARING THE PIPING

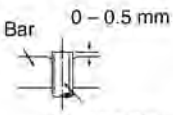
1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.
   Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.

1. To cut



2. To remove burrs

3. To flare



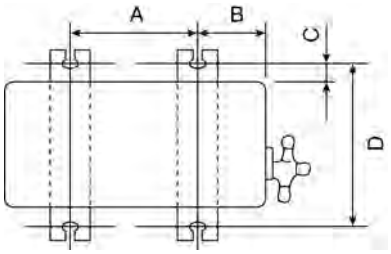
■ Improper flaring ■

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.

11.3. Outdoor Unit

11.3.1. Install the Outdoor Unit

- After selecting the best location, start installation according 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
E7***	570 mm	105 mm	18.5 mm	320 mm
E9***				
E12***				
E15***				
E15***-3	613 mm	131 mm	16 mm	360.5 mm
E18***				
E21***				
E24***				
E28***				

11.3.2. Connect the Piping

Connecting the Piping to Indoor

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

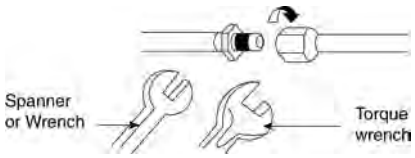
- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.

Do not over tighten, over tightening 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

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.

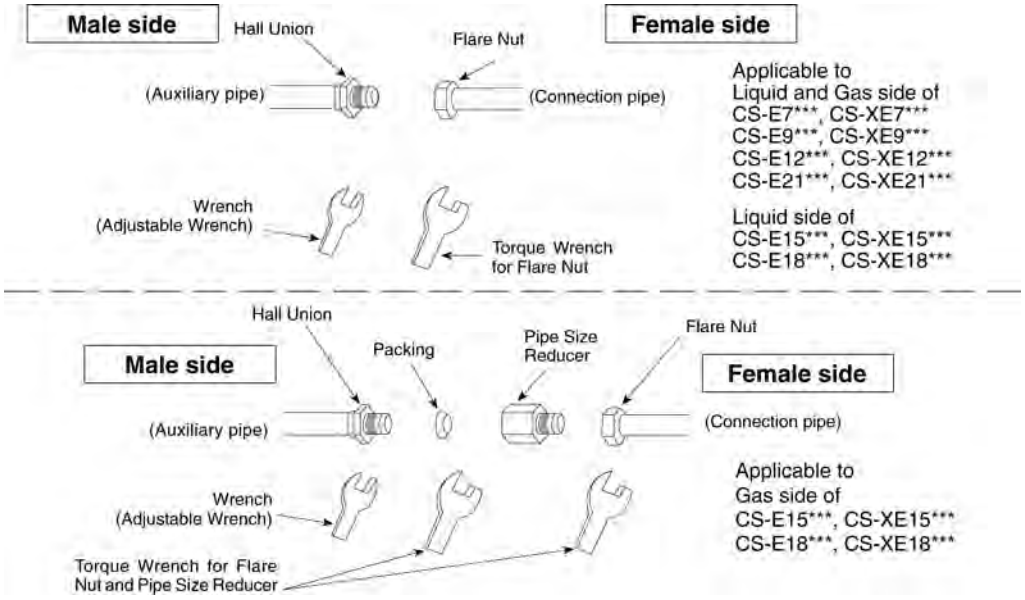
Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.



Connecting the Piping to Outdoor Multi

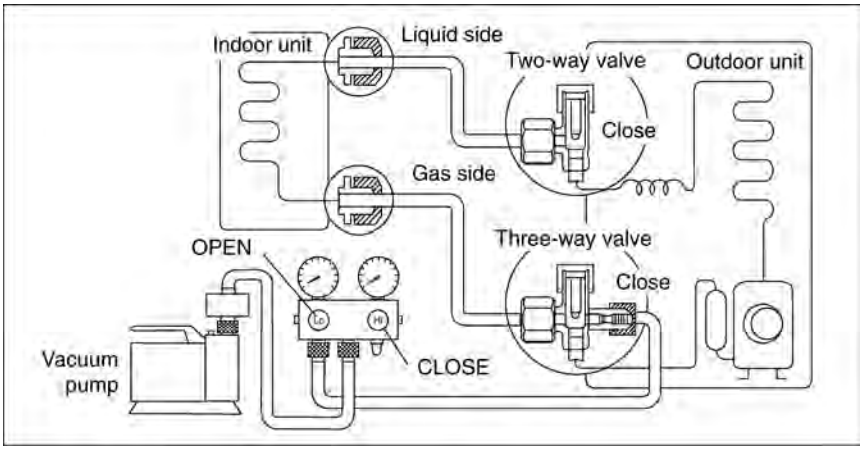
Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.

Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.



11.3.3. 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.

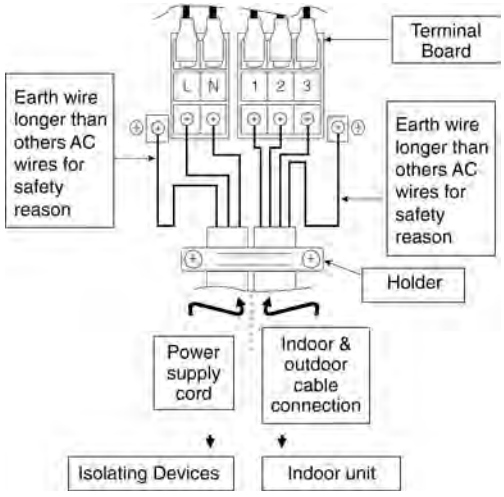


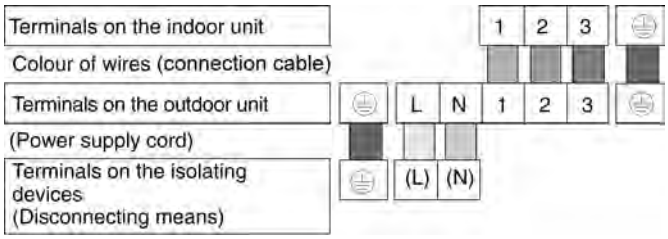
1. Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.
   • Be sure to connect the end of the charging hose with the push pin to the service port.
2. Connect the center hose of the charging set to a vacuum pump.
3. Turn on the power switch 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 ten minutes.
4. Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.
   Note: BE SURE TO TAKE 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 both of the 2-way valve and 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).
8. Mount valve caps onto the 2-way valve and the 3-way valve.
   • 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 the location of leak.
- Do not release refrigerant during piping work for installation and reinstallation.
- Take care of the liquid refrigerant, it may cause frostbite.

11.3.4. Connect the Cable to the Outdoor Unit

1. Remove the control board cover from the unit by loosening the screw.
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 (3/4 ~ 1.75HP), 3 x 2.5 mm^2 (2.0 ~ 2.5HP) or 3 x 4.0 mm^2 (3.0HP) type designation 245 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 245 IEC 57 or heavier cord.
4. Connect the power supply cord and connecting cable between indoor unit and outdoor unit according to the diagram below.





5. Secure the power supply cord and connection cable 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 instruction ⑤ of indoor unit.

⚠ 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.

11.3.5. 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 6 mm or above.

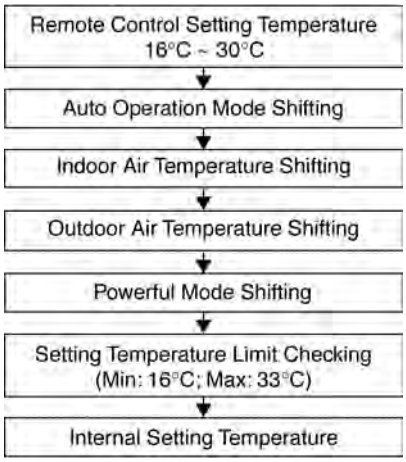
12 Operation and Control

12.1. Basic Function

Inverter control, which equipped with a microcomputer in determining the most suitable operating mode as time passes, automatically adjusts output power for maximum comfort always. In order to achieve the suitable operating mode, the microcomputer maintains the set temperature by measuring the temperature of the environment and performing temperature shifting. The compressor at outdoor unit is operating following the frequency instructed by the microcomputer at indoor unit that judging the condition according to internal setting temperature and intake air temperature.

12.1.1. Internal Setting Temperature

Once the operation starts, remote control setting temperature will be taken as base value for temperature shifting processes. These shifting processes are depending on the air conditioner settings and the operation environment. The final shifted value will be used as internal setting temperature and it is updated continuously whenever the electrical power is supplied to the unit.



12.1.2. Cooling Operation

12.1.2.1. Thermostat control

- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -1.5°C continue for 3 minutes.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.

12.1.3. Soft Dry Operation

12.1.3.1. Thermostat control

- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature < -2.0°C continue for 3 minutes.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature > Compressor OFF point.

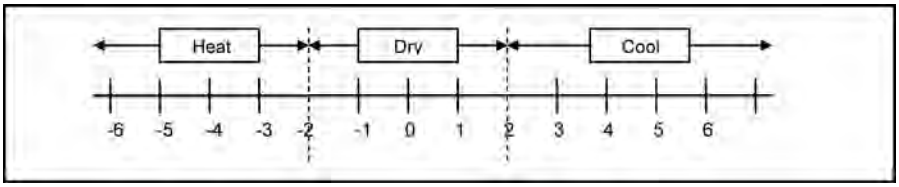
12.1.4. Heating Operation

12.1.4.1. Thermostat control

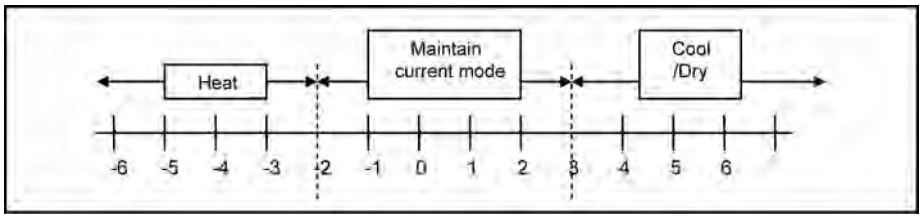
- Compressor is OFF when Intake Air Temperature - Internal Setting Temperature > +2.0°C continue for 3 minutes.
- Compressor is ON after waiting for 3 minutes, if the Intake Air Temperature - Internal Setting Temperature < Compressor OFF point.

12.1.5. Automatic Operation

- This mode can be set using remote control and the operation is decided by remote control setting temperature, remote control operation mode and indoor intake air temperature.
- During operation mode judgment, indoor fan motor (with speed of Lo-) is running for 30 seconds to detect the indoor intake air temperature.
- Every 10 minutes, the indoor temperature is judged.
- For the 1st judgment
  - If indoor intake temperature - remote control setting temperature ≥ 2°C, COOL mode is decided.
  - If -2°C ≤ indoor intake temperature - remote control setting temperature < 2°C, DRY mode is decided.
  - If indoor intake temperature - remote control setting temperature < -2°C, HEAT mode is decided.



- For the 2nd judgment onwards
  - If indoor intake temperature - remote control setting temperature ≥ 3°C, if previous operate in DRY mode, then continue in DRY mode. otherwise COOL mode is decided.
  - If -2°C ≤ indoor intake temperature - remote control setting temperature < 3°C, maintain with previous mode.
  - If indoor intake temperature - remote control setting temperature < -2°C, HEAT mode is decided.



12.2. Indoor Fan Motor Operation

A. Basic Rotation Speed (rpm)

i. Manual Fan Speed

[Cooling, Dry]

- Fan motor's number of rotation is determined according to remote control setting.

Remote Control	O	O	O	O	O
Tab	Hi	Me+	Me	Me-	Lo

[Heating]

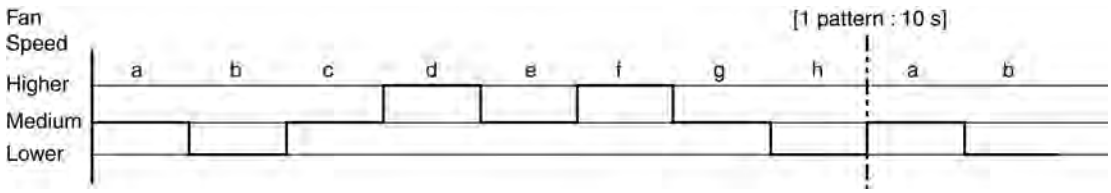
- Fan motor's number of rotation is determined according to remote control setting.

Remote Control	O	O	O	O	O
Tab	SHi	Me+	Me	Me-	Lo

ii. Auto Fan Speed

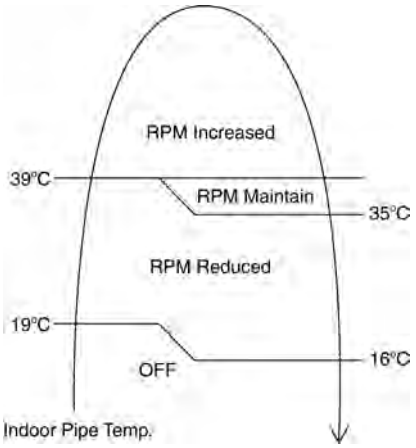
[Cooling, Dry]

- According to room temperature and setting temperature, indoor fan speed is determined automatically.
- The indoor fan will operate according to pattern below.



[Heating]

• According to indoor pipe temperature, automatic heating fan speed is determined as follows.



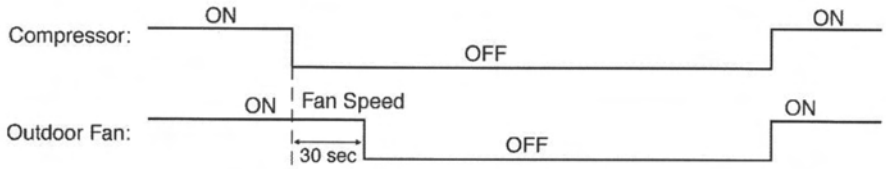
B. Feedback control

• Immediately after the fan motor started, feedback control is performed once every second.

• During fan motor on, if fan motor feedback ⩾ 2550 rpm or < 50 rpm continue for 10 seconds, then fan motor error counter increase, fan motor is then stop and restart. If the fan motor counter becomes 7 times, then H19 - fan motor error is detected. Operation stops and cannot on back.

12.3. Outdoor Fan Motor Operation

Outdoor fan motor is operated with one fan speed only. It starts when compressor starts operation and it stops 30 seconds after compressor stops operation.



12.4. Airflow Direction

1. There are two types of airflow, vertical airflow (directed by horizontal vane) and horizontal airflow (directed by vertical vanes).
2. Control of airflow direction can be automatic (angles of direction is determined by operation mode, heat exchanger temperature and intake air temperature) and manual (angles of direction can be adjusted using remote control).

12.4.1. Vertical Airflow

Operation Mode	Airflow Direction		Vane Angle (°)				
			1	2	3	4	5
Heating	Auto with Heat Exchanger Temperature	A	20				
		B	57 (45 : E18/21MK)				
		C	32				
	Manual		20	32	45	57	68
Cooling and Ion	Auto		20 ~ 45				
	Manual		20	26	32	37	45
Soft Dry	Auto		20 ~ 45				
	Manual		20	26	32	37	45

1. Automatic vertical airflow direction can be set using remote control; the vane swings up and down within the angles as stated above. For heating mode operation, the angle of the vane depands on the indoor heat exchanger temperature as Figure 1 below. It does not swing during fan motor stop. When the air conditioner is stopped using remote control, the vane will shift to close position.

2. Manual vertical airflow direction can be set using remote control; the angles of the vane are as stated above and the positions of the vane are as Figure 2 below. When the air conditioner is stopped using remote control, the vane will shift to close position.

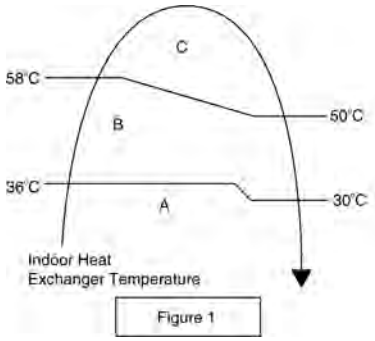


Figure 1

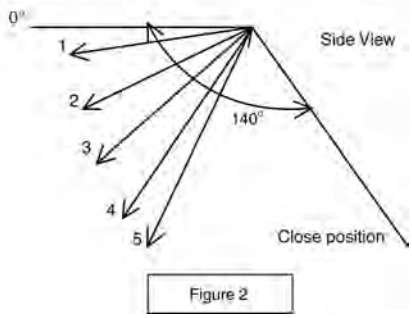


Figure 2

12.4.2. Horizontal Airflow

1. Automatic horizontal airflow direction can be set using remote control; the vane swings left and right within the angles as stated below. For heating mode operation, the angle of the vane depends on the indoor heat exchanger temperature as Figure 1 below. It does not swing during fan motor stop.

Operation Mode		Vane Angle (°)
Heating, with heat exchanger temperature	A	68 ~ 112
	B	90
Cooling and Soft Dry		68 ~ 112

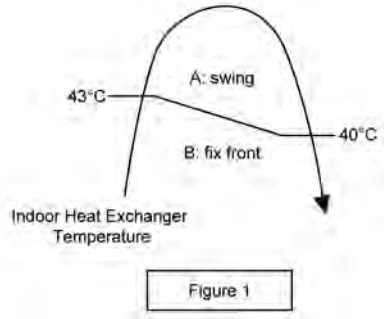


Figure 1

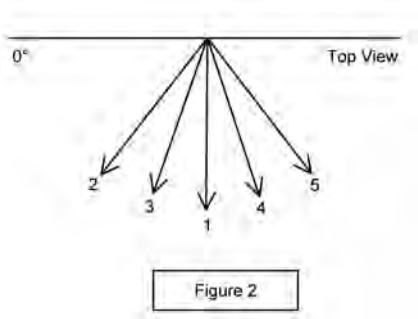


Figure 2

2. Manual horizontal airflow direction can be set using remote control; the angles of the vane are as stated below and the positions of the vane are as Figure 2 above.

Pattern	1	2	3	4	5
Airflow Direction Patterns at Remote Control					
Vane Angle (°)	90	68	78	102	112

12.5. Quiet operation (Cooling Mode/Cooling area of Dry Mode)

A. Purpose

To provide quiet cooling operation compare to normal operation.

B. Control condition

a. Quiet operation start condition

- When “POWERFUL/QUIET” button at remote control is pressed twice.
  POWERFUL/QUIET LED illuminates (low intensity).

b. Quiet operation stop condition

1. When one of the following conditions is satisfied, quiet operation stops:
   a. POWERFUL/QUIET button is pressed again.
   b. Stop by OFF/ON switch.

c. Timer “off” activates.
d. AUTO COMFORT button is pressed.
e. ECONAVI button is pressed.
f. Mild Dry Cooling button is pressed.

2. When quiet operation is stopped, operation is shifted to normal operation with previous setting.
3. When fan speed is changed, quiet operation is shifted to quiet operation of the new fan speed.
4. When operation mode is changed, quiet operation is shifted to quiet operation of the new mode.
5. During quiet operation, if timer “on” activates, quiet operation maintains.
6. After off, when on back, quiet operation is not memorised.

C. Control contents

1. Fan speed is changed from normal setting to quiet setting of respective fan speed.
   This is to reduce sound of Hi, Me, Lo for 3dB (some models more than 3dB).
2. Fan speed for quiet operation is reduced from setting fan speed.

12.6. Quiet operation (Heating)

A. Purpose

To provide quiet heating operation compare to normal operation.

B. Control condition

a. Quiet operation start condition
   • When “POWERFUL/QUIET” button at remote control is pressed.
   POWERFUL/QUIET LED illuminates.

b. Quiet operation stop condition
   1. When one of the following conditions is satisfied, quiet operation stops:
      a. POWERFUL/QUIET button is pressed again.
      b. Stop by OFF/ON switch.
      c. Timer “off” activates.
      d. AUTO COMFORT button is pressed.
      e. ECONAVI button is pressed.
      f. Mild Dry Cooling button is pressed.
   2. When quiet operation is stopped, operation is shifted to normal operation with previous setting.
   3. When fan speed is changed, quiet operation is shifted to quiet operation of the new fan speed.
   4. When operation mode is changed, quiet operation is shifted to quiet operation of the new mode, expect fan only mode.
   5. During quiet operation, if timer “on” activates, quiet operation maintains.
   6. After off, when on back, quiet operation is not memorised.

C. Control contents

a. Fan Speed manual
   1. Fan speed is changed from normal setting to quiet setting of respective fan speed.
      This is to reduce sound of Hi, Me, Lo for 3dB.
   2. Fan speed for quiet operation is reduced from setting fan speed.
b. Fan Speed Auto
   1. Indoor FM RPM depends on pipe temp sensor of indoor heat exchanger.

12.7. Powerful Mode Operation

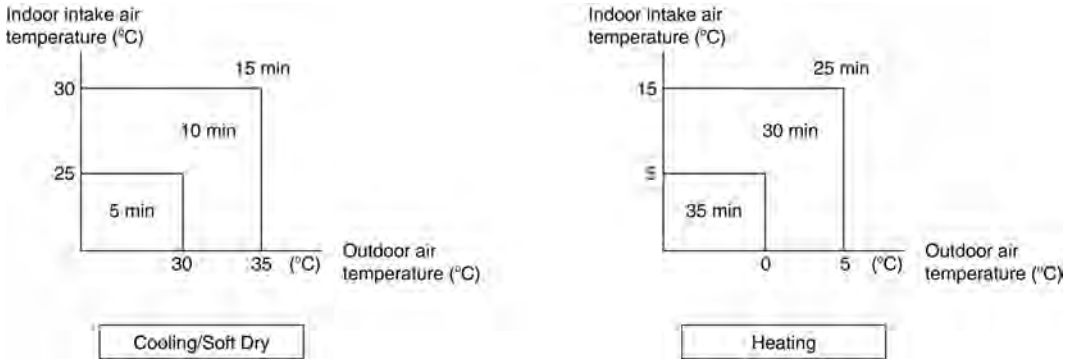
• When the powerful mode is selected, the internal setting temperature will shift lower up to 2°C (for Cooling/Soft Dry) or higher up to 3.5°C (for Heating) than remote control setting temperature for 20 minutes to achieve the setting temperature quickly.

12.8. Timer Control

• There are 2 sets of ON and OFF timer available to turn the unit ON or OFF at different preset time.
• If more than one timer had been set, the upcoming timer will be displayed and will activate in sequence.

12.8.1. ON Timer Control

- ON timer 1 and ON timer 2 can be set using remote control, the unit with timer set will start operate earlier than the setting time. This is to provide a comfortable environment when reaching the set ON time.
- 60 minutes before the set time, indoor (at fan speed of Lo-) and outdoor fan motor start operate for 30 seconds to determine the indoor intake air temperature and outdoor air temperature in order to judge the operation starting time.
- From the above judgment, the decided operation will start operate earlier than the set time as shown below.



12.8.2. OFF Timer Control

OFF timer 1 and OFF timer 2 can be set using remote control, the unit with timer set will stop operate at set time.

12.9. Auto Restart Control

1. When the power supply is cut off during the operation of air conditioner, the compressor will re-operate within three to four minutes (there are 10 patterns between 2 minutes 58 seconds and 3 minutes 52 seconds to be selected randomly) after power supply resumes.
2. This type of control is not applicable during ON/OFF Timer setting.
3. This control can be omitted by open the circuit of JP1 at indoor unit printed circuit board.

12.10. Indication Panel

LED	POWER	TIMER	POWERFUL/QUIET	e-ion	ECONAVI	AUTO COMFORT	PATROL SENSOR
Color	Green	Orange	Orange	Blue	Green	Green	Blue
Light ON	Operation ON	Timer Setting ON	POWERFUL/QUIET Mode ON	e-ion ON	ECONAVI ON	AUTO COMFORT ON	PATROL ON
Light OFF	Operation OFF	Timer Setting OFF	POWERFUL/QUIET Mode OFF	e-ion OFF	ECONAVI OFF	AUTO COMFORT OFF	PATROL OFF

Note:

- If POWER LED is blinking, the possible operation of the unit are Hot Start, during Deice operation, operation mode judgment, or ON timer sampling.
- If Timer LED is blinking, there is an abnormality operation occurs.
- If e-ion LED is blinking, there is an abnormality of e-ion occurs.
- If PATROL LED is blinking, there is a gas sensor error detection.

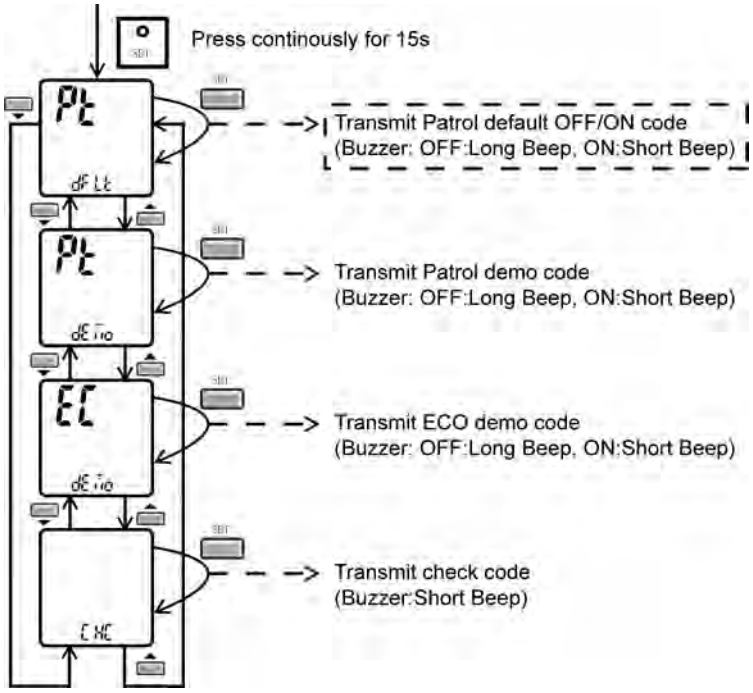
12.11. Patrol Operation

• To monitor air dirtiness level by using Patrol sensor and to maintain air freshness by activates e-ion operation

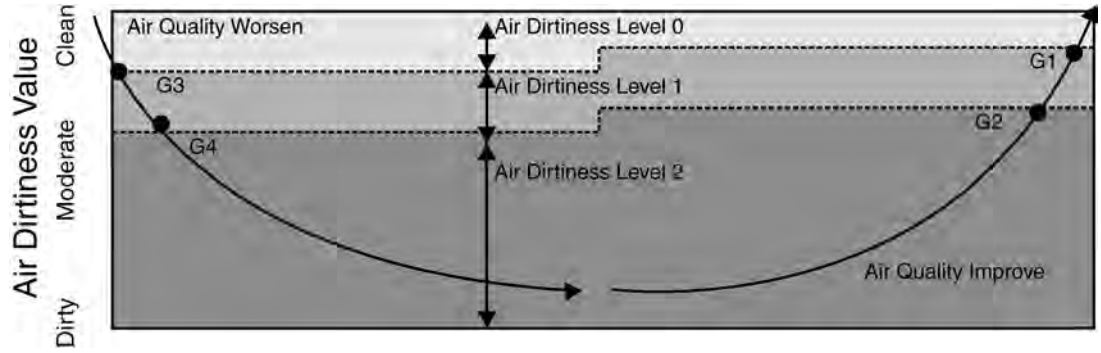
• Patrol operation starts condition
  - When the unit operation is started with “OFF/ON” button.
  - When the unit stops, “Patrol” operation is selected, Patrol individual operation will start.
  - During cooling only operation, “Patrol” operation is selected.

• Patrol operation stops condition (when any of the following condition is fulfilled):
  - When “OFF/ON” button is selected.
  - During any operation with Patrol, “PATROL/e-ion” button is pressed.
  - When OFF Timer activates.

• To disable the Patrol Operation during unit starts (default) with “OFF/ON” button
  - Press “Set” button continuously for 15 seconds by using pointer during Air Conditioner is OFF condition to enter internal setting mode.
  - Press “Timer Decrement” button to select “Pt dFLt”.
  - Press “Timer Set” button to toggle Patrol operation default OFF/ON.
    - Long “beep”: Turn OFF Patrol operation default.
    - Short “beep”: Turn ON Patrol operation default.



• Patrol Sensor Control
  - First 2 minutes from Patrol function activates is stabilization time, during stabilization time, no air dirtiness level is monitored. The Air Dirtiness level is set to Clean.
  - After that, Patrol sensor starts to record the resistance value at fixed interval. Higher resistance value indicates cleaner air.
  - The air dirtiness level is monitored by comparing the current resistance value with maximum resistance value from time to time to get the Air Dirtiness Value.
  - There are 3 air dirtiness level, based on the Air Dirtiness Value:
    - Air Dirtiness level 0: Clean
    - Air Dirtiness level 1: Moderate
    - Air Dirtiness level 2: Contaminated



• Dirtiness level sensitivity adjustment

It is possible to change the Patrol sensor sensitivity, where the Threshold value (G1 ~ G4) will be shifted accordingly:

1. Press and release “SET” button.
2. Press Timer ▲ / Timer ▼ button to select sensitivity. (Air 1 “Low Sensitivity ⟷ Air 2 “Standard” (Default) ⟷ Air 3 “High Sensitivity”)
3. Confirm setting by pressing “Timer Set” button. LCD returned to original display after 2 seconds.
4. LCD returned to original display if remote control does not operate for 30 seconds.

• e-ion Control
  - e-ion operation starts condition
    - When dirtiness at level 2.
    - 2 minutes after stabilization time.
    - 4 hours at level 0.
  - e-ion operation time
    - If dirtiness level improves from level 2 to level 1, the unit carries out level change after 60 seconds.
    - When dirtiness level returns to level 0 continuously for 11 minutes or more, e-ion operation stops.

• Dirtiness Level and fan speed
  - When e-ion operation starts, the fan speed increases based on dirtiness level:

	Dirtiness level	rpm shift		
		Patrol individual operation	Combine operation	
			Auto	Manual
e-ion ON	Dirtiness level 0	No change	No change	No change
	Dirtiness level 1	Me -	+ 20	+ 1 fan tap (max - Hi)
	Dirtiness level 2	Me	+ 40	+ 2 fan tap (max - Hi)

  - Indoor Fan Control
    - During any operation mode combines with Patrol operation, fan speed follows respective operation mode.
    - During Patrol individual operation if e-ion starts, only Auto Fan Speed and no Powerful operation is allowed. Even if “Fan Speed” button is pressed, no signal is sent to air conditioner, and no change on LCD display.
    - During Patrol individual operation if e-ion stops, Indoor Fan stop operation.

• Airflow direction (Horizontal, Vertical) Control
  - During any operation mode combines with Patrol operation, airflow direction follows respective operation mode.
  - During Patrol individual operation if e-ion starts, only Auto Air Swing is allowed. Even if “Air Swing” button is pressed, no signal is sent to air conditioner, and no change on LCD display.
  - During Patrol individual operation if e-ion stops, Airflow direction louver closed.

• Indicator
- When patrol is selected, patrol sensor indicator ON.

NO	Description		BLUE	E-ION
1	When patrol is selected function is not selected		OFF	-
2	During gas sensor error detection control		OFF	OFF
3	During stop		OFF	OFF
4	2 minutes gas sensor initial stabilization time (Level 0)		ON	OFF
5	During operation During patrol	a. Dirtiness level 0*	ON	OFF
		b. Dirtiness level 1	ON	OFF
		c. Dirtiness level 1*	ON	ON
		d. Dirtiness level 2	ON	ON

• Remote Control Receiving Sound

• Normal Operation → Patrol Mode : Beep
• Patrol Mode → Stop : Long Beep
• Patrol Mode → Normal Operation : Beep
• Stop → Patrol : Beep

• Timer Control
- When ON timer activates when unit stops, previous operation resumes and restored last saved Patrol operation status.
- When ON timer activates during any operation, no change and carry on current operation.
- When OFF timer activates during any operation, all operation stops and the latest Patrol operation status is saved.

• Power Failure Control
- During Patrol individual operation, if power failure occurs, after power resumes, Patrol individual operation resumes immediately.
- During combination operation, if power failure occurs, after power resumes combination operation resume immediately.

12.12. e-ion Operation

A. Purpose

This operation provides clean air by producing negative ions to attract dust captured at the positively charged e-ion filters.

B. Control Condition

a. e-ion operation start condition
• During unit running at any operation mode, if “e-ion” operation is selected, combination operation (operation mode + e-ion operation) starts.
• During unit is OFF, if “e-ion” operation is selected, e-ion individual operation starts.

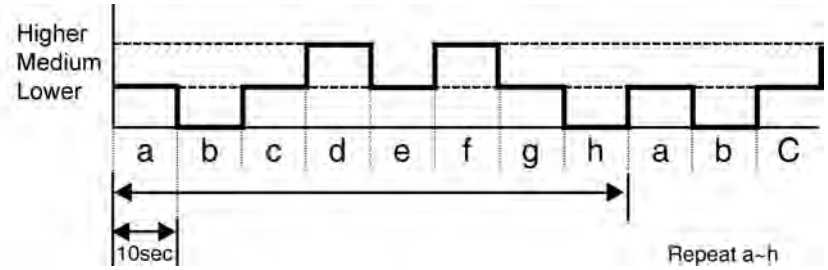
b. e-ion operation stop condition
• When “OFF/ON” button is pressed to stop the operation.
• When “PATROL/e-ion” button is pressed.
• When OFF Timer activates.

c. e-ion operation pause condition
• When indoor fan stop (during deice, odor cut control, thermostat off, etc.). e-ion operation resume after indoor fan restarts.
• When indoor intake temperature ⩾ 40°C. e-ion operation resume after indoor intake temperature < 40°C continuously for 30 minutes.

C. Control Content

a. Indoor fan control
• During any operation mode combines with e-ion operation, fan speed follows respective operation mode.
• During e-ion individual operation - only Auto Fan Speed and no Powerful operation is allowed. Even if Fan Speed button is pressed, no signal is sent to air conditioner, and no change on LCD display.

Auto Fan Speed for e-ion operation switches between HLo and CLo at pattern below:



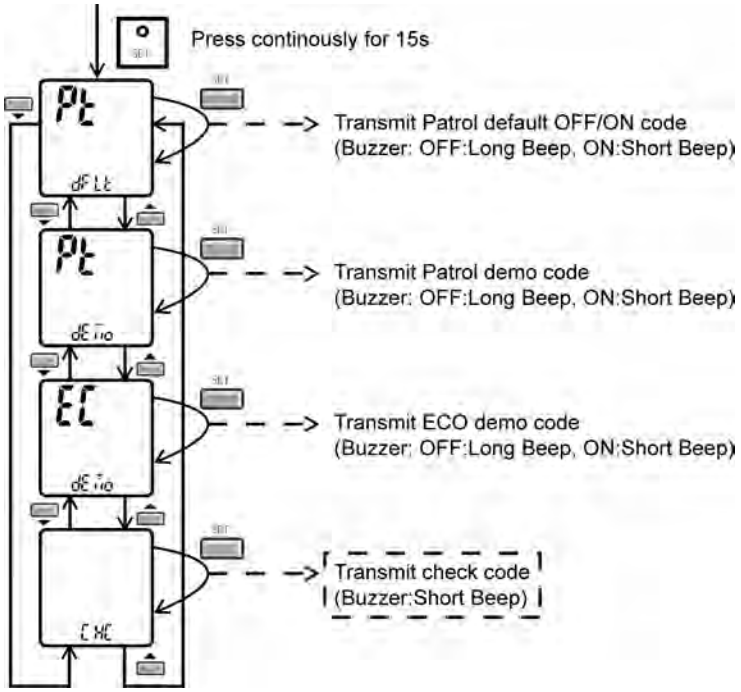
b. Airflow direction control
- During any operation mode combines with e-ion operation, airflow direction follows respective operation mode.
- During e-ion individual operation, only Auto Air Swing is allowed. Even if Air Swing button is pressed, no signal is sent to air conditioner, and no change on LCD display.

c. Timer control
- When ON timer activates when unit stops, previous operation resumes and restores last saved e-ion operation status.
- When ON timer activates during any operation, no change and carry on current operation.
- When OFF timer activates during any operation, all operation stops and the latest e-ion operation status is saved.

d. Indicator
- When e-ion operation starts, e-ion indicator ON.

e. e-ion Check Mode
- e-ion abnormality check mode
- Purpose is to improve sensor serviceability when sensor is malfunction.

1. Control starting condition
   When all of the conditions are formed
   - Not in Patrol Demo mode.
   - e-ion operation mode ON.
   - When e-ion check mode signal is received; the procedure of selection is as shown:
   - Press “Set” button continuously for 15 seconds by using pointer to enter internal setting mode.
   - Press “Timer Decrement” button to select “CHC”.
   - Confirm setting by pressing “Timer Set” button, a “beep” sound will be heard.



- If abnormal discharge is detected at filter (short-circuited) due to water or dust adhesion, etc., the e-ion indicator blinks immediately.

f. Power failure
- During e-ion individual operation, if power failure occurs, after power resumes, e-ion individual operation resumes immediately.
- During combination operation, if power failure occurs, after power resumes, combination operation resume immediately.

g. Error Detection Control

When e-ion indicator blink, it indicates error listed below:

i. e-ion Air Purifying system main connector to PCB is open:

Judgement Method
- During e-ion operation (include during Patrol operation), e-ion Air Purifying system main connector to PCB is opened.

Troubleshooting Methods
- Connect the connector or stop operation (include during Patrol operation) to cancel the blinking.

ii. Abnormal Discharge

Judgement Method
- During e-ion operation, when feedback voltage is -Lo (at microcontroller) is detected, it is judged abnormal discharge and stops power supplies to the e-ion Air Purifying system.
- The unit retries after 30 minutes and repeat for 24 times. (not applicable for e-ion Check Mode)

Troubleshooting Method
- Press “PATROL/e-ion” button or “OFF/ON” button to stop the operation and check the e-ion Air Purifying system main connector to PCB.
- After that, press “e-ion” button again to confirm the e-ion indicator not blinking.
- The 24 times counter will be clear after 10 minutes of normal operation or when operation stops.

Error Reset Method
- Press “OFF/ON” button to OFF the operation.
- Press AUTO OFF/ON button at indoor unit to OFF the operation.
- OFF Timer activates.
- Power supply reset.

iii. e-ion breakdown

Judgement Method
- When hi-feedback voltage (at microcontroller) supplied to filter during e-ion stop, due to PCB or filter’s high voltage power supply damage.
- Operations except e-ion continue. Both Timer indicator and e-ion indicator blink.

Troubleshooting Method
- Press “PATROL/e-ion” button or “OFF/ON” button to stop the operation.
- Change main circuit board or filter’s high voltage power supply.
- When lo-feedback voltage supplied to e-ion Air Purifying system during e-ion operation, e-ion indicator and Timer indicator stop blinking.

12.13. Mild Dry Cooling Operation

- This operation helps to prevent decreases in room humidity while maintaining the setting temperature.
- During unit running at Cooling operation mode, if “Mild Dry Cooling” button is pressed, Mild Dry Cooling operation starts and Mild Dry Cooling indicators turns ON at remote control display.
- Mild dry cooling operation is unavailable when the unit is operating Auto mode, Soft Dry mode, Patrol individual operation or e-ion individual operation.
- Mild dry cooling operation is cancelled when the unit turned OFF, Mild Dry Cooling button is pressed again or when the operation mode changed from Cooling to other mode.
- ECONAVI, Powerful, Quiet and Mild Dry Cooling mode cannot function at the same time, the unit will follows the operation according to the last signal received.
- During this operation, the compressor frequency changes according to operating condition to prevent room humidity decreases and when AUTO AIR SWING is set, the vertical airflow direction fixed at lower limit position.

12.14. AUTO COMFORT and ECO NAVI Operation

• Area of human availability, activity level and absent is judged based on pulses by using 2 infrared sensors. The internal setting temperature shift, fan speed and horizontal airflow direction are adjusted in order to provide comfort environment while maintain the energy saving level.

• AUTO COMFORT start condition:
  - When AUTO COMF button is pressed.

• AUTO COMFORT stop conditions:
  - When AUTO COMF button is pressed again.
  - When unit is OFF by OFF/ON button.
  - When unit is OFF when OFF TIMER activates.
  - When unit is OFF by AUTO OFF/ON button at indoor unit.
  - When POWERFUL, QUIET or MILD DRY operation activates.
  - When ◀.▶ button is pressed.

• ECO NAVI start condition:
  - When ECO NAVI button is pressed.

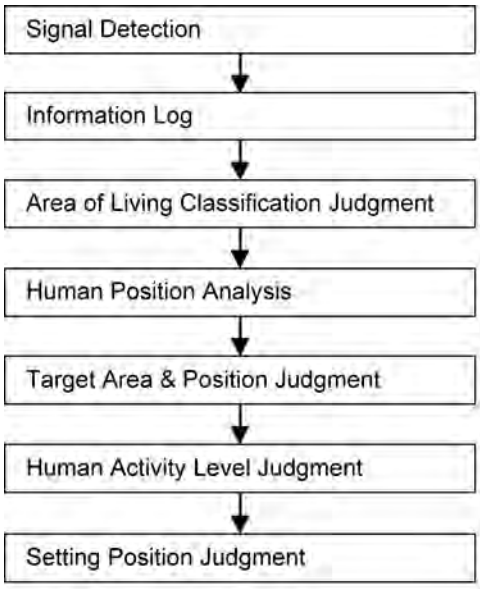
• ECO NAVI stop conditions:
  - When ECO NAVI button is pressed again.
  - When unit is OFF by OFF/ON button.
  - When unit is OFF when OFF TIMER activates.
  - When unit is OFF by AUTO OFF/ON button at indoor unit.
  - When POWERFUL, QUIET or MILD DRY operation activates.
  - When ◀.▶ button is pressed.

• AUTO COMFORT / ECO NAVI initialization

	Initialize indication	Human Activity Indicator			
1	0 - 2 seconds		□	□	□
2	2 - 3 seconds		■	■	■
3	3 - 70 seconds	I	■	□	■
		II	■	■	□
		III	■	□	■
		IV	□	■	■
		Repeat Step I to IV			

* □ Indicator ON, ■ Indicator OFF

• Human activity judgment is as following



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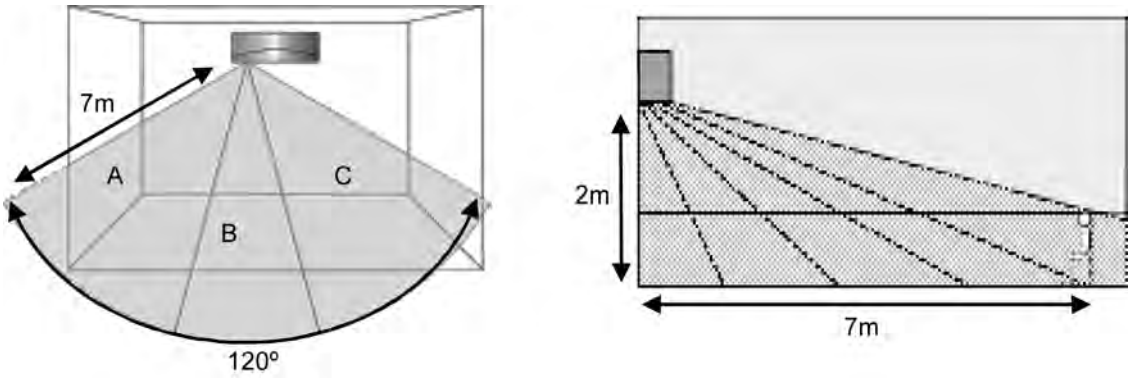
12.14.1. Signal Detection



• Human Activity sensor will turns on according to infrared sensors signal detection.

Signal Detection		Possible detected human position area	Human Activity Sensor		
Sensor 1	Sensor 2		Left	Center	Right
1	0	C	■	■	□
0	1	A	□	■	■
1	1	B	■	□	■
		A & C	■	□	■
		B & C	■	□	■
		A & C	■	□	■
		A, B & C	■	□	■
0	0	-	■	■	■

* □ Indicator ON, ■ Indicator OFF

• However, once the Human Activity Indicator is ON, it will maintain ON status for 5 seconds. If there is no signal detection from either infrared sensor, the final display condition will be kept until absence status.

12.14.2. Information Log

• The signal from Infrared sensors will be log to human activity database for further analysis.

12.14.3. Area of Living Classification Judgment

• The system is able to judge area of living according to human activity database, classified as following:
  - Living Area – In front of television, dining table, etc.
  - Walkway – Human detection is relatively less.
  - Non-Living Area – near windows, wall, etc.

12.14.4. Human Position Analysis

• According to Area of Living, frequency of activity and indoor unit intake temperature, the system will analyze the human position away from the indoor unit.

12.14.5. Target Area and Position Judgment

• The system will judge the indoor unit installation position according to human activity Non-Living Area:
  - Non-Living Area at Position A – Indoor unit installed at left side of the room.
  - Non-Living Area at Position C – Indoor unit installed at right side of the room.
  - Other than above – Indoor unit installed at center of the room.
• Every 4 hours, the Target Area and Position Judgment will restart.

12.14.6. Human Activity Level Judgment

• Human Activity Level is judged based on the frequency of pulses detected by the infrared sensors within a timeframe. The activity level will be categorized into High, Normal, Low level.
• When a pulse is detected within this timeframe, the status of human presence is judged.
• When there is no signal detection continues for 20 minutes or more, the status of human absence is judged.

12.14.7. Setting Position Judgment

• According to installation position when there is only one activity area detected, the horizontal airflow direction louver position is fixed according to chart below:

Target area	Horizontal airflow direction louver position		
	Left installation	Center installation	Right installation
A	2	1	1
B	5	5	4
C	3	3	3

• When 2 activity areas have been detected, according to Human Activity Level, the timing of horizontal airflow direction louver steps at the targeted activity areas is judged.

Operation mode	Activity level difference	Louver stop time
Cooling	1 level	Higher Activity level ≈ 60 seconds Lower Activity level ≈ 30 seconds
	2 levels	Higher Activity level ≈ 60 seconds Lower Activity level ≈ 8 seconds
Heating	1 level	Higher Activity level ≈ 8 seconds Lower Activity level ≈ 30 seconds
	2 levels	Higher Activity level ≈ 8 seconds Lower Activity level ≈ 60 seconds

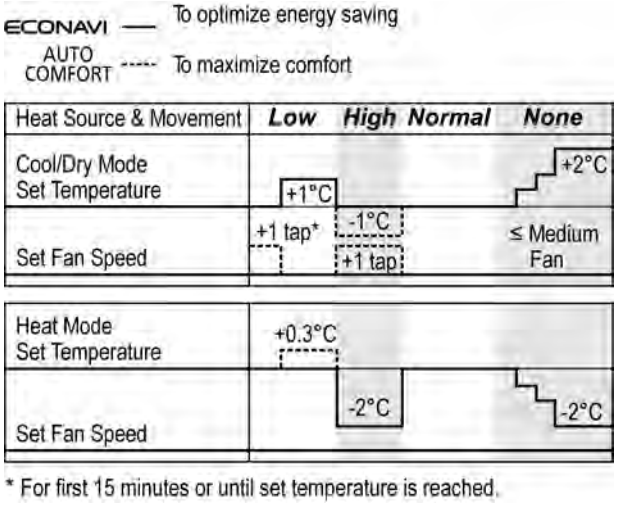
• When 3 activity areas have been detected, according to Human Activity Level the timing of horizontal airflow louver steps at the targeted activity areas is judged.

Operation mode	Activity level	Louver stop time
Cooling	Hi Me Lo	≈ 45 seconds ≈ 30 seconds ≈ 20 seconds
Heating	Hi Me Lo	≈ 20 seconds ≈ 30 seconds ≈ 45 seconds

• When 3 activity areas have same activity level, the horizontal airflow direction louver will swing left and right.

12.14.8. Setting Temperature and Fan Speed Shift

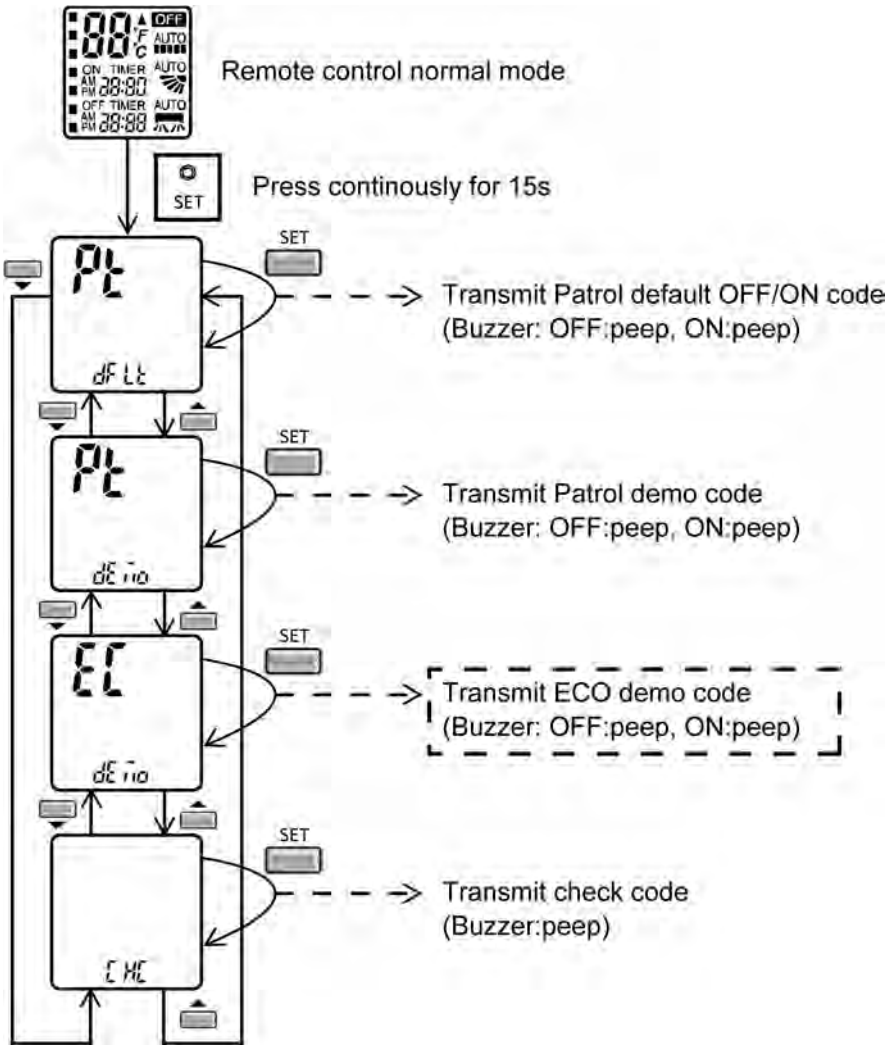
• Cooling Dual Sensor



* For first 15 minutes or until set temperature is reached.

12.14.9. ECO NAVI and AUTO COMF Demo Mode

• To enable ECO DEMO mode:



• To disable ECO Demo MODE:
  - Transmit ECO Demo signal again.
  - Transmit Patrol Demo signal.

• Operation details

Infrared Sensor		Human Activity Sensor			Vane Position	Fan Speed
Sensor 1	Sensor 2	Left	Center	Right		
1	0	■	■	□	5	HI
1	1	■	□	■	Auto Swing	HI
0	1	□	■	■	1	HI
0	0	■	■	■	Auto Swing	LO

• The target area will maintain for 5 seconds before changeover to next detection.
• If no activity detection, the last action will maintain for 30 seconds before changeover to human absence status.

12.14.10.Infrared Sensor Abnormality

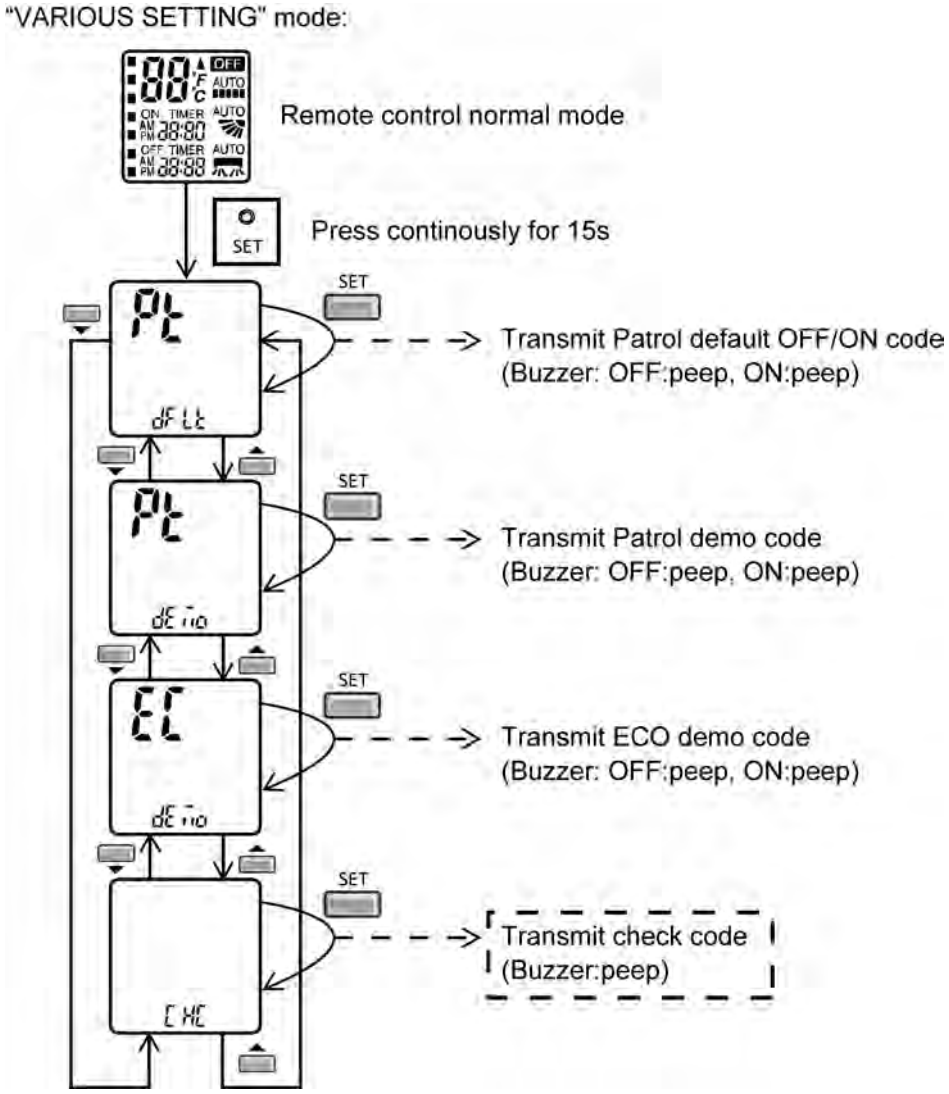
- Abnormality detection:
  - Connector disconnection / Wire cut abnormality
    - Sensor judge Hi level continuously for 25 seconds
  - Circuit abnormality
    - 70 seconds after power ON, if infrared sensor judge Lo level continuously for 25 seconds

- Error Code judgment
  - When abnormality happened, internal counter increase by 1 time.
  - Infrared sensor power OFF, retry after 5 seconds.
  - When the infrared sensor maintains normal condition for 120 seconds, the counter reset or AC reset.
  - When abnormality counter reached 4 times, H59 occurred – No TIMER indicator blinking.

- When error code happened, the unit is able to operate without AUTO COMF / ECO NAVI.

12.14.11.Infrared Sensor Check Mode

- To enable Infrared sensor abnormality check mode:



- During ECO NAVI / AUTO COMF is ON, when CHECK signal received, if either sensors has abnormality, the 4 times abnormality counter is ignored, ECO NAVI Indicator will blink immediately and error code is memorized.
- The unit could operate without ECO NAVI or AUTO COMF.
- The ECO NAVI indicator blinking could be cancelled by pressing ECO NAVI/AUTO COMF button again.
- If the Infrared sensor has no abnormality, the CHECK process will end and continue with normal operation.

13 Operation Control (For Multi Split Connection)

During multi split connection, indoor unit's operation controls are same with single split connection unless specified in this chapter.

13.1. Cooling operation

13.1.1. Thermostat control

- Capability supply to indoor unit is OFF (Expansion valve closed) when Intake Air Temperature — Internal setting temperature < -2.0°C
- Capability resume supply to indoor unit after waiting for 3 minutes, if the Intake Air temperature — Internal setting temperature > Capability supply OFF point.

13.2. Soft Dry Operation

13.2.1. Thermostat control

- Capability supply to indoor unit is OFF (Expansion valve closed) when Intake Air Temperature — Internal setting temperature < -3.0°C
- Capability resume to indoor unit after waiting for 3 minutes, if the Intake Air temperature — Internal setting temperature > Capability supply OFF point.

13.3. Heating Operation

13.3.1. Thermostat control

- Capability supply to indoor unit is OFF (Expansion valve closed) when Intake Air Temperature — Internal setting temperature > +1.0°C
- During this condition, the indoor fan is stopped if compressor is ON.
- Capability resume supply to indoor unit after waiting for 3 minutes, if the Intake Air Temperature — Internal setting temperature < Capability supply OFF point.

13.3.2. Temperature Sampling Control

- Temperature sampling is controlled by outdoor unit where room temperature for all power supply ON indoor unit could be obtained.
- When capability supply to the indoor unit is OFF and the compressor is ON, the indoor fan motor is stopped. During this condition, 15 seconds after sampling signal from outdoor unit is received, the indoor fan start operation at low fan speed.
- However, within first 4 minutes of capability stopped supply to the indoor unit, even sampling signal is received, the sampling control is cancelled.

13.4. Automatic Operation

- This mode can be set using remote control and the operation is decided by remote control setting temperature, remote control operation mode, indoor intake and outdoor air temperature.
- During operation mode judgment, indoor fan motor (with speed of -Lo) and outdoor fan motor are running for 30 seconds to detect the indoor intake and outdoor air temperature. The operation mode is decided based on below chart.

- Every 180 minutes, the indoor and outdoor temperature is judge. Based on remote control setting temperature, the value of T1 will increase up to 10°C, T2 will decrease by 3°C and T3 will decrease up to 8°C.

13.5. Indoor Fan Motor Operation

13.5.1. Residual Heat Removal Control

- To prevent high pressure at indoor unit, when heating mode thermostat-off condition or power supply OFF, indoor fan continue to operate at controlled fan speed for maximum 30 seconds then stop.

13.6. Powerful Mode Operation

- When the power mode is selected, the internal setting temperature will shift lower up to 4°C for Cooling/Soft Dry or higher up to 6°C for heating than remote control setting temperature, the powerful operation continue until user cancel the Powerful operation by pressing powerful button again.

13.7. Auto restart control

- When the power supply is cut off during the operation of air conditioner, the compressor will re-operate between three to four minutes (10 patterns to be selected randomly) after power resume.
- During multi split connection, Indoor unit will resume previous mode, include unit standby mode.

13.8. Indication Panel

LED	POWER	TIMER	POWERFUL/QUIET	e-ion	ECONAVI	AUTO COMFORT	PATROL SENSOR
Color	Green	Orange	Orange	Blue	Green	Green	Blue
Light ON	Operation ON	Timer Setting ON	POWERFUL/QUIET Mode ON	e-ion ON	ECONAVI ON	AUTO COMFORT ON	PATROL ON
Light OFF	Operation OFF	Timer Setting OFF	POWERFUL/QUIET Mode OFF	e-ion OFF	ECONAVI OFF	AUTO COMFORT OFF	PATROL OFF

Note:

- If POWER LED is blinking (0.5 seconds ON, 0.5 second OFF), the possible operation of the unit are during Indoor Residual Heat Removal, Hot Start, during Deice operation, operation mode judgment, or ON timer sampling.
- If POWER LED is blinking (2.5 seconds ON, 0.5 second OFF), the unit is in standby mode.
- If TIMER LED is blinking, there is an abnormality operation occurs.
- If e-ion LED is blinking, there is an abnormality of e-ion occurs.
- If PATROL LED is blinking, there is a gas sensor error detection.

13.9. Mild Dry Cooling Operation

- During multi split connection, Mild Dry Cooling Operation is disabled.

14 Protection Control

14.1. Protection Control For All Operations

14.1.1. Restart Control (Time Delay Safety Control)

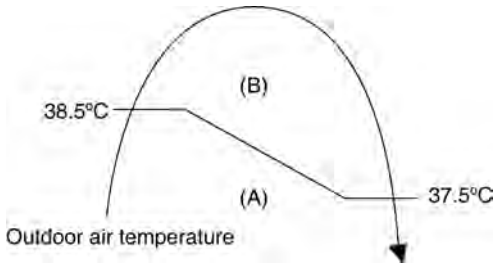
- The Compressor will not turn on within 3 minutes from the moment operation stops, although the unit is turned on again by pressing OFF/ON button at remote control within this period.
- This control is not applicable if the power supply is cut off and on again.
- This phenomenon is to balance the pressure inside the refrigerant cycle.

14.1.2. Total Running Current Control

1. When the outdoor unit total running current (AC) exceeds X value, the frequency instructed for compressor operation will be decreased.
2. If the running current does not exceed X value for 5 seconds, the frequency instructed will be increased.
3. However, if total outdoor unit running current exceeds Y value, compressor will be stopped immediately for 3 minutes.

Model	E7MKE/E-3		E9MKE/E-3		E12MKE		E12MKE-3		E15MKE		E18MKE		E21MKE	
Operation Mode	X (A)	Y (A)	X (A)	Y (A)	X (A)	Y (A)	X (A)	Y (A)	X (A)	Y (A)	X (A)	Y (A)	X (A)	Y (A)
Cooling/Soft Dry (A)	3.78	15.06	4.62	15.06	6.64	15.06	6.93	15.06	7.59	15.06	11.81	14.75	12.27	14.75
Cooling/Soft Dry (B)	3.33	15.06	4.20	15.06	6.20	15.06	6.42	15.06	7.23	15.06	8.9	14.75	11.10	14.75
Heating	4.46	15.06	5.57	15.06	7.30	15.06	8.10	15.06	8.62	15.06	10.07	14.75	11.58	14.75

4. The first 30 minutes of cooling operation, (A) will be applied.



14.1.3. IPM (Power transistor) Prevention Control

A. Overheating Prevention Control

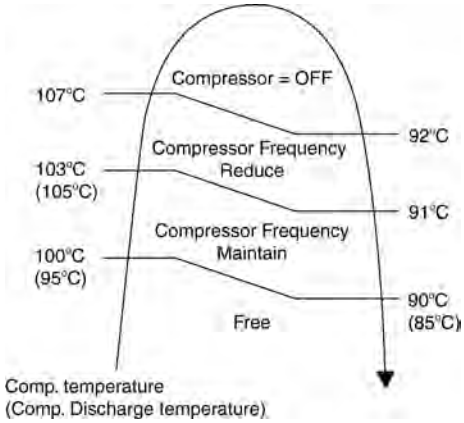
1.When the IPM temperature rises to 120°C, compressor operation will stop immediately.
2.Compressor operation restarts after 3 minutes the temperature decreases to 110°C.
3.If this condition repeats continuously 4 times within 20 minutes, timer LED will be blinking (“F96” is indicated).

B. DC Peak Current Control

1. When electric current to IPM exceeds set value of 18.5 A (E7 ~ 15MK) and 30.0 ± 5.0A (E18 ~ 21MK), the compressor will stop operate. Then, operation will restart after 3 minutes.
2. If the set value is exceeded again more than 30 seconds after the compressor starts, the operation will restart after 1 minute.
3. If the set value exceeded again within 30 seconds after the compressor starts, the operation will restart after 1 minute. If this condition repeats continuously for 7 times, all indoor and outdoor relays will be cut off, timer LED will be blinking (“F99” is indicated).

14.1.4. Compressor Overheating Prevention Control

- Instructed frequency for compressor operation will be regulated by compressor discharge temperature. The changes of frequency are as below.
- If compressor discharge temperature exceeds 107°C, compressor will be stopped, occurs 4 times per 20 minutes, timer LED will be blinking. (“F97” is indicated.)



14.1.5. Low Pressure Prevention Control (Gas Leakage Detection)

a. Control start conditions
- For 5 minutes, the compressor continuously operates and outdoor total current is between 0.75A and 0.95A (E7/9/12/15MK), 1.38A and 1.65A (E18/21MK).
- During Cooling and Soft Dry operations:
  Indoor suction temperature - indoor piping temperature is below 4°C.
- During Heating operations :
  Indoor piping temperature - indoor suction is under 5°C.

b. Control contents
- Compressor stops (and restart after 3 minutes).
- If the conditions above happen 2 times within 20 minutes, the unit will:
  - Stop operation
  - Timer LED blinks and “F91” indicated.

14.1.6. Low Frequency Protection Control 1

- When the compressor operate at frequency lower than 24 Hz continued for 20 minutes, the operation frequency will be changed to 23 Hz for 2 minutes.

14.1.7. Low Frequency Protection Control 2

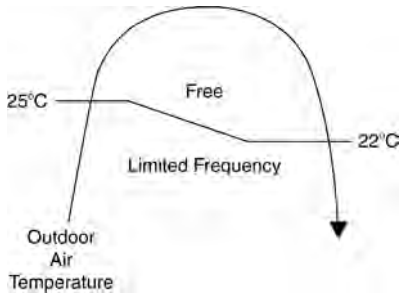
- When all the below conditions comply, the compressor frequency will change to lower frequency.

Temperature, T, for:	Cooling/Soft Dry	Heating
Indoor intake air (°C)	T < 14 or T ⩾ 30	T < 14 or T ⩾ 28
Outdoor air (°C)	T < 13 or T ⩾ 38	T < 4 or T ⩾ 24
Indoor heat exchanger (°C)	T < 30	T ⩾ 0

14.2. Protection Control For Cooling & Soft Dry Operation

14.2.1. Outdoor Air Temperature Control

- The compressor operating frequency is regulated in accordance to the outdoor air temperature as shown in the diagram below.
- This control will begin 1 minute after the compressor starts.
- Compressor frequency will adjust base on outdoor air temperature.



14.2.2. Cooling Overload Control

- Detects the Outdoor pipe temperature and carry out below restriction/limitation (Limit the compressor Operation frequency).
- The compressor stop if outdoor pipe temperature exceeds 61°C (E7 ~ 15MK) and 63°C (E18 ~ 21MK).
- If the compressor stops 4 times in 20 minutes, Timer LED blinking (F95 indicated: outdoor high pressure rise protection).

14.2.3. Freeze Prevention Control 1

1. When indoor heat exchanger temperature is lower than 0°C continuously for 6 minutes, compressor will stop operating.
2. Compressor will resume its operation 3 minutes after the indoor heat exchanger is higher than 5°C.
3. At the same time, indoor fan speed will be higher than during its normal operation.
4. If indoor heat exchanger temperature is higher than 5°C for 5 minutes, the fan speed will return to its normal operation.

14.2.4. Freeze Prevention Control 2

1. Control start conditions
   - During Cooling operation and soft dry operation
     - During thermo OFF condition, indoor intake temperature is less than 10°C or
     - Compressor stops for freeze prevention control
   - Either one of the conditions above occurs 5 times in 60 minutes.
2. Control contents
   - Operation stops
   - Timer LED blinks and “H99” indicated

14.2.5. Dew Prevention Control 1

- To prevent dew formation at indoor unit discharge area.
- This control will be activated if:
  - Outdoor air temperature and Indoor pipe temperature judgment by microcontroller is fulfilled.
  - When Cooling or Dry mode is operated more than 20 minutes or more.
- This control stopped if:
  - Compressor stopped.
  - Remote control setting changed (fan speed / temperature).
  - Outdoor air temperature and indoor intake temperature changed.
- Fan speed will be adjusted accordingly in this control.

14.2.6. Odor Cut Control

- To reduce the odor released from the unit.
  - Start Condition
    - AUTO FAN Speed is selected during COOL or DRY operation.
    - During freeze prevention control and timer preliminary operation, this control is not applicable.
  - Control content
    - Depends on compressor conditions:
      1. Compressor OFF → Compressor ON.
         The indoor unit fan stops temporarily and then starts to blow at minimum airflow for 30 seconds.
      2. Compressor ON → Compressor OFF.
         The indoor unit fan stops for 90 seconds and then blows at minimum airflow for 20 seconds.

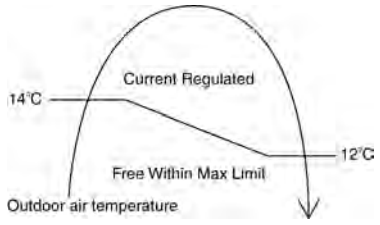
14.3. Protection Control For Heating Operation

14.3.1. Intake Air Temperature Control

Compressor will operate at limited freq., if indoor intake air temperature is 30°C or above.

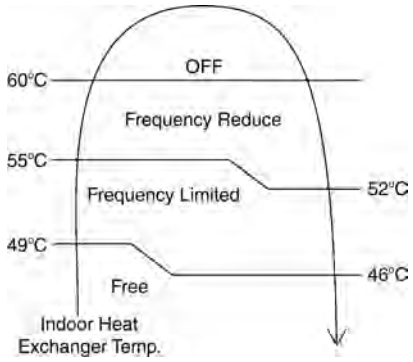
14.3.2. Outdoor Air Temperature Control

- The Max current value is regulated when the outdoor air temperature rise above 16°C (E7 ~ 15MK) and 14°C (E18 ~ 21MK) in order to avoid compressor overloading.



14.3.3. Overload Protection Control

- The compressor operating frequency is regulated in accordance to indoor heat exchanger temperature as shown below.
- If the heat exchanger temperature exceeds 60°C, compressor will stop.



14.3.4. Low Temperature Compressor Oil Return Control

- In heating operation, if the outdoor temperature falls below -10°C when compressor starts, the compressor frequency will be regulated up to 600 seconds.

14.3.5. Cold Draught Prevention Control

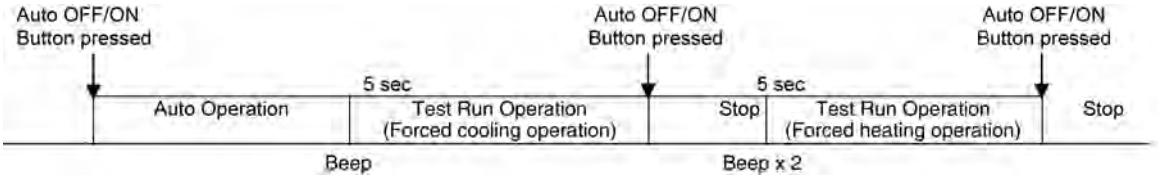
- When indoor pipe temperature is low, cold draught operation starts where indoor fan speed will be reduced.

14.3.6. Deice Operation

- When outdoor pipe temperature and outdoor air temperature is low, deice operation start where indoor fan motor and outdoor fan motor stop and operation LED blinks.

15 Servicing Mode

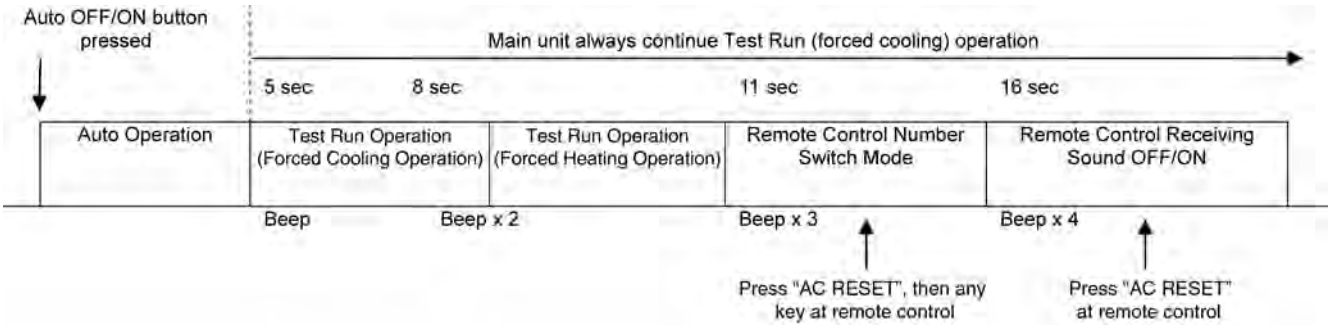
15.1. Auto OFF/ON Button



1. AUTO OPERATION MODE
   The Auto operation will be activated immediately once the Auto OFF/ON button is pressed. This operation can be used to operate air conditioner with limited function if remote control is misplaced or malfunction.

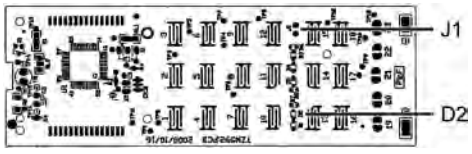
2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)
   The Test Run operation will be activated if the Auto OFF/ON button is pressed continuously for more than 5 seconds. A “beep” sound will heard at the fifth seconds, in order to identify the starting of Test Run operation (Forced cooling operation). Within 5 minutes after Forced cooling operation start, the Auto OFF/ON button is pressed for more than 5 seconds. A 2 “beep” sounds will heard at the fifth seconds, in order to identify the starting of Forced heating operation.

   The Auto OFF/ON button may be used together with remote control to set / change the advance setting of air conditioner operation.



3. REMOTE CONTROL NUMBER SWITCH MODE
   The Remote Control Number Switch Mode will be activated if the Auto OFF/ON button is pressed continuously for more than 11 seconds (3 “beep” sounds will occur at 11th seconds to identify the Remote Control Number Switch Mode is in standby condition) and press “AC RESET” button and then press any button at remote control to transmit and store the desired transmission code to the EEPROM.

   There are 4 types of remote control transmission code could be selected and stored in EEPROM of indoor unit. The indoor unit will only operate when received signal with same transmission code from remote control. This could prevent signal interference when there are 2 or more indoor units installed nearby together.
   To change remote control transmission code, short or open jumpers at the remote control printed circuit board.



Remote Control Printed Circuit Board		
Jumper A (J1)	Jumper B (D2)	Remote Control No.
Short	Open	A (Default)
Open	Open	B
Short	Short	C
Open	Short	D

- During Remote Control Number Switch Mode, press any button at remote control to transmit and store the transmission code to the EEPROM.

4. REMOTE CONTROL RECEIVING SOUND OFF/ON MODE
   The Remote Control Receiving Sound OFF/ON Mode will be activated if the Auto OFF/ON button is pressed continuously for more than 16 seconds (4 “beep” sounds will occur at 16th seconds to identify the Remote Control Receiving Sound Off/On Mode is in standby condition) and press “AC Reset” button at remote control.

   Press “Auto OFF/ON button” to toggle remote control receiving sound.
   - Short “beep”: Turn OFF remote control receiving sound.
   - Long “beep”: Turn ON remote control receiving sound.

   After Auto OFF/ON Button is pressed, the 20 seconds counter for Remote Control Receiving Sound OFF/ON Mode is restarted.

15.2. Remote Control Button

15.2.1. SET BUTTON

• To check remote control transmission code and store the transmission code to EEPROM
  - Press “SET” button continuously for 10 seconds by using pointer.
  - Press “TIMER SET” button until a “beep” sound is heard as confirmation of transmission code changed.

• To change the air quality sensor sensitivity
  - Press and release by using pointer.
  - Press the Timer Decrement button to select sensitivity:
    1. Low Sensitivity
    2. Standard (Default)
    3. Hi Sensitivity
  - Confirm setting by pressing Timer Set button, a “Beep” sound will be heard. LCD returns to original display after 2 seconds.
  - LCD returns to original display if remote control does not operate for 30 seconds.

15.2.2. RESET (RC)

• To clear and restore the remote control setting to factory default
  - Press once to clear the memory.

15.2.3. RESET (AC)

• To restore the unit’s setting to factory default
  - Press once to restore the unit’s setting.

15.2.4. TIMER ▲

• To change indoor unit indicator’s LED intensity
  - Press continuously for 5 seconds.

15.2.5. TIMER ▼

• To change remote control display from Degree Celsius (°C) to Degree Fahrenheit (°F).
  - Press continuously for 10 seconds.

16 Troubleshooting Guide

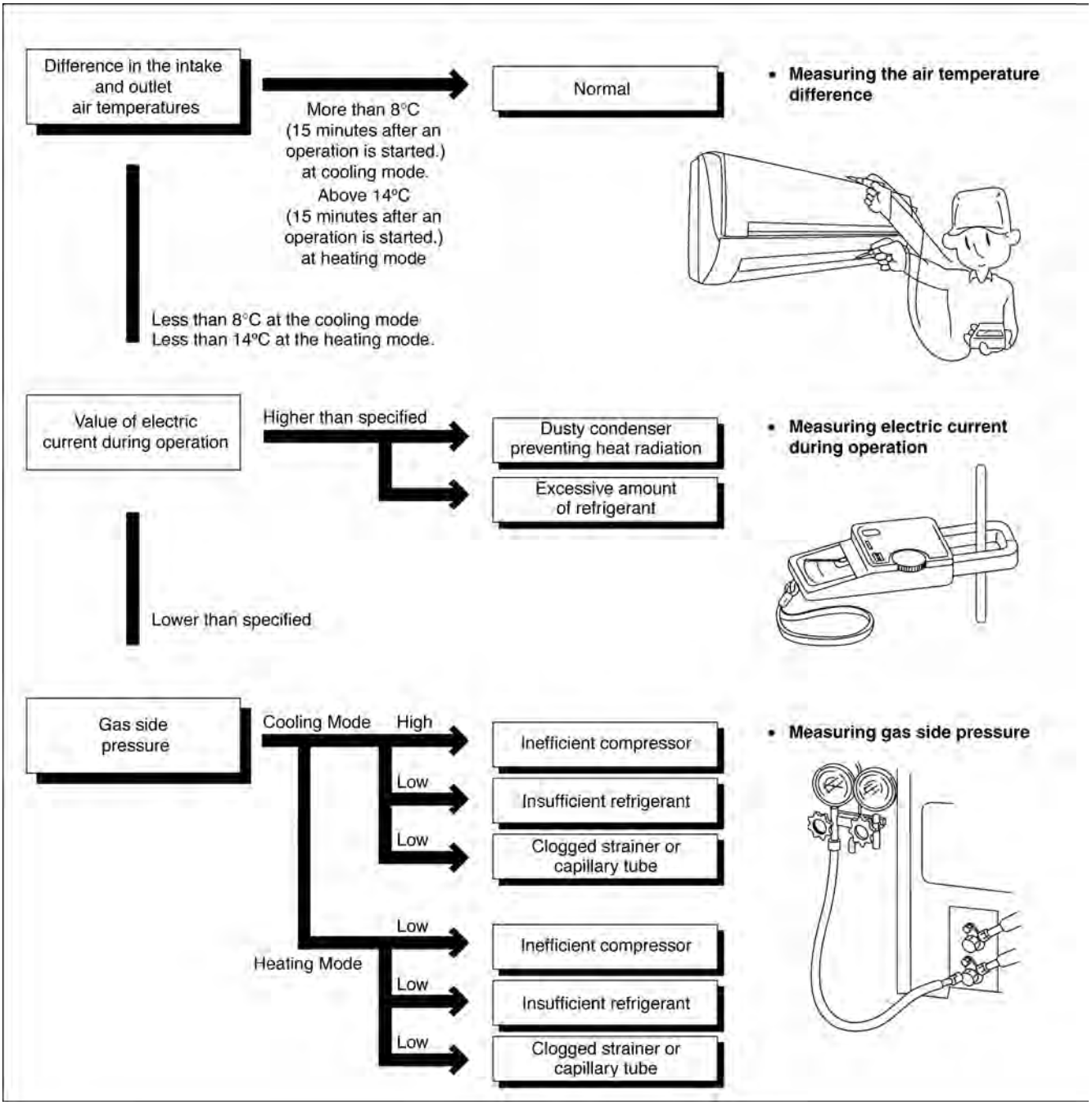
16.1. Refrigeration Cycle System

In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.
The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table on the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure MPa (kg/cm²G)	Outlet air temperature (°C)
Cooling Mode	0.9 ~ 1.2 (9 ~ 12)	12 ~ 16
Heating Mode	2.3 ~ 2.9 (23 ~ 29)	36 ~ 45

★ Condition: • Indoor fan speed; High
• Outdoor temperature 35°C at cooling mode and 7°C at heating mode.
• Compressor operates at rated frequency



16.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditioner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operating	Low Pressure	High Pressure	Electric current during operating
Insufficient refrigerant (gas leakage)	↘	↘	↘	↘	↘	↘
Clogged capillary tube or Strainer	↘	↘	↘	↗	↗	↗
Short circuit in the indoor unit	↘	↘	↘	↗	↗	↗
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	↘
Inefficient compression	↗	↘	↘	↗	↘	↘

• Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

16.2. Breakdown Self Diagnosis Function

16.2.1. Self Diagnosis Function (Three Digits Alphanumeric Code)

- Once abnormality has occurred during operation, the unit will stop its operation, and Timer LED blinks.
- Although Timer LED goes off when power supply is turned off, if the unit is operated under a breakdown condition, the LED will light up again.
- In operation after breakdown repair, the Timer LED will no more blink. The last error code (abnormality) will be stored in IC memory.
- **To make a diagnosis**
  1. Timer LED start to blink and the unit automatically stops the operation.
  2. Press the CHECK button on the remote controller continuously for 5 seconds.
  3. "- -" will be displayed on the remote controller display. Note: Display only for "- -". (No transmitting signal, no receiving sound and no Power LED blinking.)
  4. Press the "TIMER" ▲ or ▼ button on the remote controller. The code "H00" (no abnormality) will be displayed and signal will be transmitted to the main unit.
  5. Every press of the button (up or down) will increase abnormality numbers and transmit abnormality code signal to the main unit.
  6. When the latest abnormality code on the main unit and code transmitted from the remote controller are matched, power LED will light up for 30 seconds and a beep sound (continuously for 4 seconds) will be heard. If no codes are matched, power LED will light up for 0.5 seconds and no sound will be heard.
  7. The breakdown diagnosis mode will be canceled unless pressing the CHECK button continuously for 5 seconds or operating the unit for 30 seconds.
  8. The LED will be off if the unit is turned off or the RESET button on the main unit is pressed.

- **To display memorized error (Protective operation) status**
  1. Turn power on.
  2. Press the CHECK button on the remote controller continuously for 5 seconds.
  3. "- -" will be displayed on the remote controller display. Note: Display only for "- -". (No transmitting signal, no receiving sound and no Power LED blinking.)
  4. Press the "TIMER" ▲ or ▼ button on the remote controller. The code "H00" (no abnormality) will be displayed and signal will be transmitted to the main unit. The power LED lights up. If no abnormality is stored in the memory, three beeps sound will be heard.
  5. Every press of the button (up or down) will increase abnormality numbers and transmit abnormality code signal to the main unit.
  6. When the latest abnormality code on the main unit and code transmitted from the remote controller are matched, power LED will light up for 30 seconds and a beep sound (continuously for 4 seconds) will be heard. If no codes are matched, power LED will light up for 0.5 seconds and no sound will be heard.
  7. The breakdown diagnosis mode will be canceled unless pressing the CHECK button continuously for 5 seconds or operating the unit for 30 seconds.
  8. The same diagnosis can be repeated by turning power on again.

- **To clear memorized error (Protective operation) status after repair:**
  1. Turn power on (in standby condition).
  2. Press the AUTO button for 5 seconds (A beep receiving sound) on the main unit to operate the unit at Forced Cooling Operation modes.
  3. Press the CHECK button on the remote controller for about 1 second with a pointed object to transmit signal to main unit. A beep sound is heard from main unit and the data is cleared.
- **Temporary Operation (Depending on breakdown status)**
  1. Press the AUTO button (A beep receiving sound) on the main unit to operate the unit. (Remote control will become possible.)
  2. The unit can temporarily be used until repaired.

16.3. Error Codes Table

Diagnosis display	Abnormality / Protection control	Abnormality Judgement	Protection operation	Problem	Check location
H00	No memory of failure	—	Normal operation	—	—
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
H14	Indoor intake air temperature sensor abnormality	Continuous for 5s	—	Indoor intake air temperature sensor open or short circuit	• Indoor intake air temperature sensor lead wire and connector
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
H19	Indoor fan motor merchanism lock	Continuous happen for 7 times	—	Indoor fan motor lock or feedback abnormal	• Fan motor lead wire and connector • Fan motor lock or block
H23	Indoor heat exchanger temperature sensor abnormality	Continuous for 5s	—	Indoor heat exchanger temperature sensor open or short circuit	• Indoor heat exchanger temperature sensor lead wire and connector
H25	Indoor E-Ion abnormality	Port is ON for 10s during E-Ion off	—	—	• E-Ion PCB
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
H30	Outdoor discharge pipe temperature sensor abnormality	Continuous for 5s	—	Outdoor discharge pipe temperature sensor open or short circuit	• Outdoor discharge pipe temperature sensor 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
H34	Outdoor heat sink temperature sensor abnormality	Continuous for 2s	—	Outdoor heat sink temperature sensor open or short circuit	• Outdoor heat sink sensor
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
H38	Indoor/Outdoor mismatch (brand code)	—	—	Brand code not match	• Check indoor unit and outdoor unit.

Diagnosis display	Abnormality / Protection control	Abnormality Judgement	Protection operation	Problem	Check location
H39	Abnormal indoor operating unit or standby units	3 times happen within 40 minutes	—	Wrong wiring and connecting pipe, expansion valve abnormality, indoor heat exchanger sensor open circuit	• Check indoor/outdoor connection wire and connection pipe • Indoor heat exchanger sensor lead wire and connector • Expansion valve and lead wire and connector
H41	Abnormal wiring or piping connection	—	—	Wrong wiring and connecting pipe, expansion valve abnormality	• Check indoor/outdoor connection wire and connection pipe • Expansion valve and lead wire and connector.
H58	Indoor gas sensor abnormality	Continuous for 6 hours	—	Indoor gas sensor open or short circuit	• Indoor gas sensor • Indoor PCB
H59	ECO patrol sensor abnormality	Continuous for 70s	—	ECO patrol sensor open or short circuit	• ECO patrol sensor • ECO patrol and Indoor PCB
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.
F17	Indoor standby units freezing abnormality	3 times happen within 40 minutes	—	Wrong wiring and connecting pipe, expansion valve leakage, indoor heat exchanger sensor open circuit	• 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 10 minutes	—	Power factor correction circuit abnormal	• Outdoor PCB faulty
F91	Refrigeration cycle abnormality	2 times happen within 20 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

16.4. Self-diagnosis Method

16.4.1. H11 (Indoor/Outdoor Abnormal Communication)

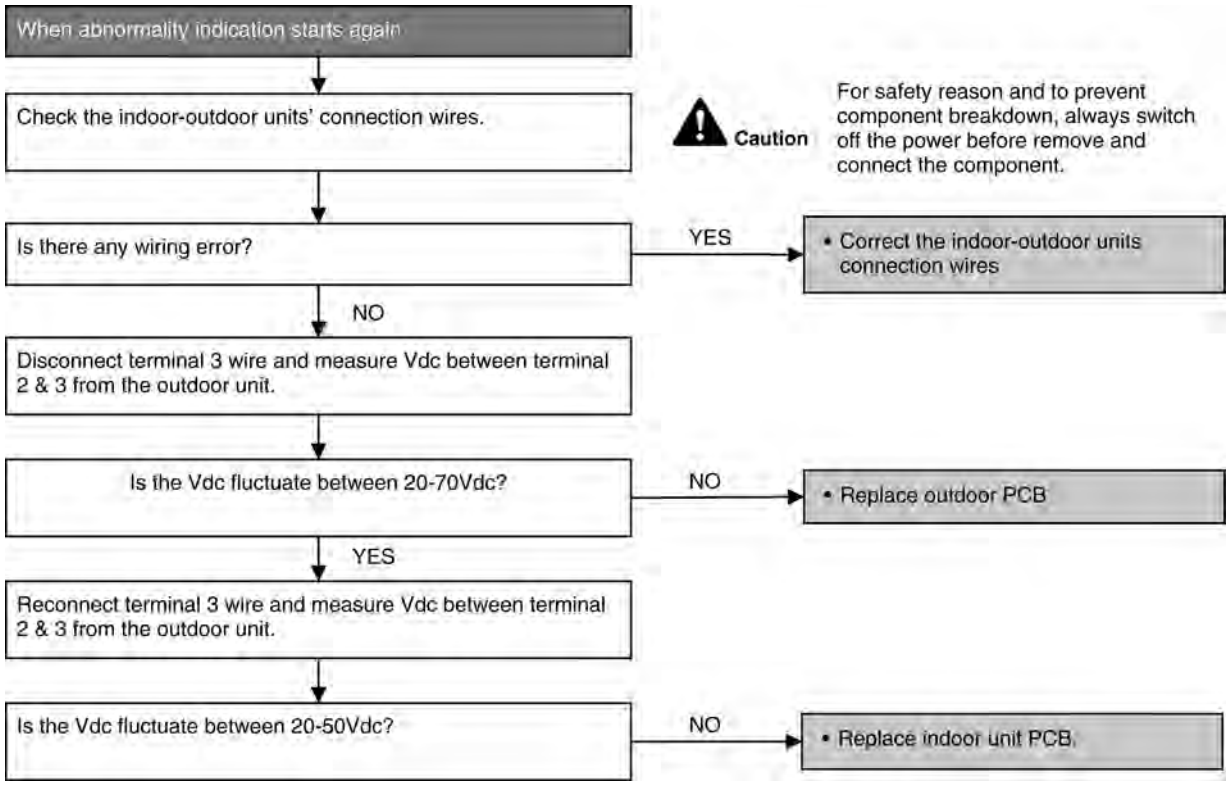
Malfunction Decision Conditions

During startup and operation of cooling and heating, the data received from outdoor unit in indoor unit signal transmission is checked whether it is normal.

Malfunction Caused

- Faulty indoor unit PCB.
- Faulty outdoor unit PCB.
- Indoor unit-outdoor unit signal transmission error due to wrong wiring.
- Indoor unit-outdoor unit signal transmission error due to breaking of wire in the connection wires between the indoor and outdoor units.
- Indoor unit-outdoor unit signal transmission error due to disturbed power supply waveform.

Troubleshooting



16.4.2. H12 (Indoor/Outdoor Capacity Rank Mismatched)

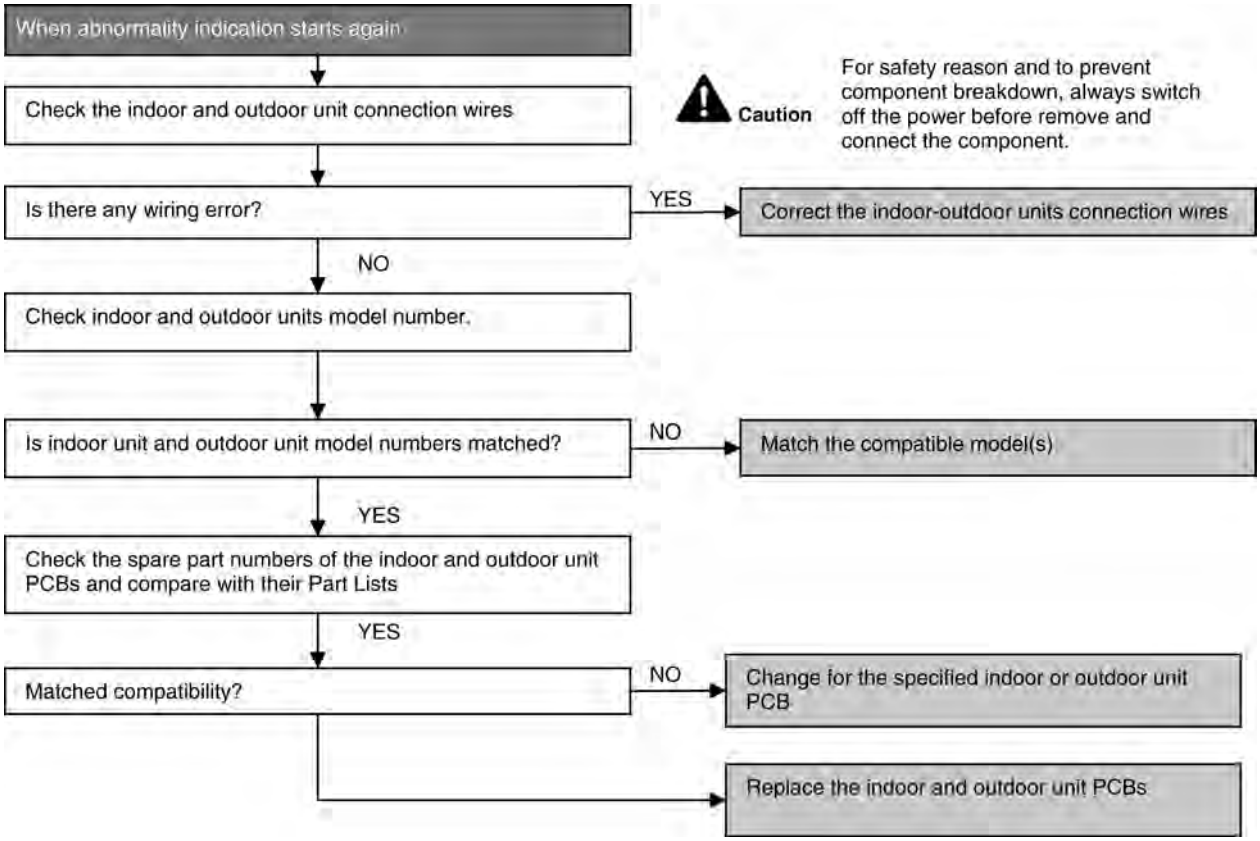
Malfunction Decision Conditions

During startup, error code appears when different types of indoor and outdoor units are interconnected.

Malfunction Caused

- Wrong models interconnected.
- Wrong indoor unit or outdoor unit PCBs mounted.
- Indoor unit or outdoor unit PCBs defective.
- Indoor-outdoor unit signal transmission error due to wrong wiring.
- Indoor-outdoor unit signal transmission error due to breaking of wire 3 in the connection wires between the indoor and outdoor units.

Troubleshooting



16.4.3. H14 (Indoor Intake Air Temperature Sensor Abnormality)

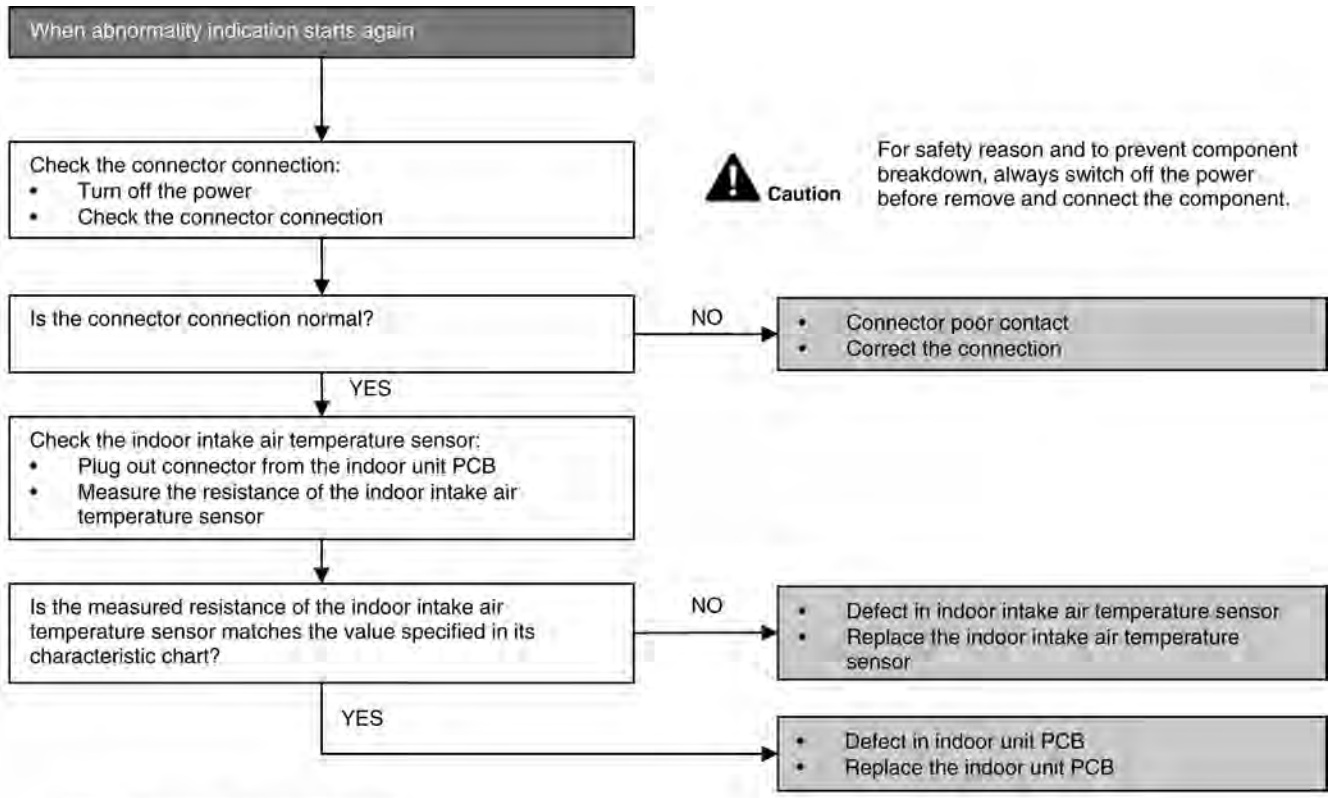
Malfunction Decision Conditions

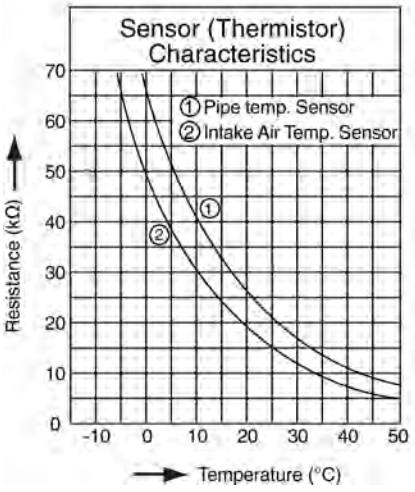
During startup and operation of cooling and heating, the temperatures detected by the indoor intake air temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting





16.4.4. H15 (Compressor Temperature Sensor Abnormality)

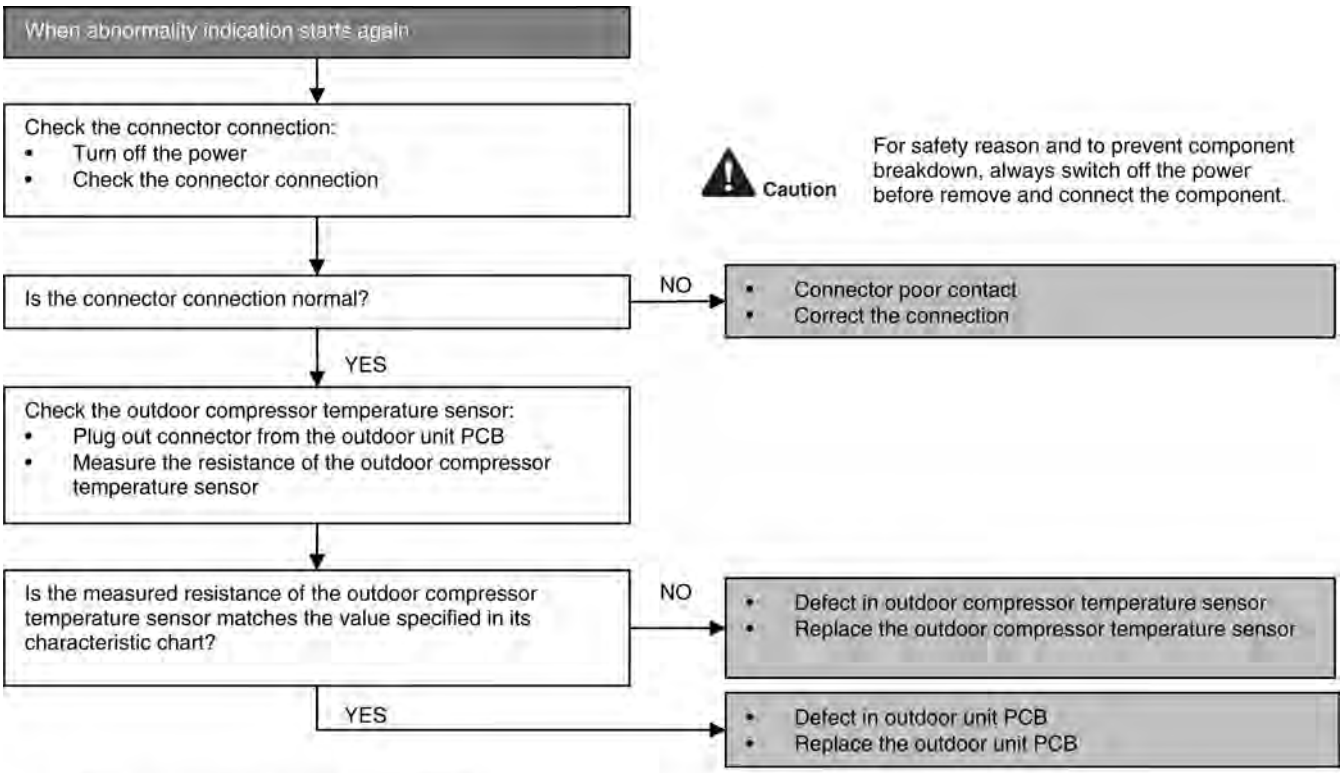
Malfunction Decision Conditions

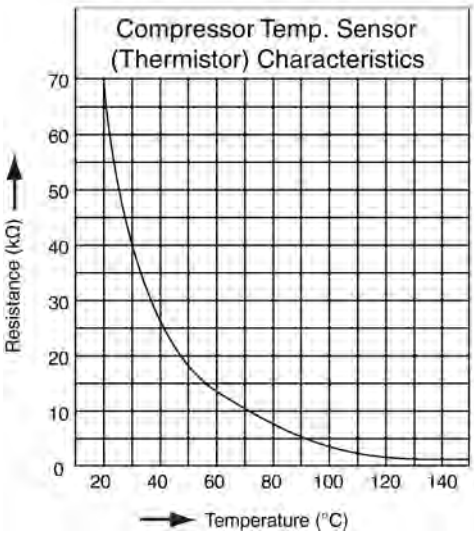
During startup and operation of cooling and heating, the temperatures detected by the outdoor compressor temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting





16.4.5. H16 (Outdoor Current Transformer Open Circuit)

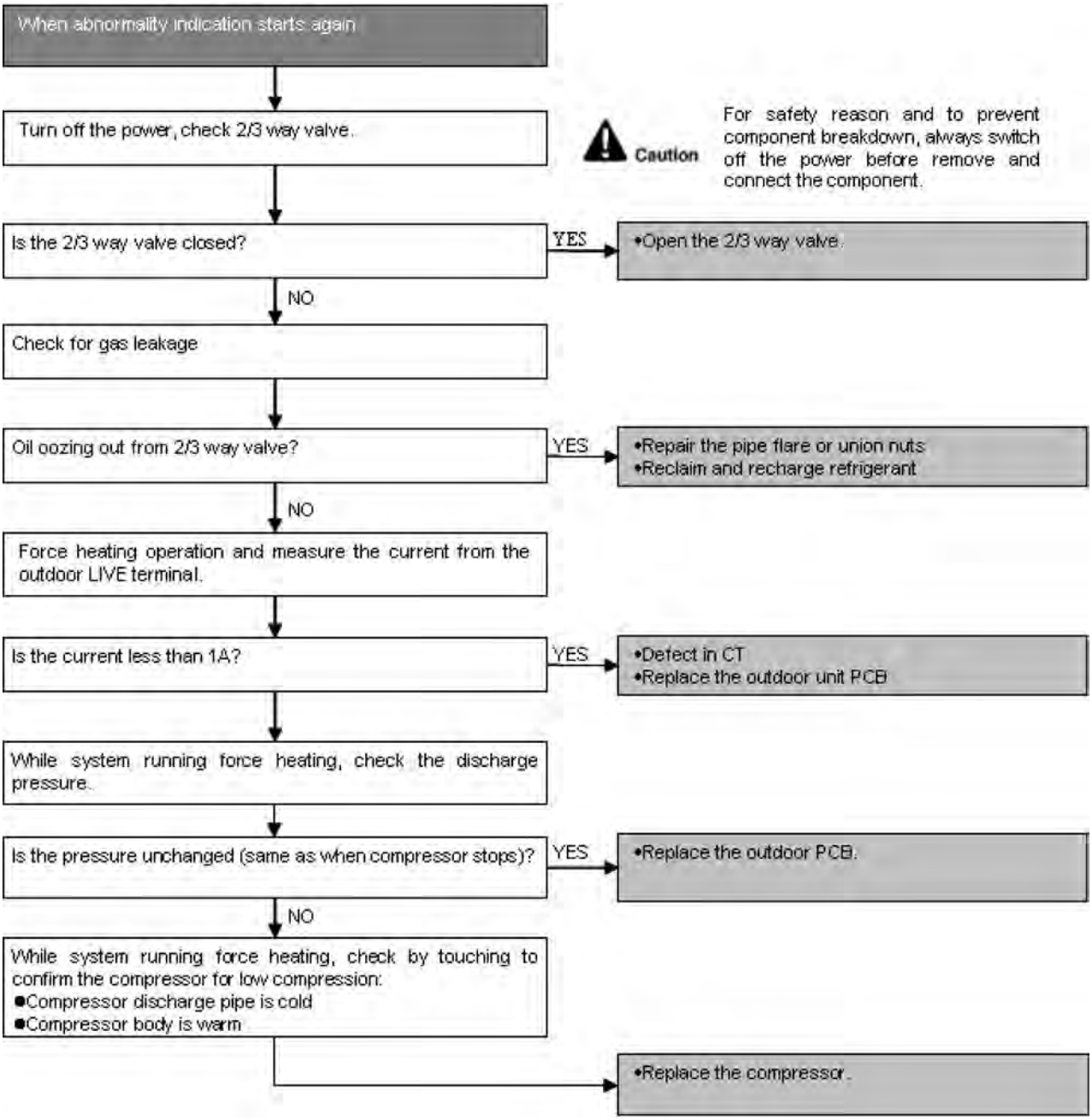
Malfunction Decision Conditions

A current transformer (CT) is detected by checking the compressor running frequency (≥ rated frequency) and CT detected input current (less than 0.65A) for continuously 20 seconds.

Malfunction Caused

- CT defective
- Outdoor PCB defective
- Compressor defective (low compression)

Troubleshooting



16.4.6. H19 (Indoor Fan Motor - DC Motor Mechanism Locked)

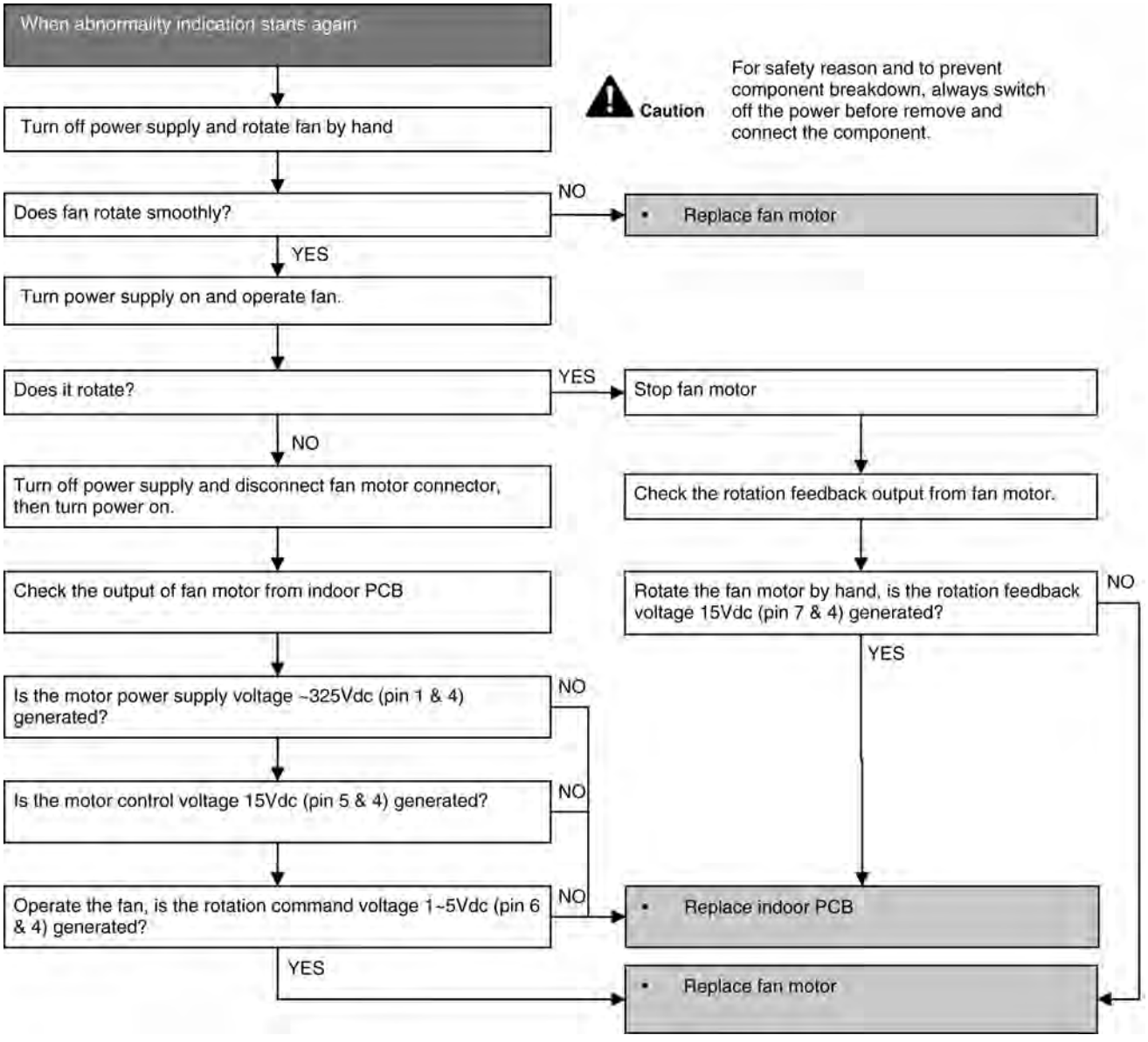
Malfunction Decision Conditions

The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor (feedback of rotation > 2550rpm or < 50rpm)

Malfunction Caused

- Operation stops due to short circuit inside the fan motor winding.
- Operation stops due to breaking of wire inside the fan motor.
- Operation stops due to breaking of fan motor lead wires.
- Operation stops due to Hall IC malfunction.
- Operation error due to faulty indoor unit PCB.

Troubleshooting



16.4.7. H23 (Indoor Pipe Temperature Sensor Abnormality)

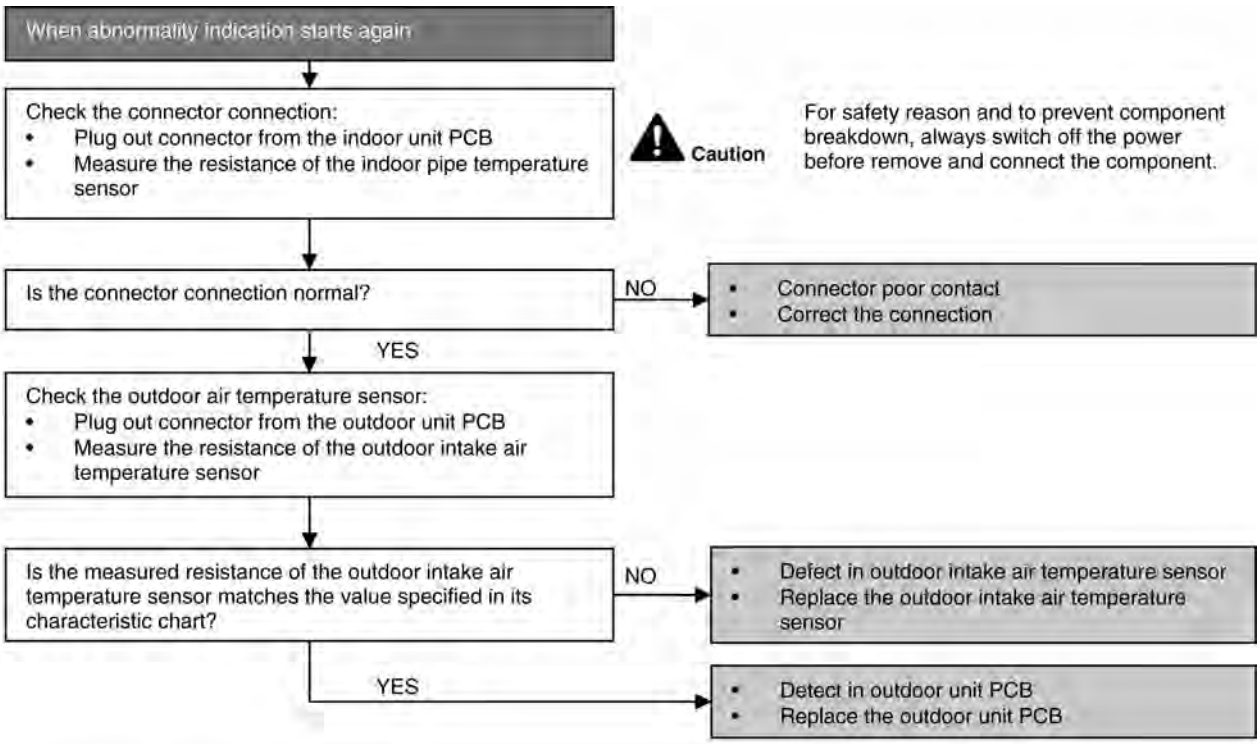
Malfunction Decision Conditions

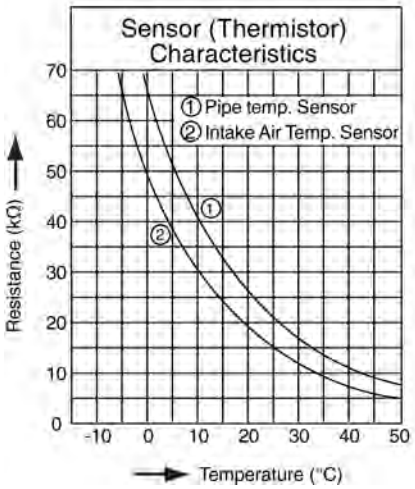
During startup and operation of cooling and heating, the temperatures detected by the indoor heat exchanger temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting





16.4.8. H25 (e-ion Air Purifying System Abnormal)

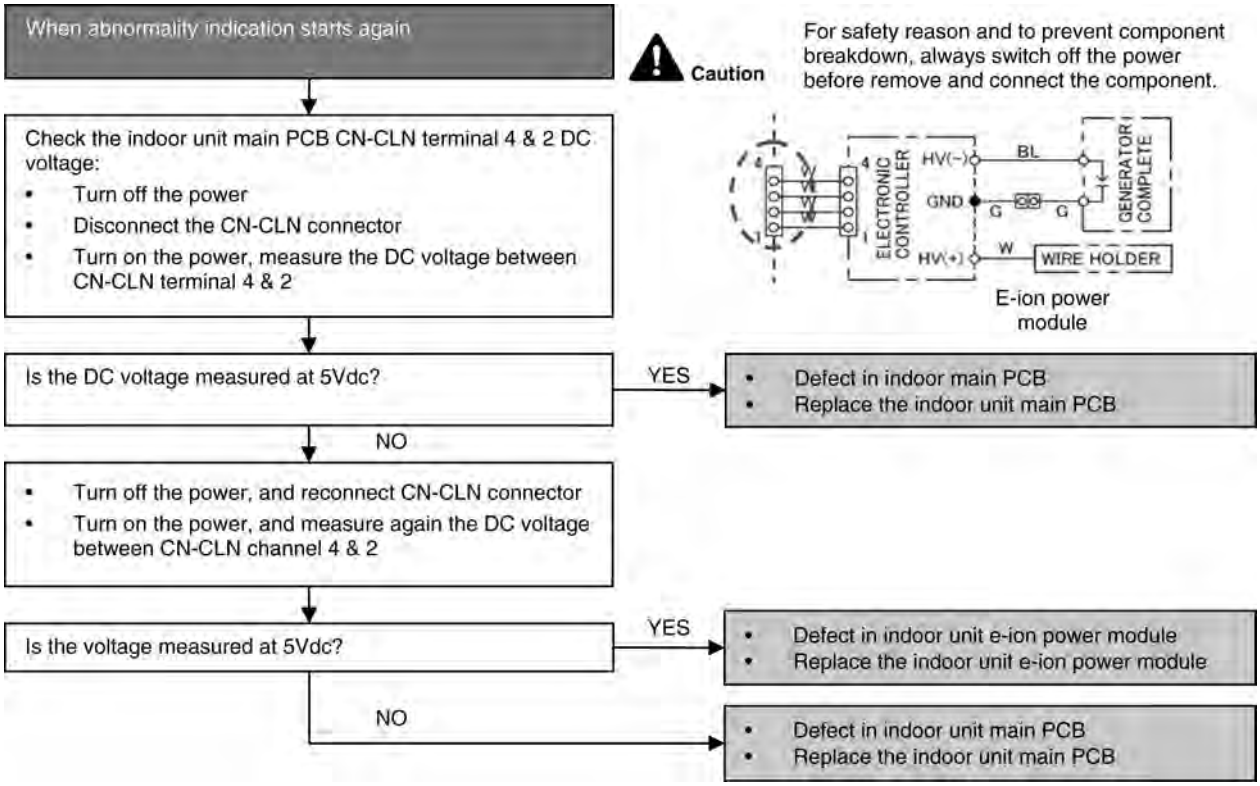
Malfunction Decision Conditions

During standby of cooling and heating operation, e-ion breakdown occurs and air conditioner stops operation.

Malfunction Caused

- Faulty indoor main PCB.
- Faulty indoor e-ion power module.

Troubleshooting



16.4.9. H27 (Outdoor Air Temperature Sensor Abnormality)

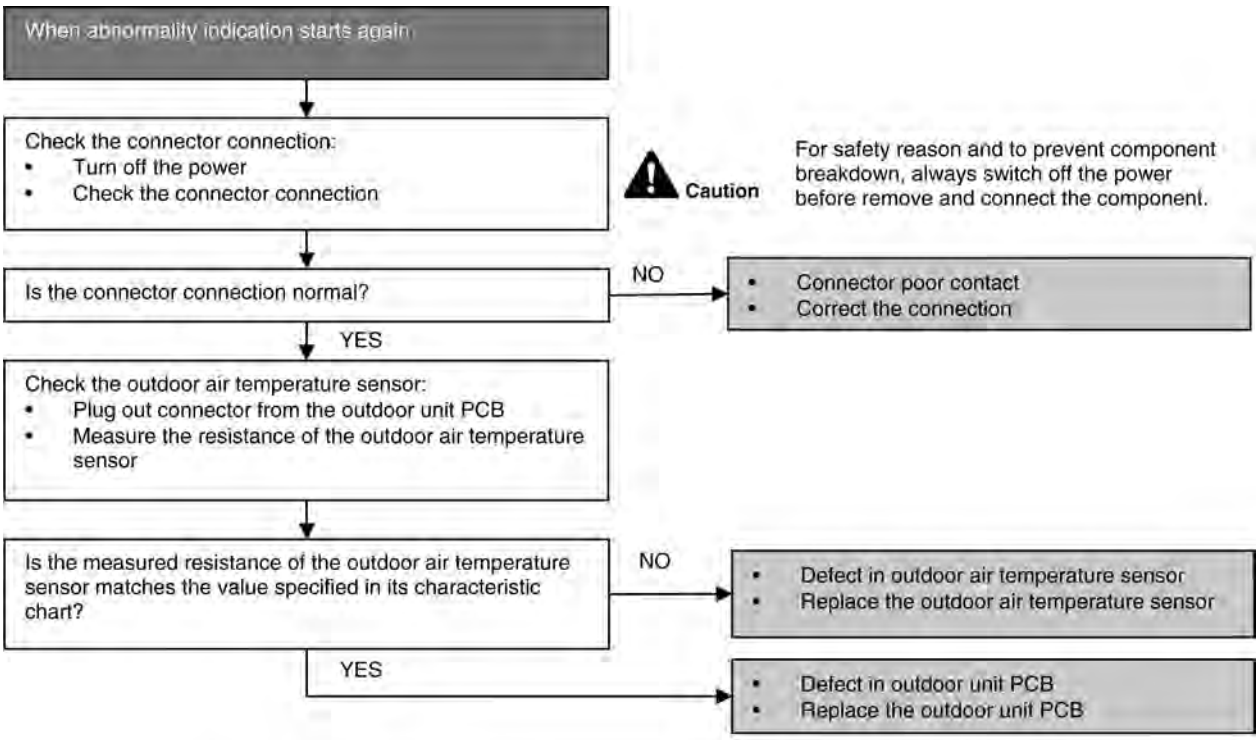
Malfunction Decision Conditions

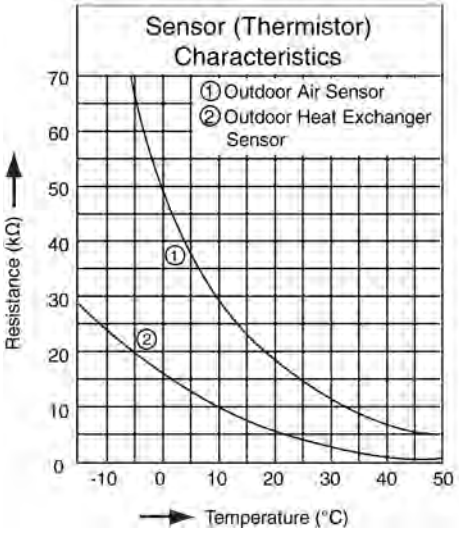
During startup and operation of cooling and heating, the temperatures detected by the outdoor air temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting





16.4.10. H28 (Outdoor Pipe Temperature Sensor Abnormality)

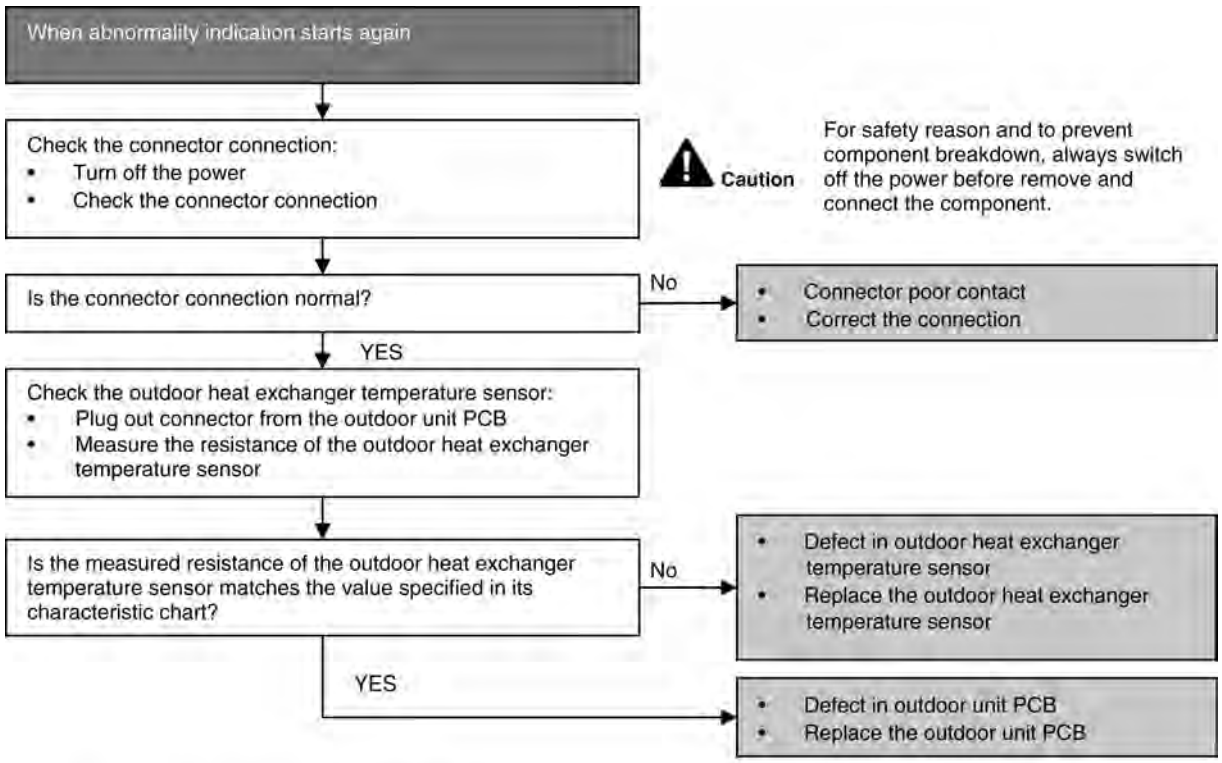
Malfunction Decision Conditions

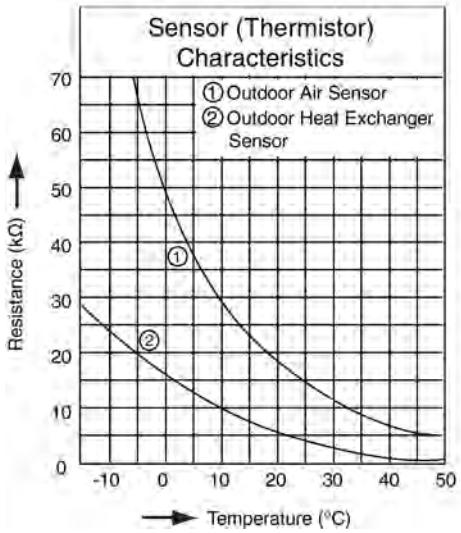
During startup and operation of cooling and heating, the temperatures detected by the outdoor pipe temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting





16.4.11. H30 (Compressor Discharge Temperature Sensor Abnormality)

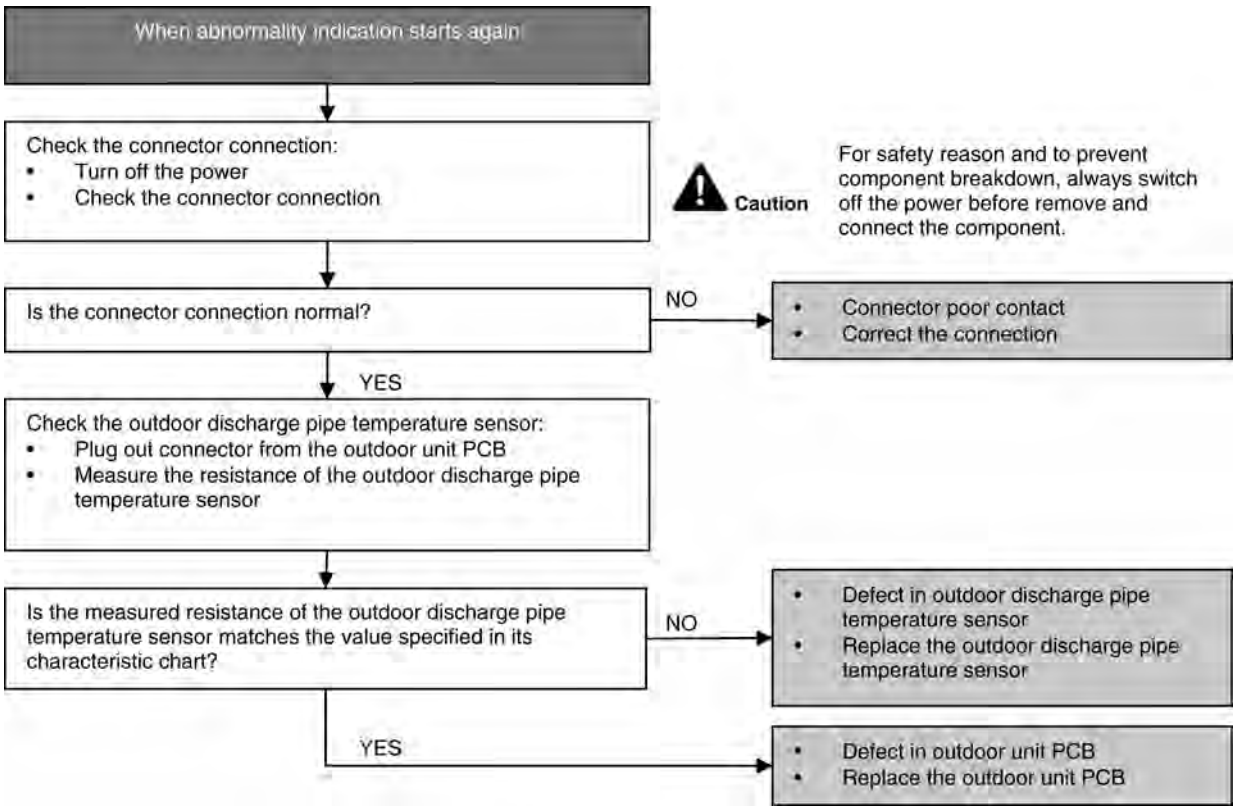
Malfunction Decision Conditions

During startup and operation of cooling and heating, the temperatures detected by the outdoor discharge pipe temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting



16.4.12. H32 (Outdoor Heat Exchanger Temperature Sensor 2 Abnormality)

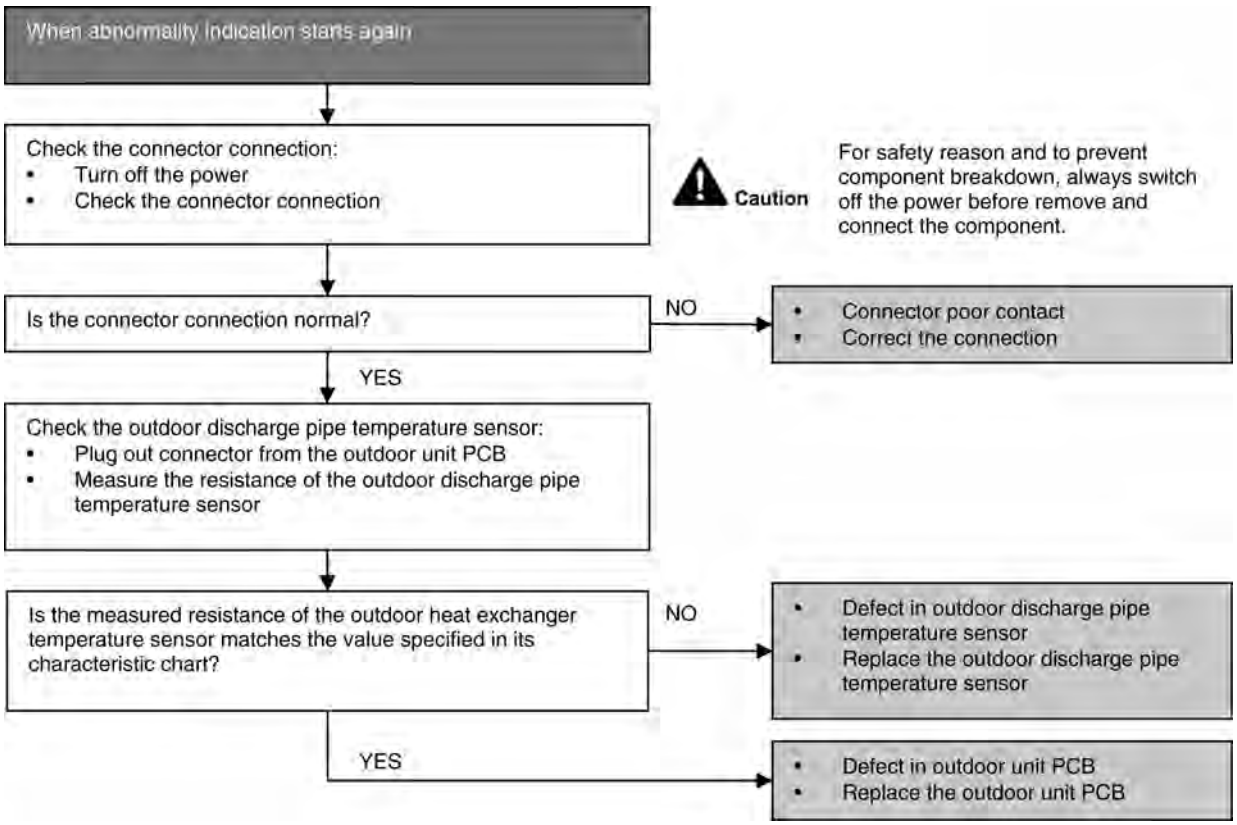
Malfunction Decision Conditions

During startup and operation of cooling and heating, the temperatures detected by the outdoor heat exchanger temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting



16.4.13. H33 (Unspecified Voltage between Indoor and Outdoor)

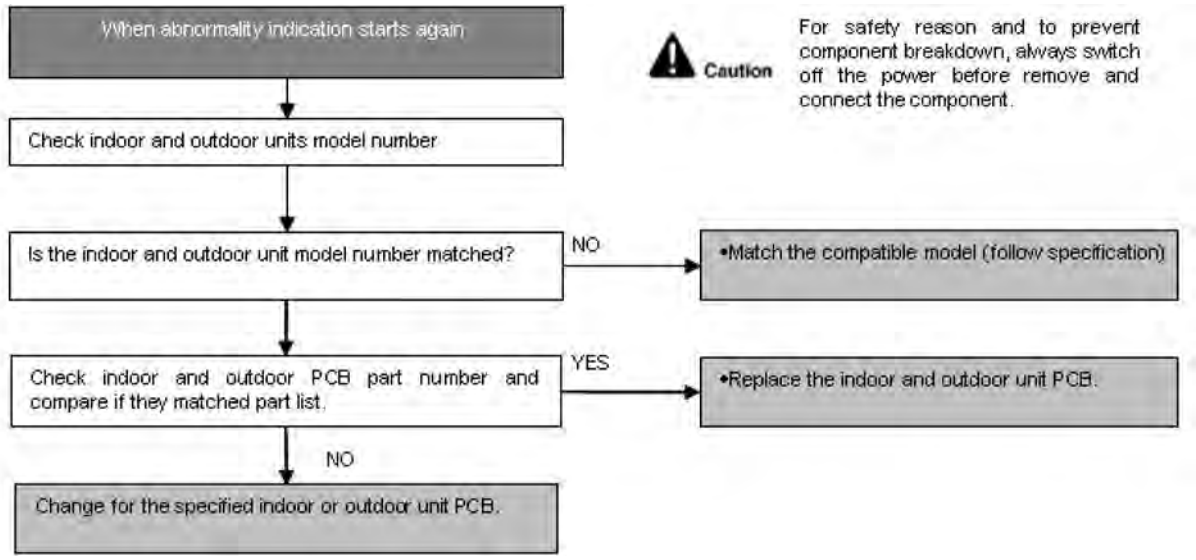
Malfunction Decision Conditions

The supply power is detected for its requirement by the indoor/outdoor transmission.

Malfunction Caused

- Wrong models interconnected.
- Wrong indoor unit and outdoor unit PCBs used.
- Indoor unit or outdoor unit PCB defective.

Troubleshooting



16.4.14. H34 (Outdoor Heat Sink Temperature Sensor Abnormality)

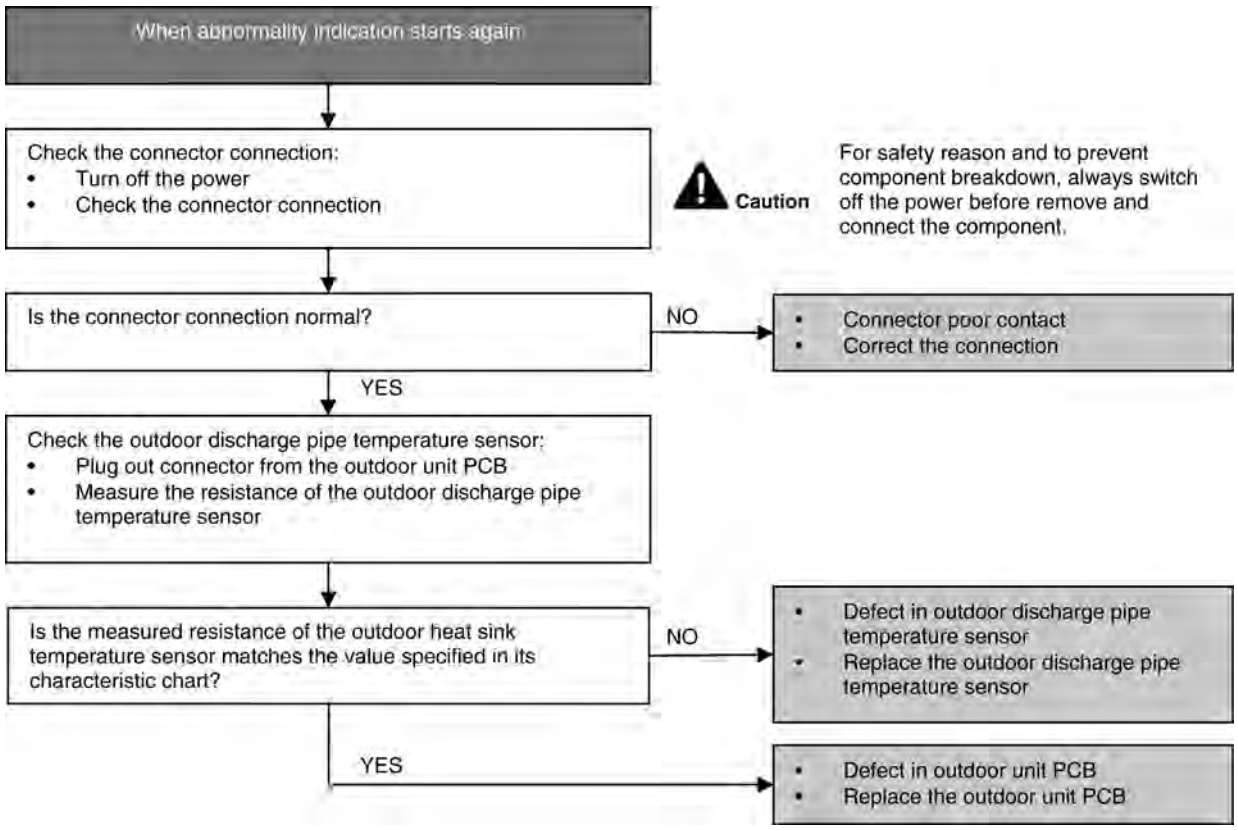
Malfunction Decision Conditions

During startup and operation of cooling and heating, the temperatures detected by the outdoor heat sink temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting



16.4.15. H36 (Outdoor Gas Pipe Sensor Abnormality)

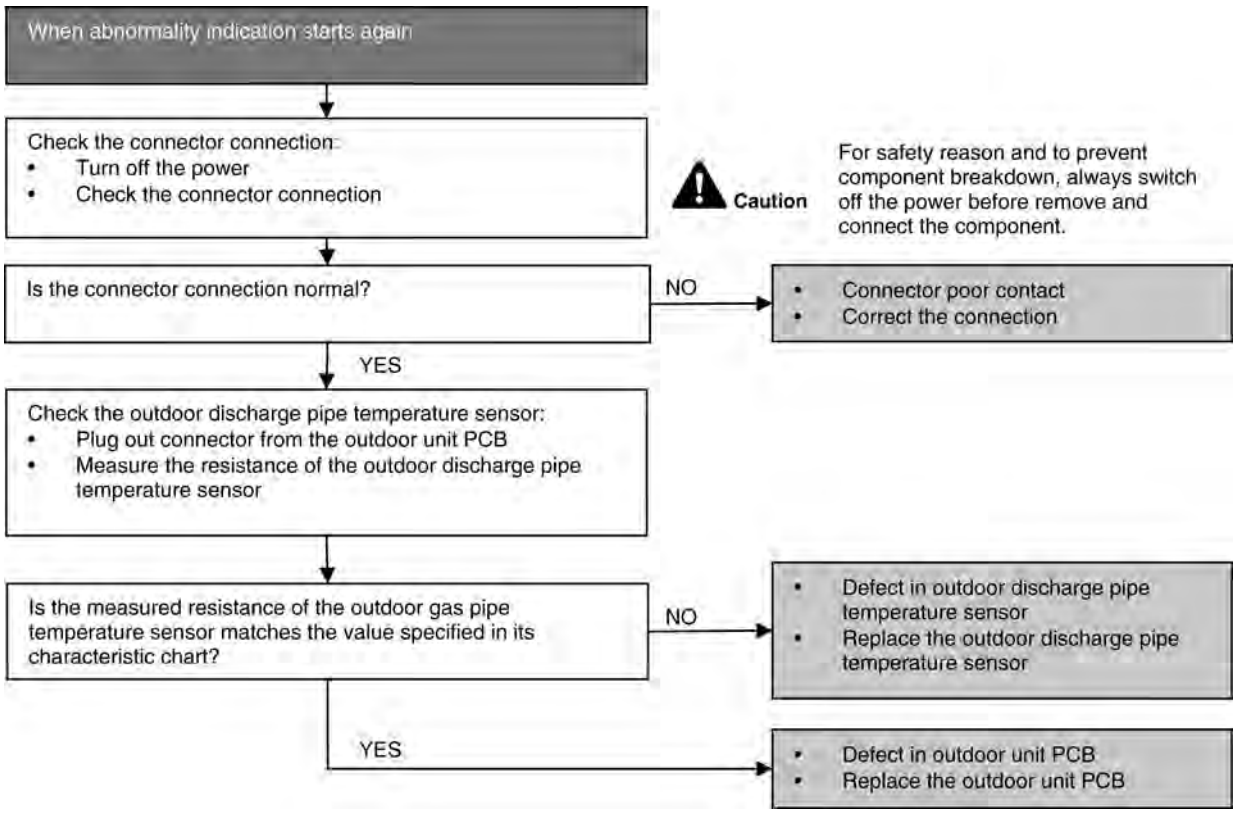
Malfunction Decision Conditions

During startup and operation of cooling and heating, the temperatures detected by the outdoor gas pipe temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting



16.4.16. H37 (Outdoor Liquid Pipe Temperature Sensor Abnormality)

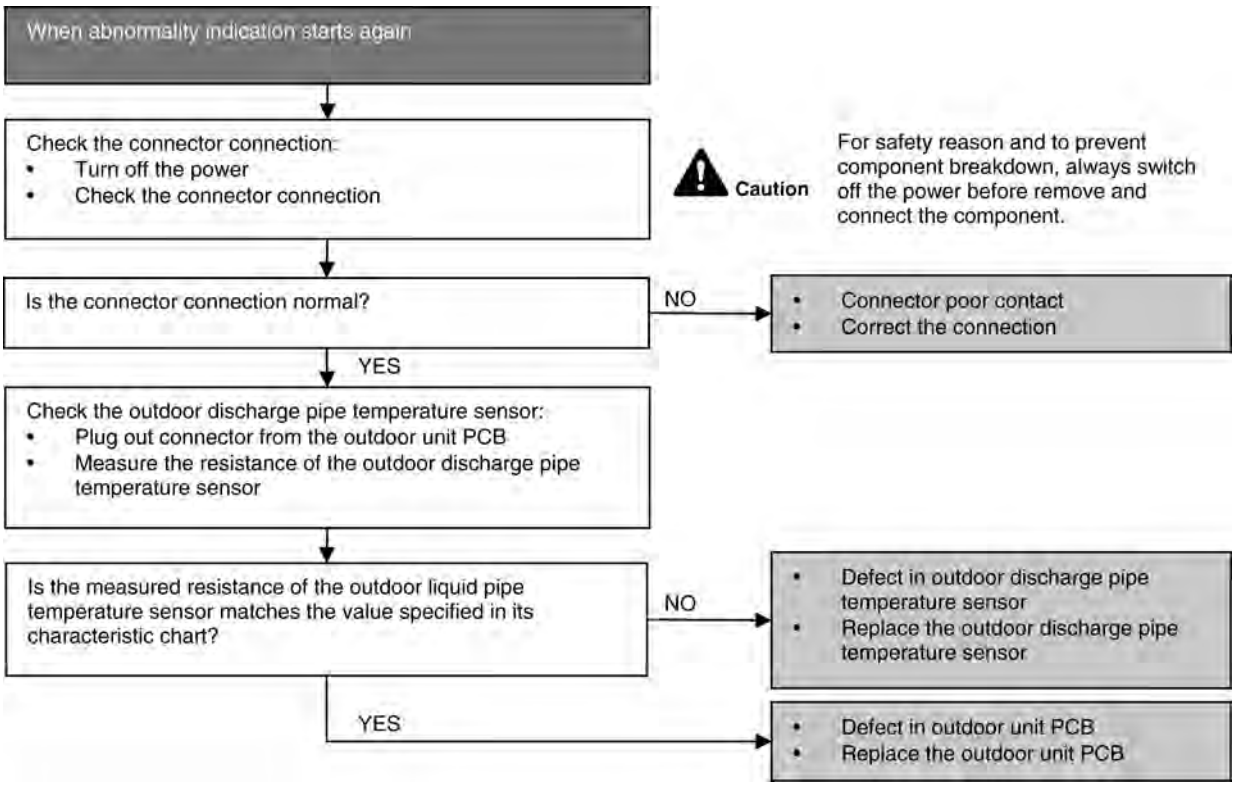
Malfunction Decision Conditions

During startup and operation of cooling and heating, the temperatures detected by the outdoor liquid pipe temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting



16.4.17. H58 (Patrol Sensor Abnormality)

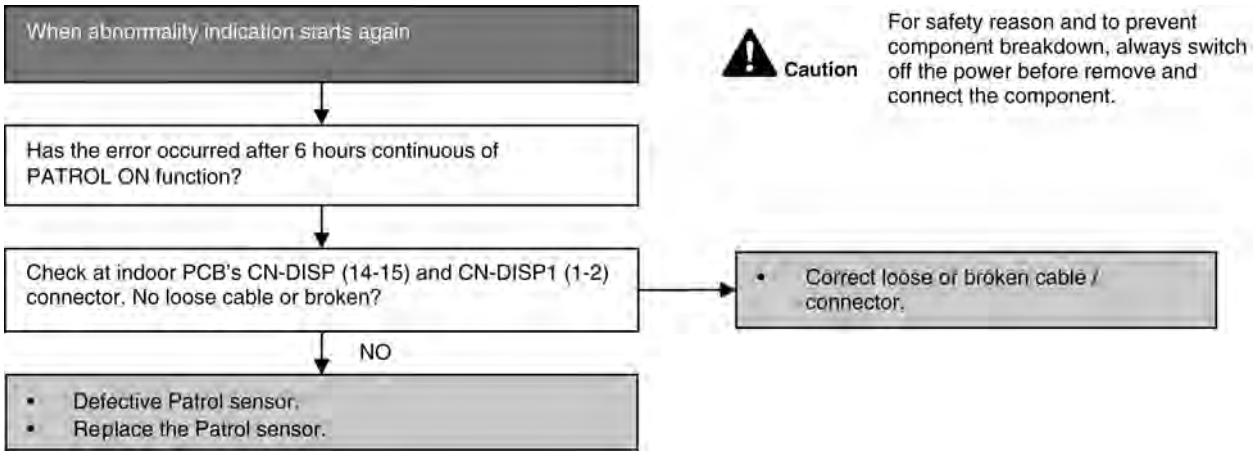
Malfunction Decision Conditions

- If Patrol sensor feedback is 0V or 5V continuous for 6 hours.
- Error will display only when the Patrol operation is ON.

Malfunction Caused

- Faulty connector connection.
- Faulty Patrol sensor.

Troubleshooting



16.4.18. H97 (Outdoor Fan Motor - DC Motor Mechanism Locked)

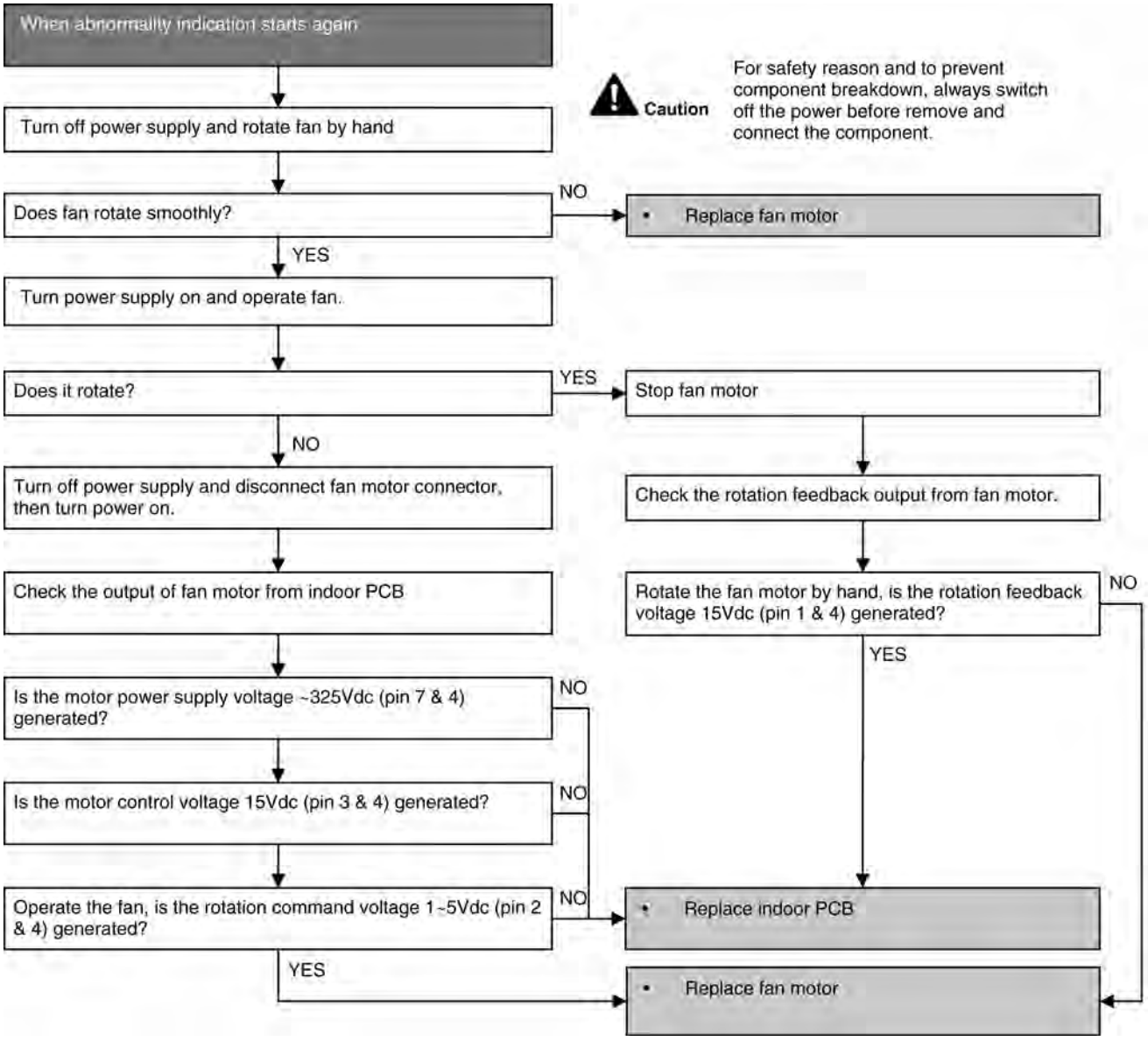
Malfunction Decision Conditions

The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor.

Malfunction Caused

- Operation stops due to short circuit inside the fan motor winding.
- Operation stops due to breaking of wire inside the fan motor.
- Operation stops due to breaking of fan motor lead wires.
- Operation stops due to Hall IC malfunction.
- Operation error due to faulty outdoor unit PCB.

Troubleshooting



16.4.19. H98 (Indoor High Pressure Protection)

Error Code will not display (no Timer LED blinking) but store in EEPROM

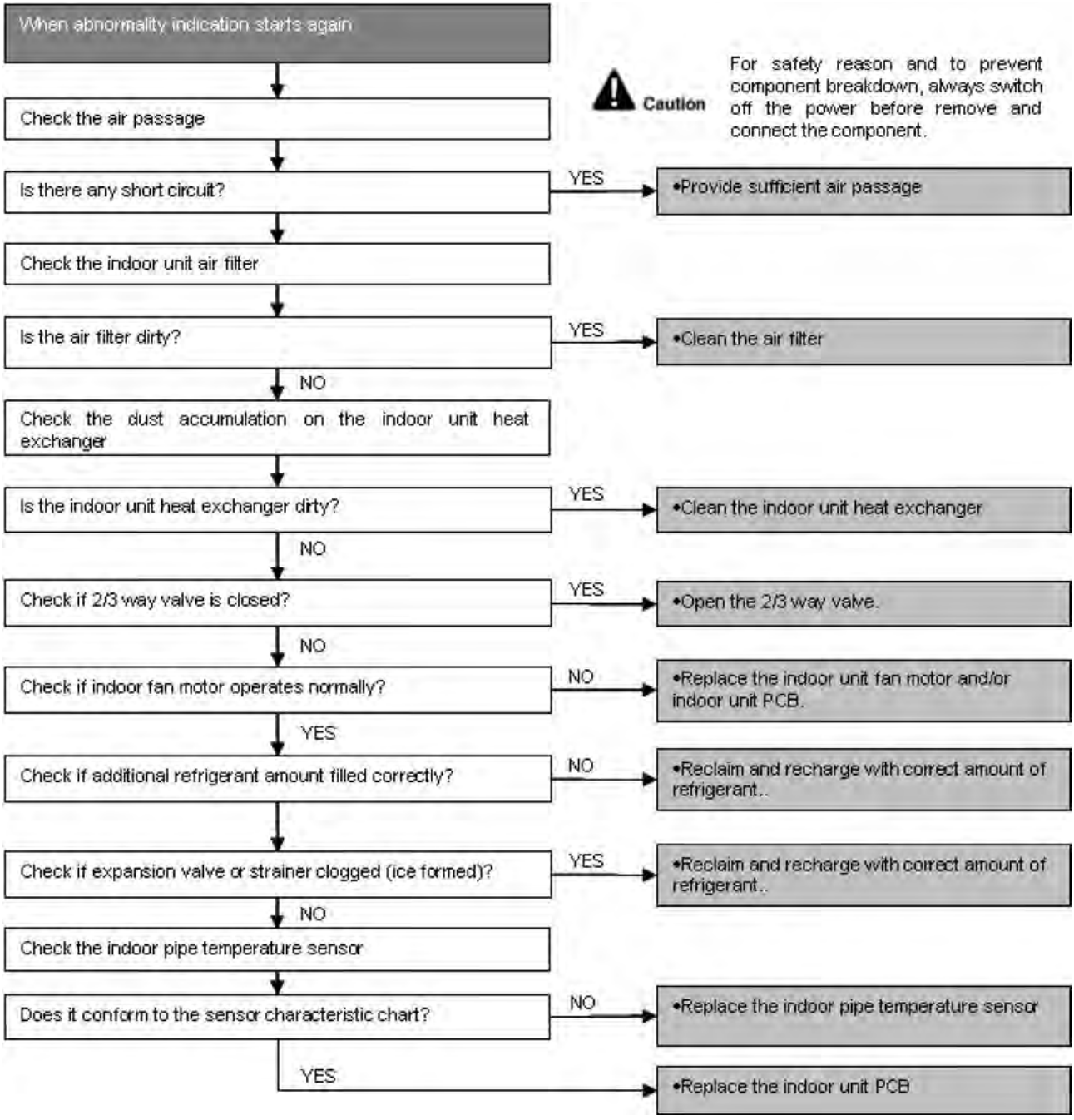
Malfunction Decision Conditions

During heating operation, the temperature detected by the indoor pipe temperature sensor is above 60°C.

Malfunction Caused

- Air short circuit at indoor unit
- Clogged indoor unit air filter
- Dust accumulation on the indoor unit heat exchanger
- 2/3 way valve closed
- Faulty indoor unit fan motor
- Excessive refrigerant
- Clogged expansion valve or strainer
- Faulty indoor pipe temperature sensor
- Faulty indoor unit PCB

Troubleshooting



16.4.20. H99 (Indoor Freeze Prevention Protection: Cooling or Soft Dry)

Error code will not display (no TIMER LED blinking) but store in EEPROM

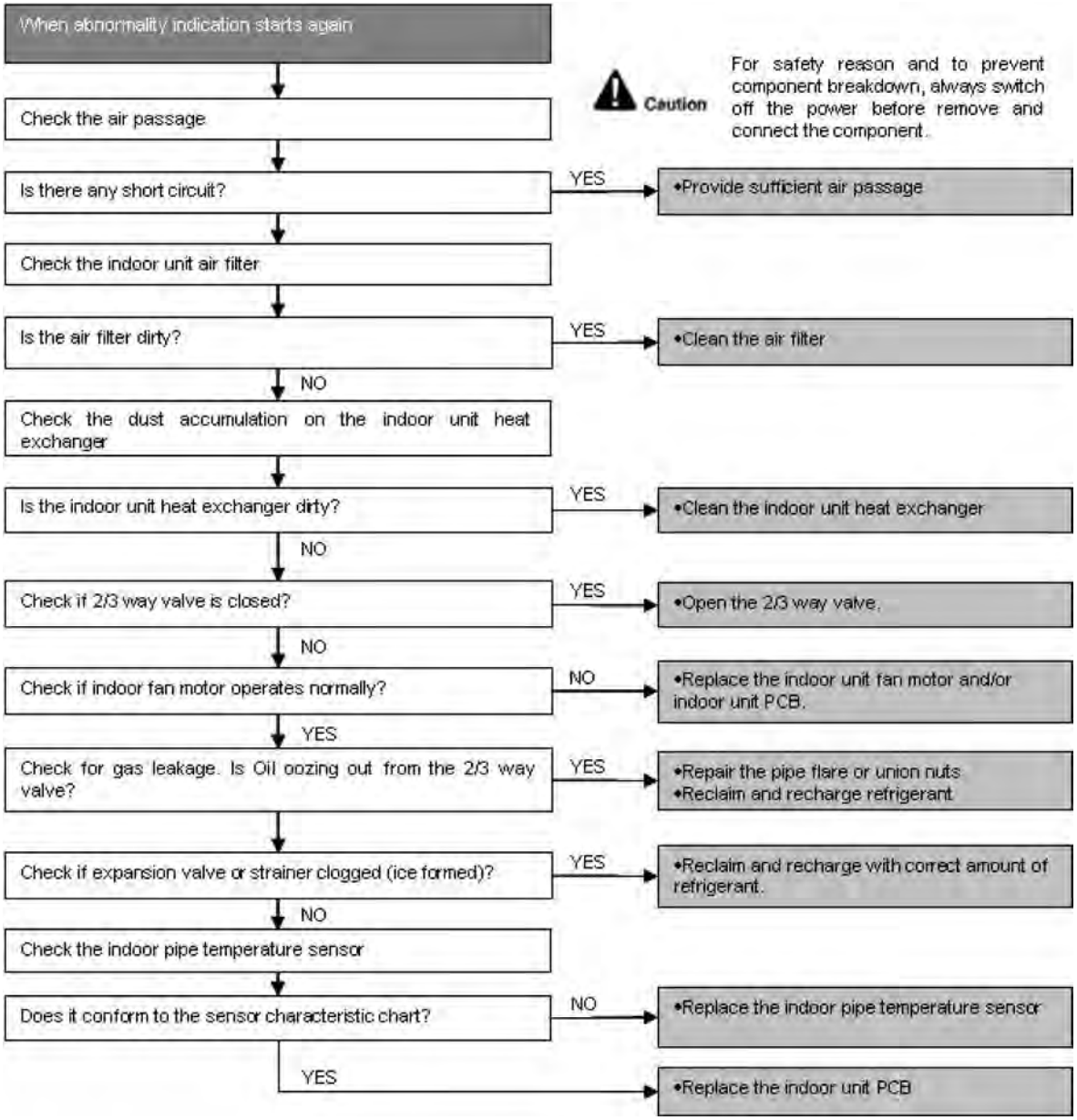
Malfunction Decision Conditions

Freeze prevention control takes place (when indoor pipe temperature is lower than 2°C)

Malfunction Caused

- Air short circuit at indoor unit
- Clogged indoor unit air filter
- Dust accumulation on the indoor unit heat exchanger
- 2/3 way valve closed
- Faulty indoor unit fan motor
- Refrigerant shortage (refrigerant leakage)
- Clogged expansion valve or strainer
- Faulty indoor pipe temperature sensor
- Faulty indoor unit PCB

Troubleshooting



16.4.21. F11 (4-way valve Abnormality)

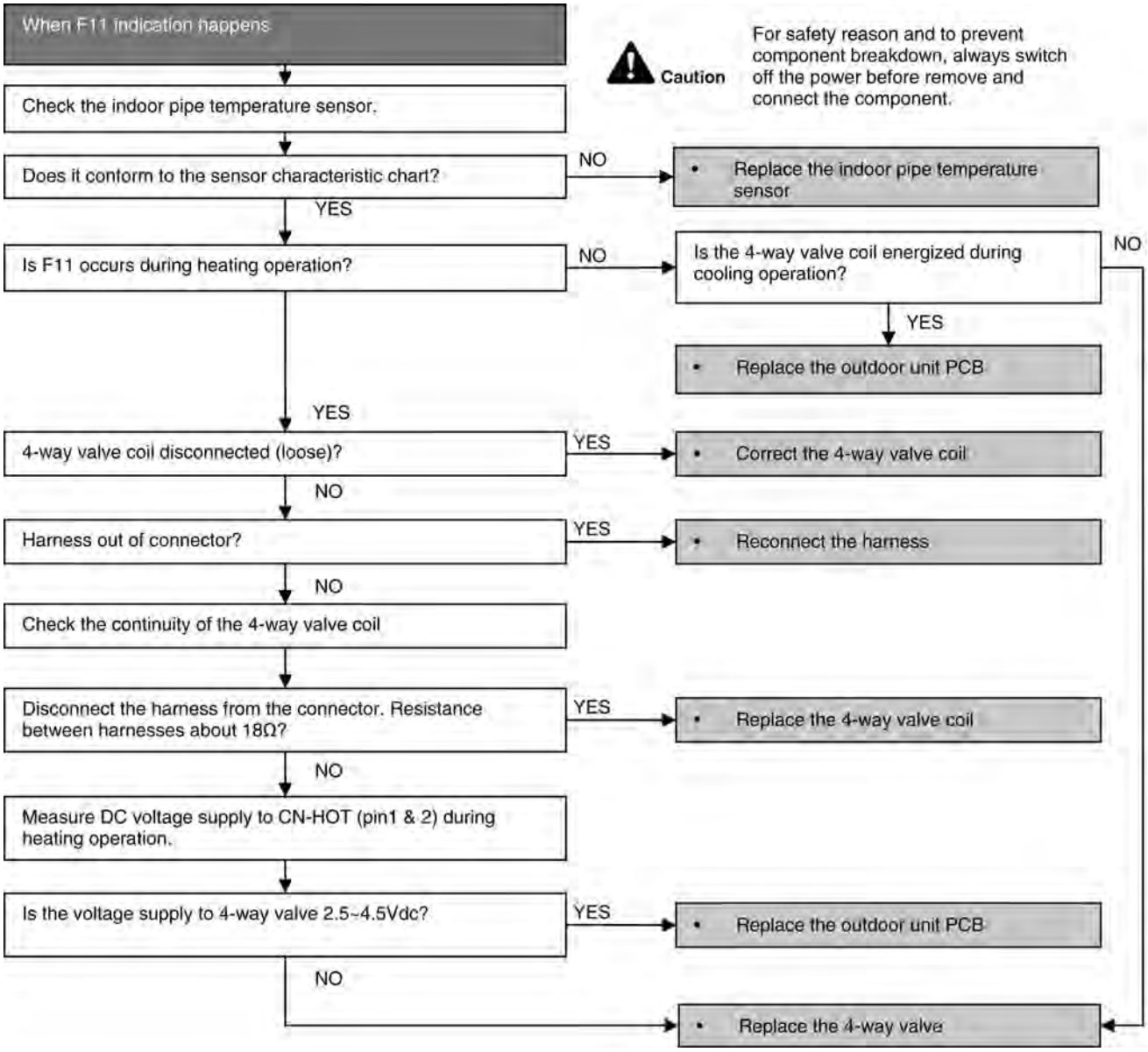
Malfunction Decision Conditions

- When heating operation, when indoor pipe temperature is below 10°C
- When cooling operation, when indoor pipe temperature is above 45°C

Malfunction Caused

- Connector in poor contact
- Faulty sensor
- Faulty outdoor unit PCB
- 4-way valve defective

Troubleshooting



16.4.22. F17 (Indoor Standby Units Freezing Abnormality)

Malfunction Decision Conditions

- When the different between indoor intake air temperature and indoor pipe temperature is above 10°C or indoor pipe temperature is below -1.0°C

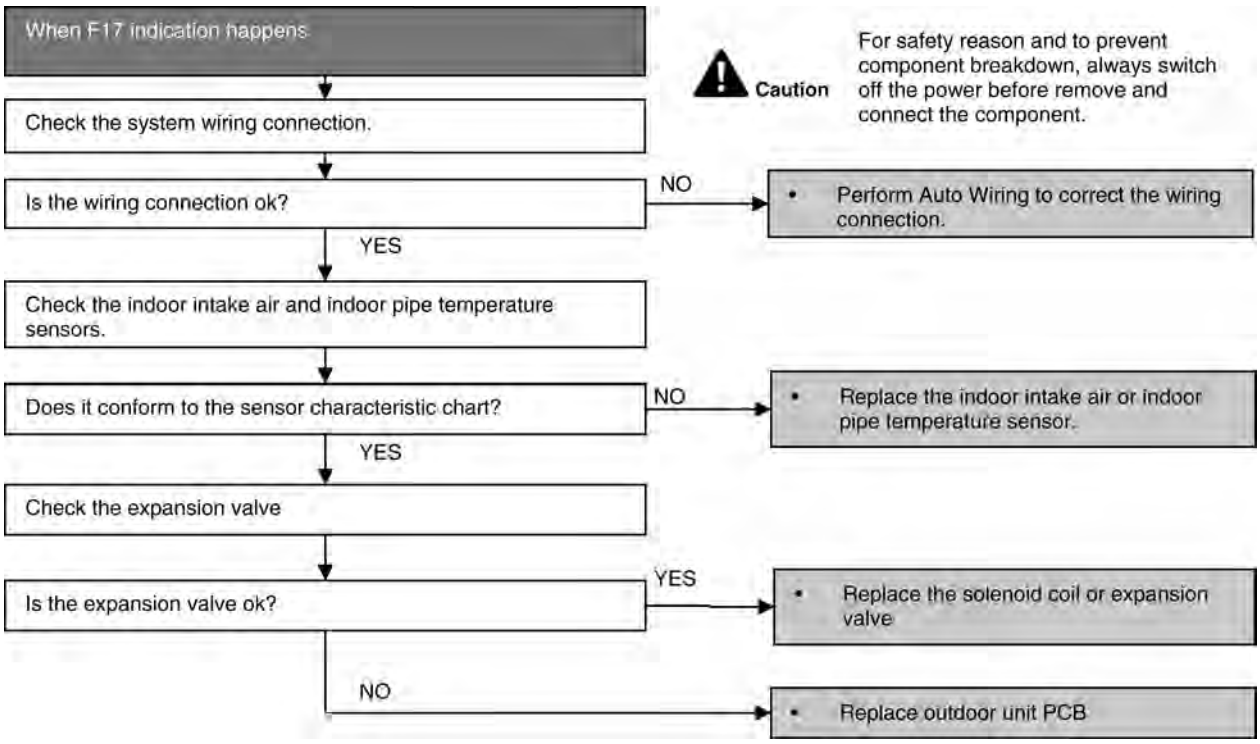
Remark:

When the indoor standby unit is freezing, the outdoor unit transfers F17 error code to the corresponding indoor unit and H39 to other indoor unit(s).

Malfunction Caused

- Wrong wiring connection
- Faulty sensor
- Faulty expansion valve

Troubleshooting



16.4.23. F90 (Power Factor Correction Protection)

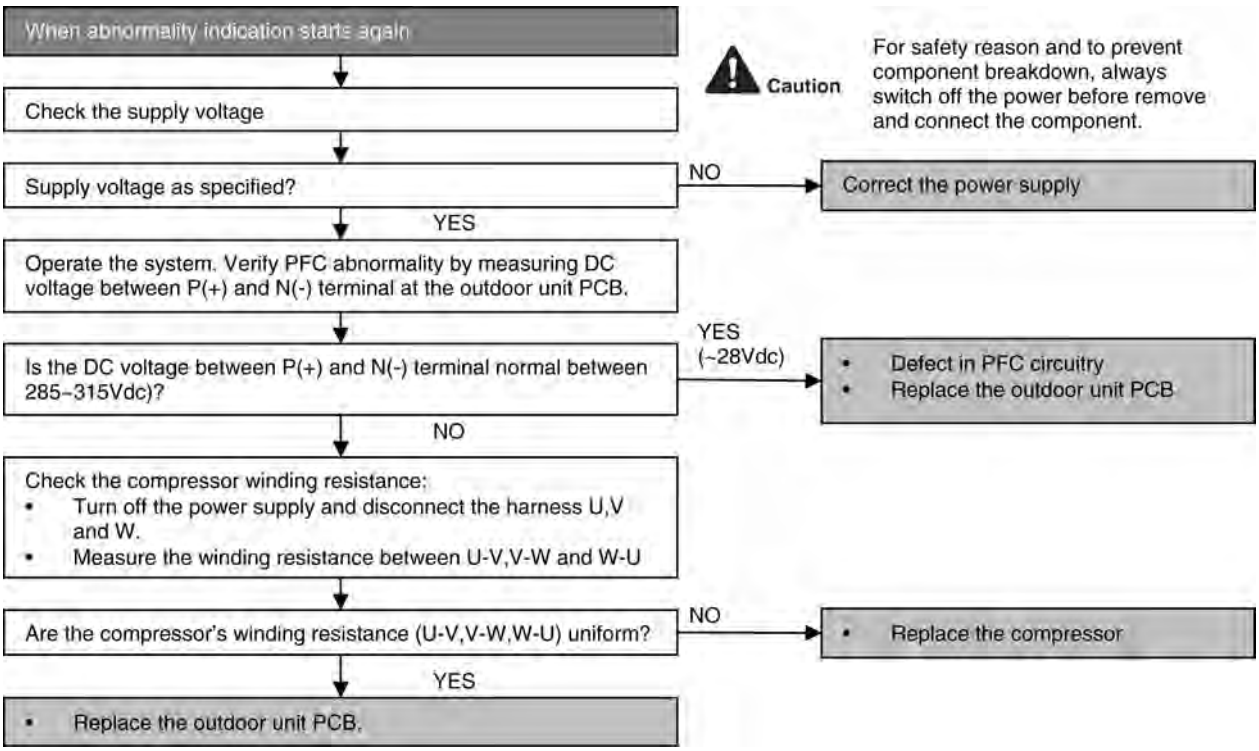
Malfunction Decision Conditions

During startup and operation of cooling and heating, when Power Factor Correction (PFC) protection circuitry at the outdoor unit main PCB senses abnormal high DC voltage level.

Malfunction Caused

- DC voltage peak due to power supply surge.
- DC voltage peak due to compressor windings not uniform.
- Faulty outdoor PCB.

Troubleshooting



16.4.24. F91 (Refrigeration Cycle Abnormality)

Malfunction Decision Conditions

- During cooling, compressor frequency = Fcmax.
- During heating, compressor frequency > Fhrated.
- During cooling and heating operation, running current: 0.65A < I < 1.65A.
- During cooling, indoor intake - indoor pipe < 4°C
- During heating, indoor pipe - indoor intake < 5°C

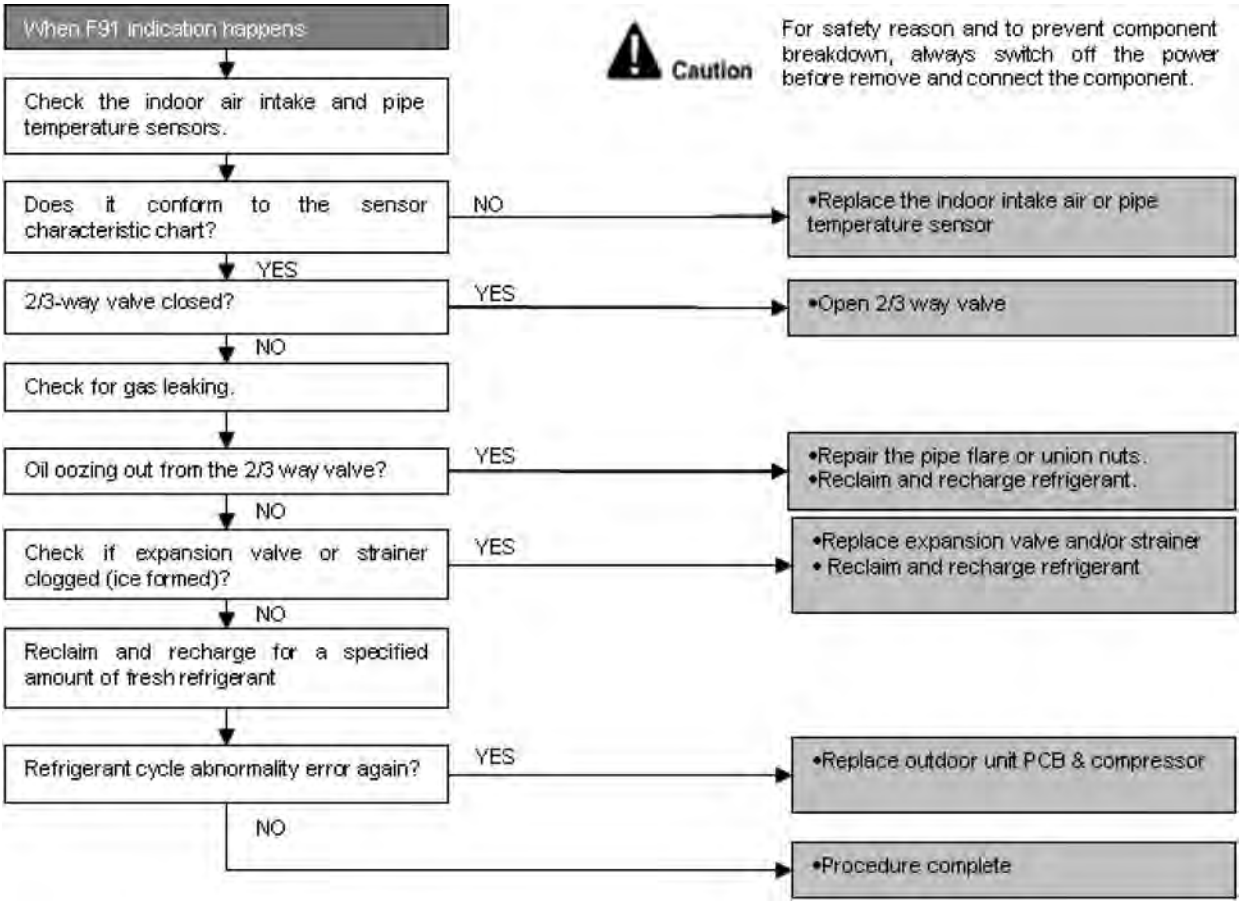
Multi Models Only

- Gas shortage detection 1: A gas shortage is detected by checking the CT-detected input current value and the compressor running frequency. During startup and operating of cooling and heating, input current < 8.78/256 (A/Hz) x compressor running frequency + 0.25.
- Gas shortage detection 2: A gas shortage is detected by checking the difference between indoor pipe temperature and indoor intake air temperature during cooling and heating.

Malfunction Caused

- Faulty indoor intake air or pipe temperature sensor
- 2/3 way valve closed
- Refrigerant shortage (refrigerant leakage)
- Clogged expansion valve or strainer
- Faulty outdoor unit
- Poor compression of compressor

Troubleshooting



16.4.25. F93 (Compressor Rotation Failure)

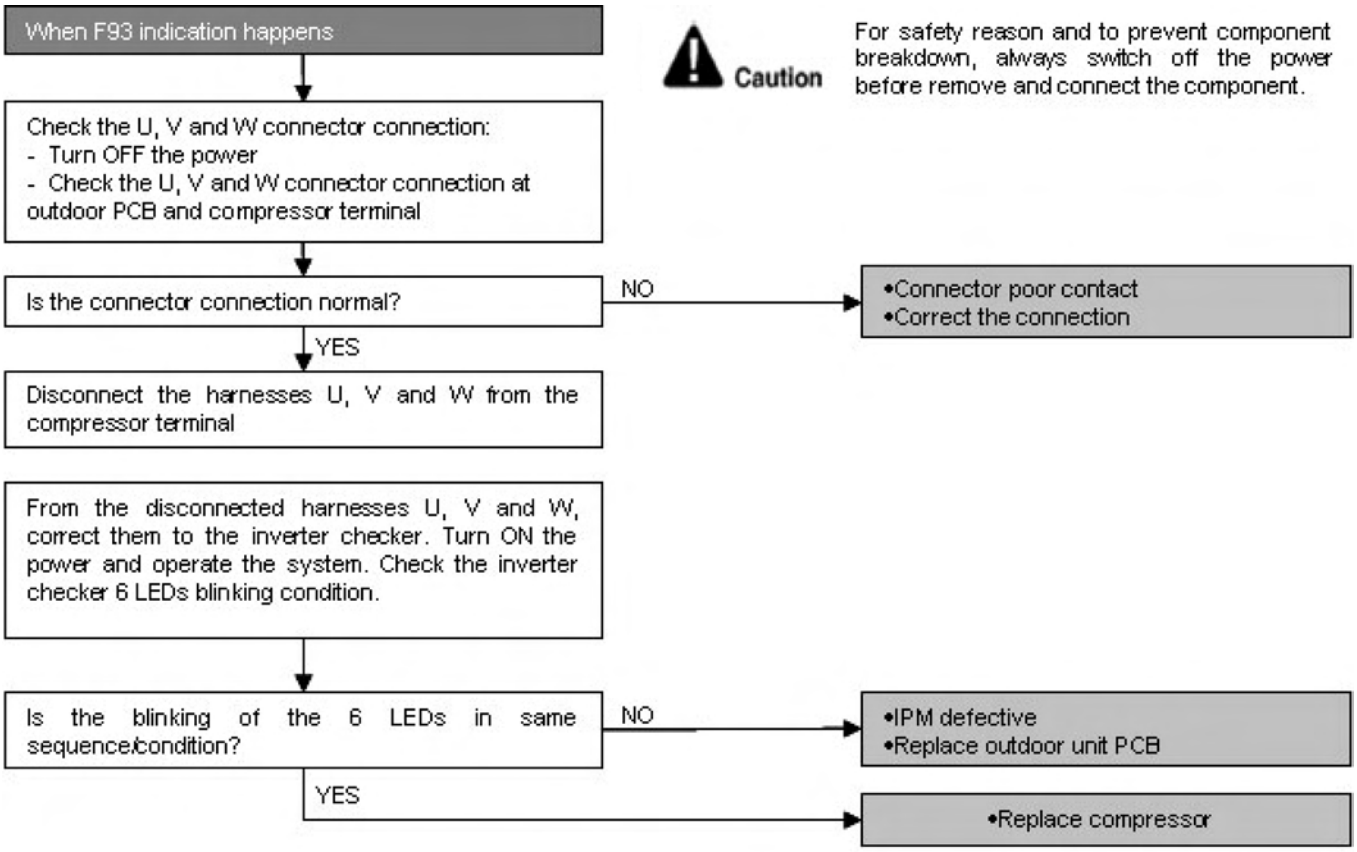
Malfunction Decision Conditions

A compressor rotation failure is detected by checking the compressor running condition through the position detection circuit.

Malfunction Caused

- Compressor terminal disconnect
- Faulty Outdoor PCB
- Faulty compressor

Troubleshooting



16.4.26. F95 (Cooling High Pressure Abnormality)

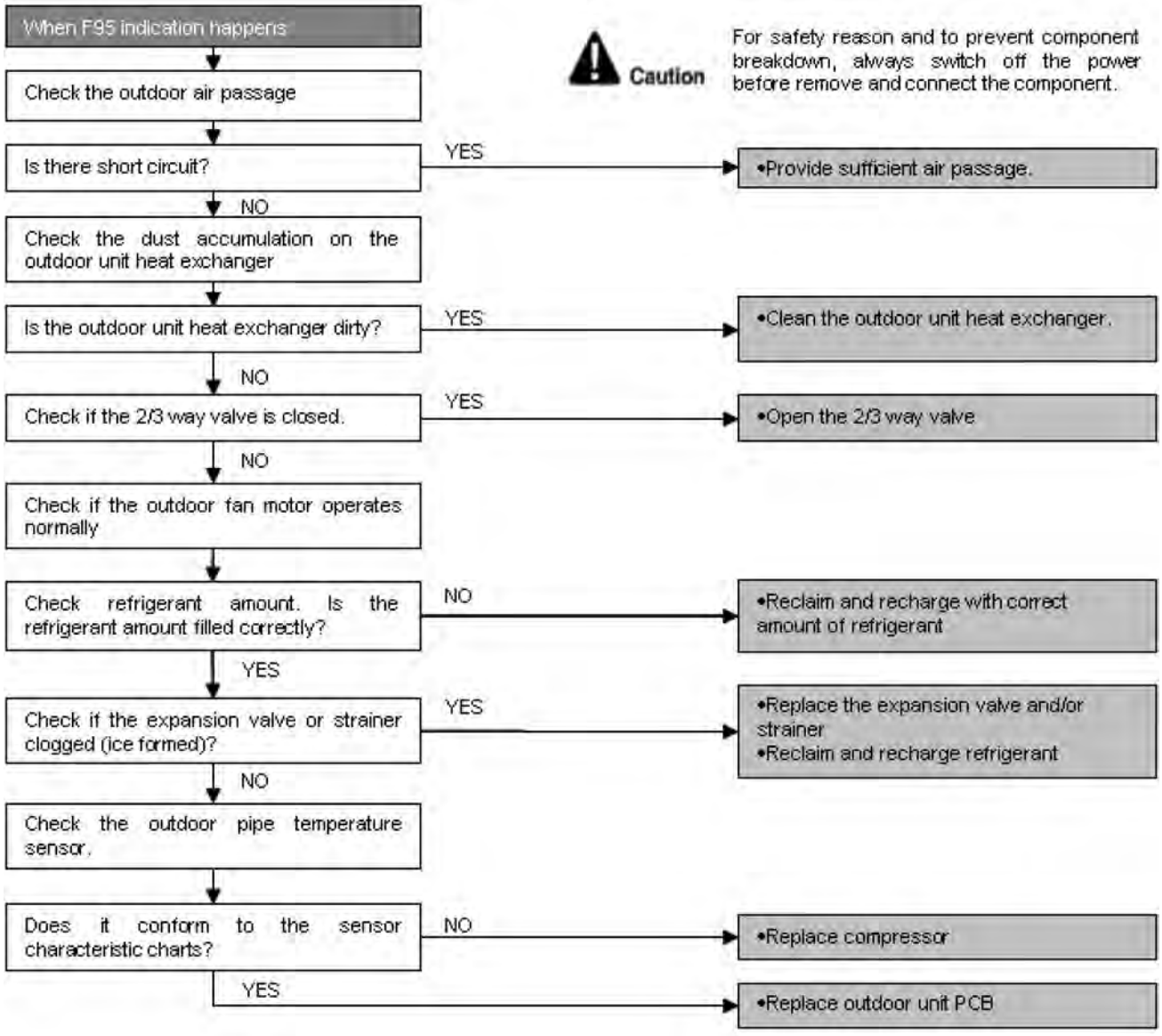
Malfunction Decision Conditions

During operation of cooling, when outdoor unit heat exchanger high temperature data (61°C) is detected by the outdoor pipe temperature sensor.

Malfunction Caused

- Air short circuit at indoor unit
- Dust accumulation on the indoor unit heat exchanger
- 2/3 way valve closed
- Faulty outdoor unit fan motor
- Excessive refrigerant
- Clogged expansion valve or strainer
- Faulty outdoor pipe temperature sensor
- Faulty outdoor unit PCB

Troubleshooting



16.4.27. F96 (IPM Overheating)

Malfunction Decision Conditions

During operating of cooling and heating, when IPM temperature data (100°C) is detected by the IPM temperature sensor.

Multi Models Only

- Compressor Overheating: During operation of cooling and heating, when the compressor OL is activated.
- Heat Sink Overheating: During operation of cooling and heating, when heat sink temperature data (90°C) is detected by the heat sink temperature sensor.

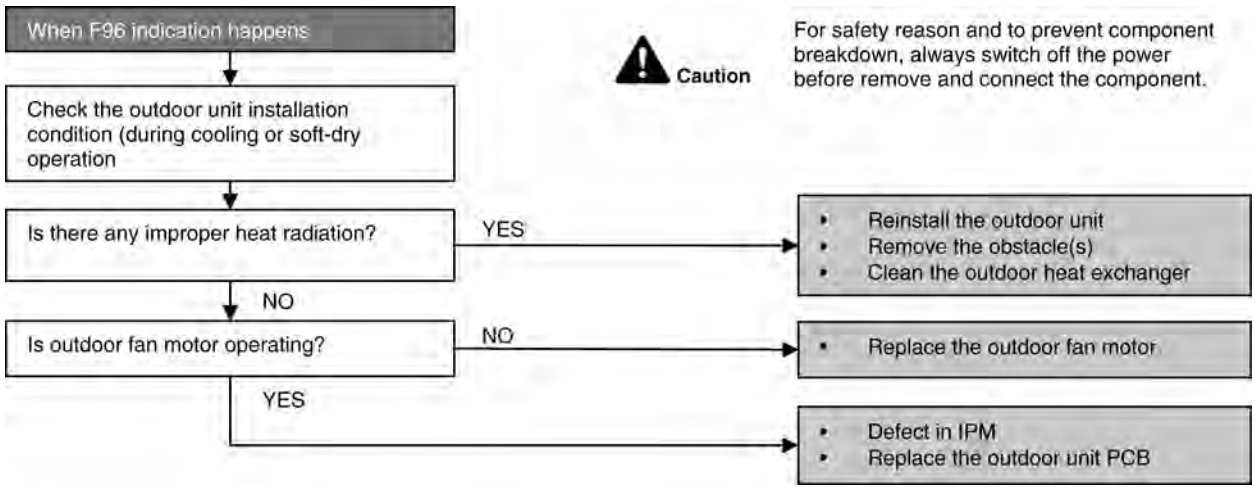
Malfunction Caused

- IPM overheats due to short circuit of hot discharge air flow.
- IPM overheats due to defective of outdoor fan motor.
- IPM overheats due to defective of internal circuitry of IPM.
- IPM overheats due to defective IPM temperature sensor.

Multi Models Only

- Compressor OL connector poor contact.
- Compressor OL faulty.

Troubleshooting



16.4.28. F97 (Compressor Overheating)

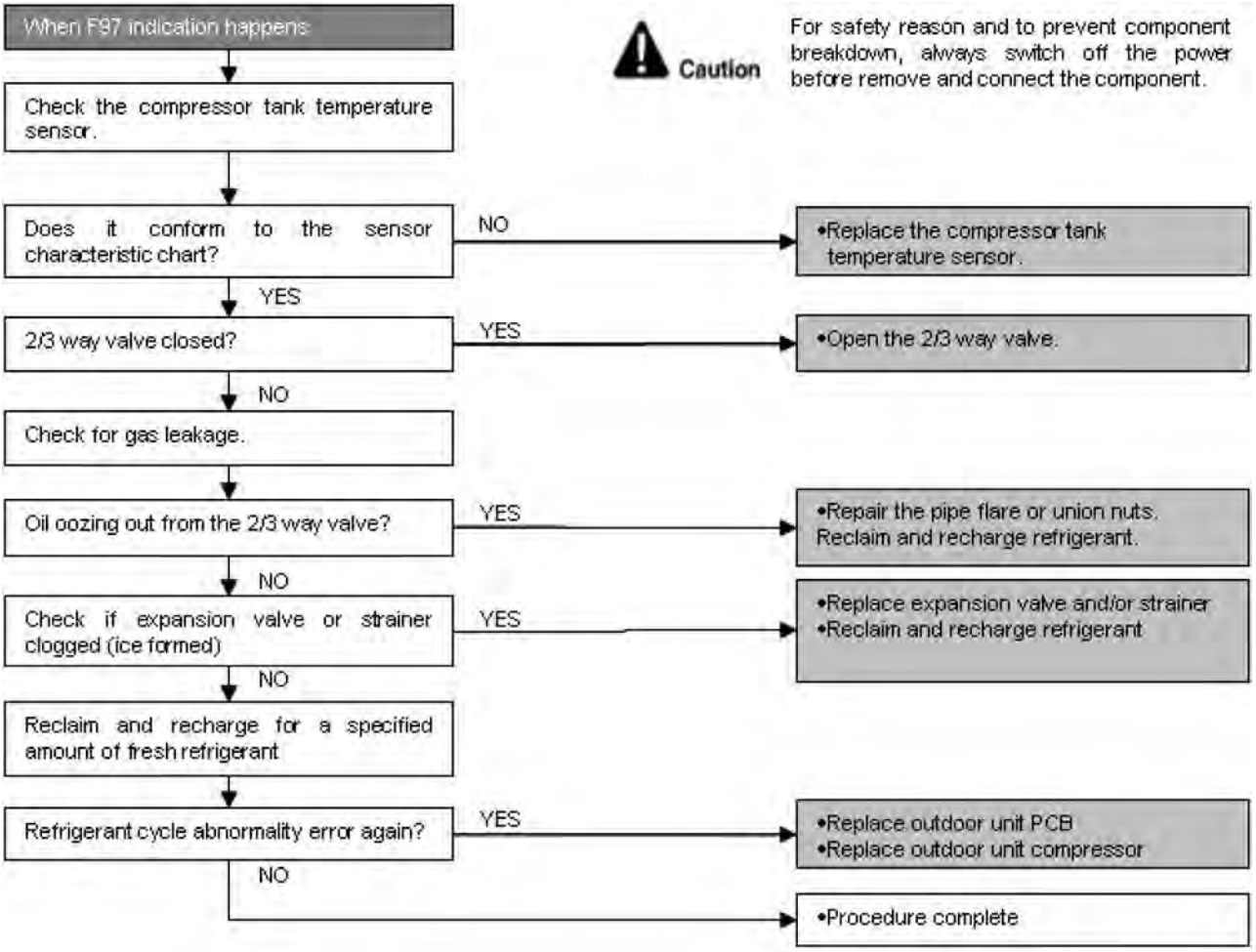
Malfunction Decision Conditions

During operation of cooling and heating, when compressor tank temperature data (112°C) is detected by the compressor tank temperature sensor.

Malfunction Caused

- Faulty compressor tank temperature sensor
- 2/3 way valve closed
- Refrigerant shortage (refrigerant leakage)
- Faulty outdoor unit PCB
- Faulty compressor

Troubleshooting



16.4.29. F98 (Input Over Current Detection)

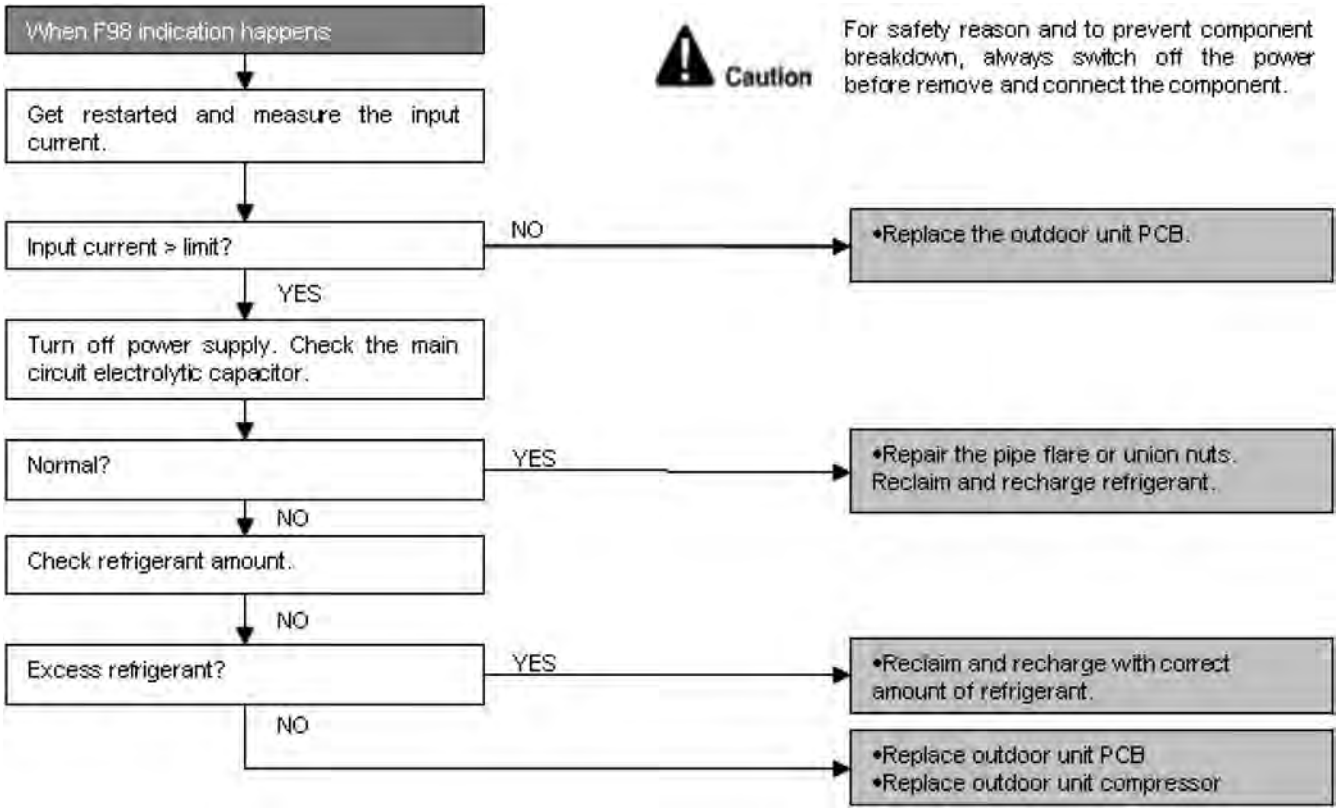
Malfunction Decision Conditions

During operation of cooling and heating, when an input over-current (X value in Total Running Current Control) is detected by checking the input current value being detected by current transforme r (CT) with the compressor running.

Malfunction Caused

- Excessive refrigerant.
- Faulty outdoor unit PCB.

Troubleshooting



16.4.30. F99 (Output Over Current Detection)

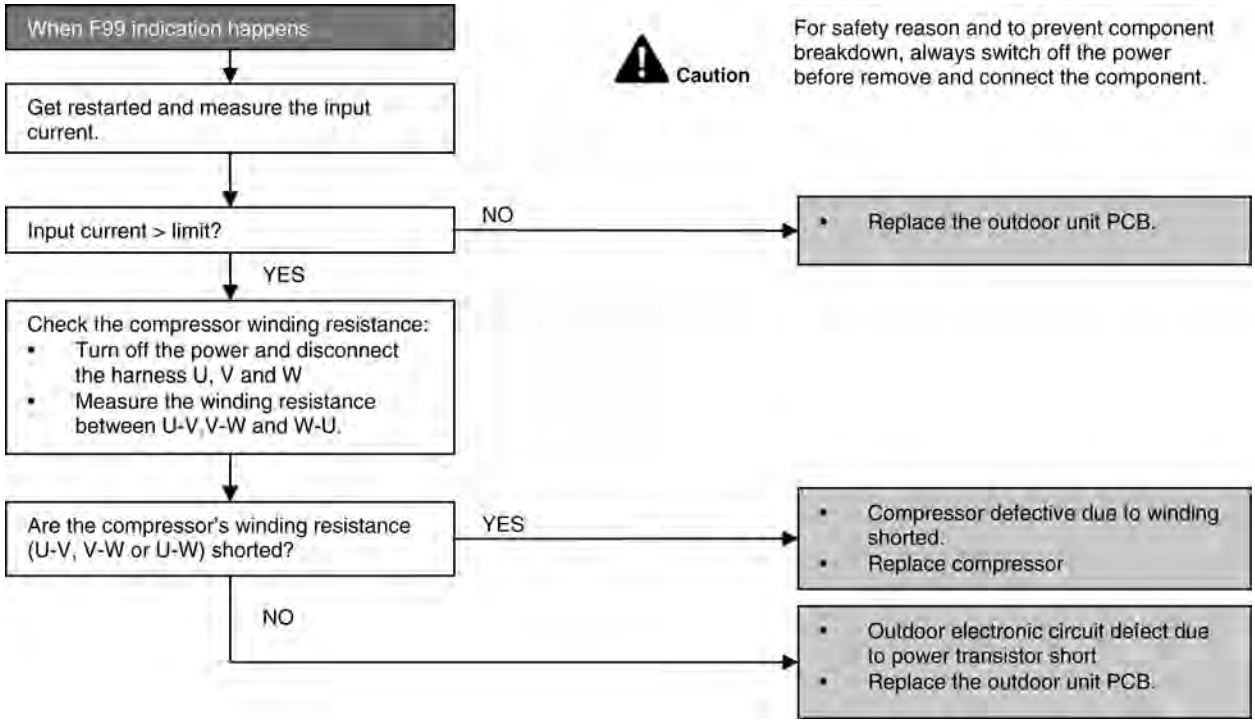
Malfunction Decision Conditions

During operation of cooling and heating, when an output over-current (DC peak current value at IPM Prevention Control) is detected by checking the current that flows in the inverter DC peak sensing circuitry.

Malfunction Caused

- Faulty outdoor unit PCB
- Faulty compressor

Troubleshooting



- Checking the power transistor
- Never touch any live parts for at least 10 minutes after turning off the circuit breaker.
- If unavoidable necessary to touch a live part, make sure the power transistor's supply voltage is below 50V using the tester.
- For the UVW, make measurement at the Faston terminal on the board of the relay connector.

Tester's negative terminal	Power transistor (+)	UVW	Power transistor (-)	UVW
Tester's positive terminal	UVW	Power transistor (+)	UVW	Power transistor (-)
Normal resistance	Several kΩ to several MΩ			
Abnormal resistance	0 or ∝			

17 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.

17.1. CS-E7MK CS-E9MK CS-E12MK CS-E15MK

17.1.1. Indoor Electronic Controllers, Cross Flow Fan and Indoor Fan Motor Removal Procedures

17.1.1.1. To remove front grille

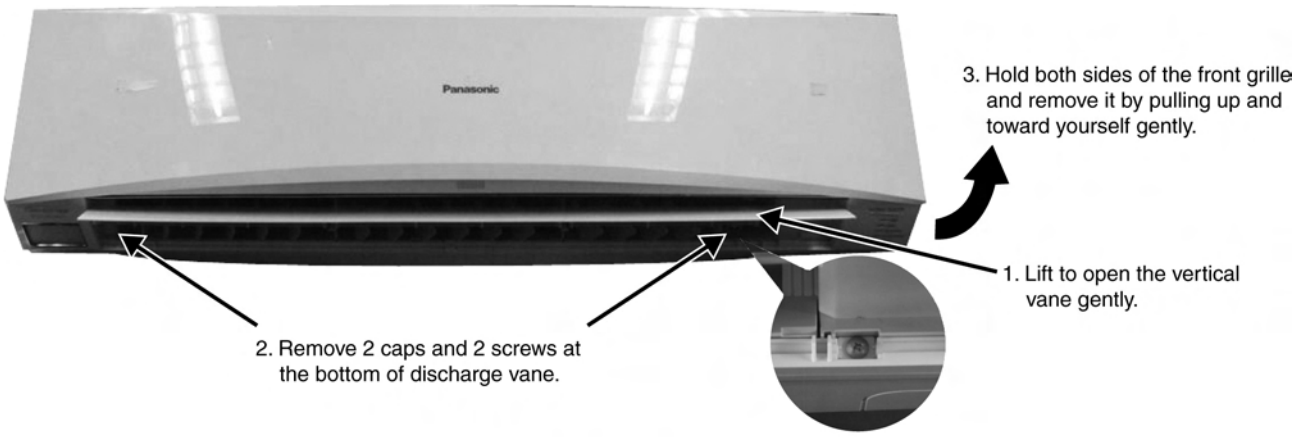


Figure 1

17.1.1.2. To remove power electronic controller

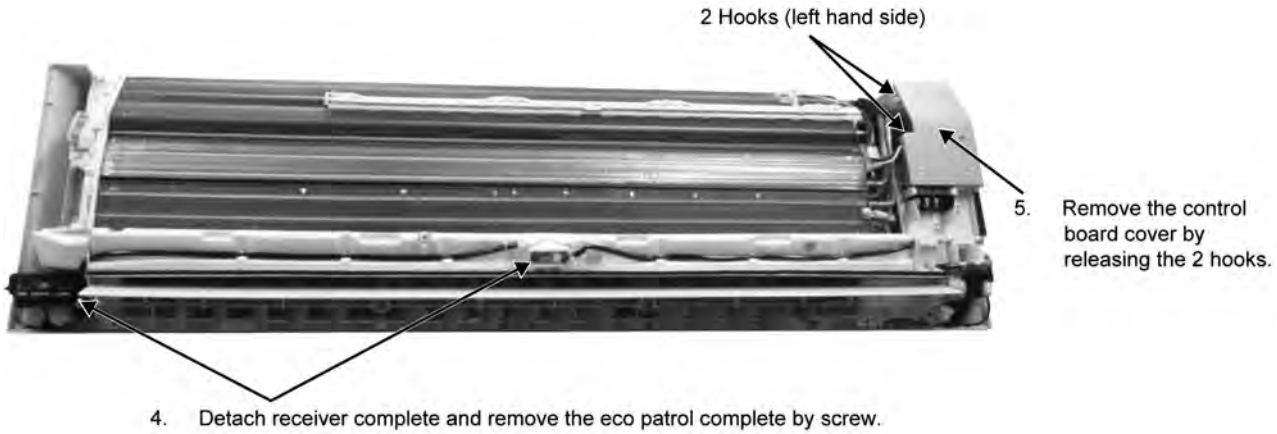


Figure 2

17.1.1.3. To remove power electronic controller

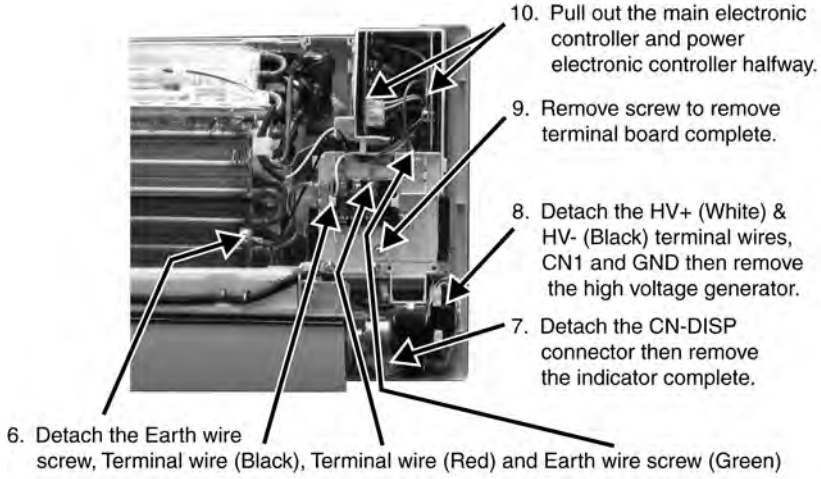


Figure 3

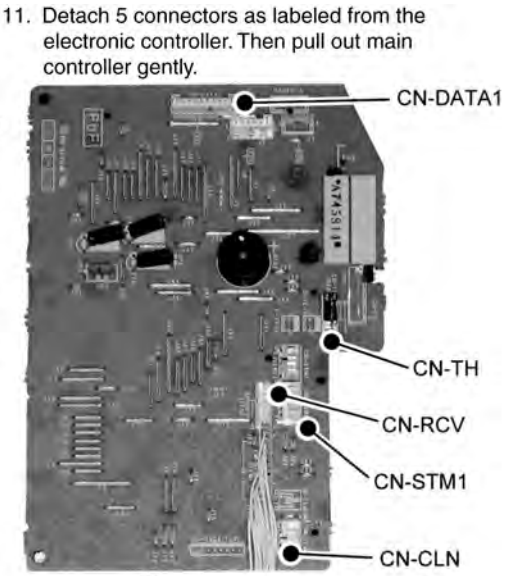


Figure 4

Figure 5

17.1.1.4. To remove discharge grille

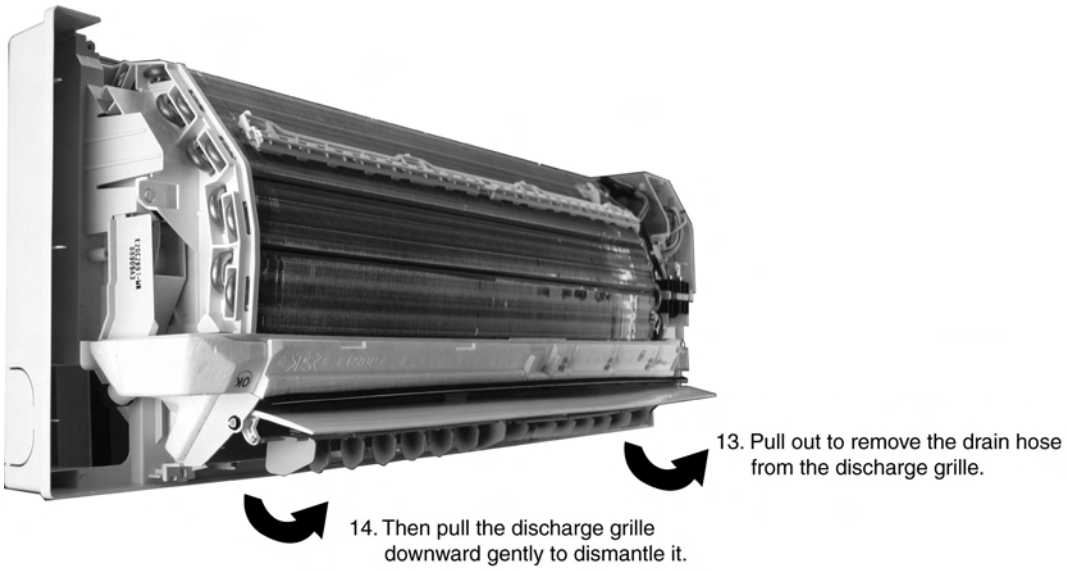


Figure 6

17.1.1.5. To remove control board

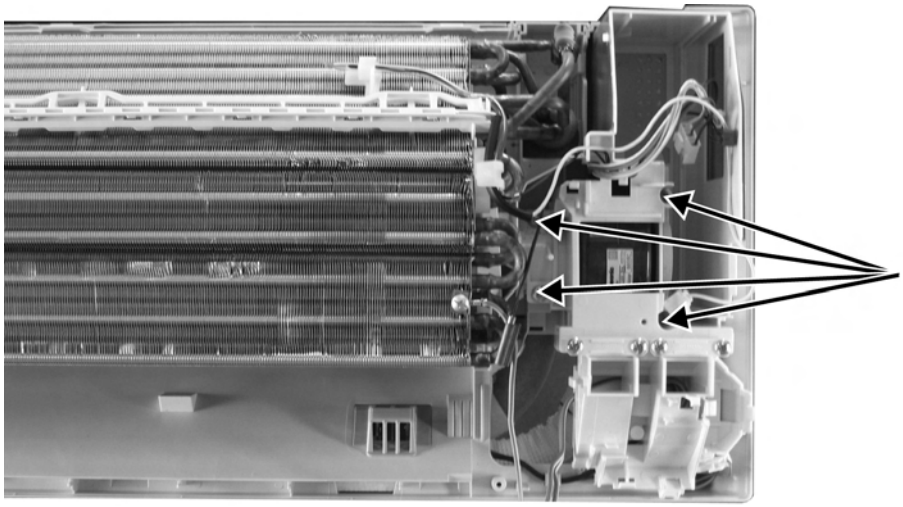


Figure 7

17.1.1.6. To remove cross flow fan and indoor fan motor

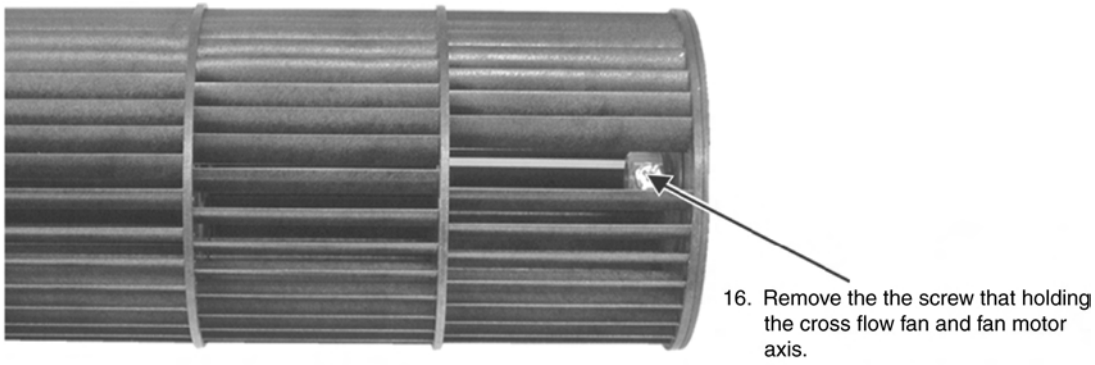


Figure 8

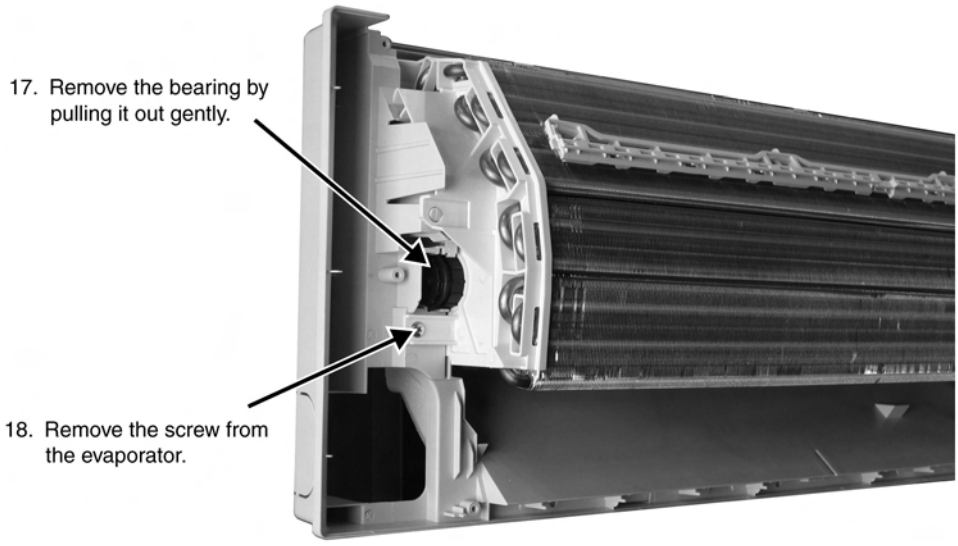


Figure 9

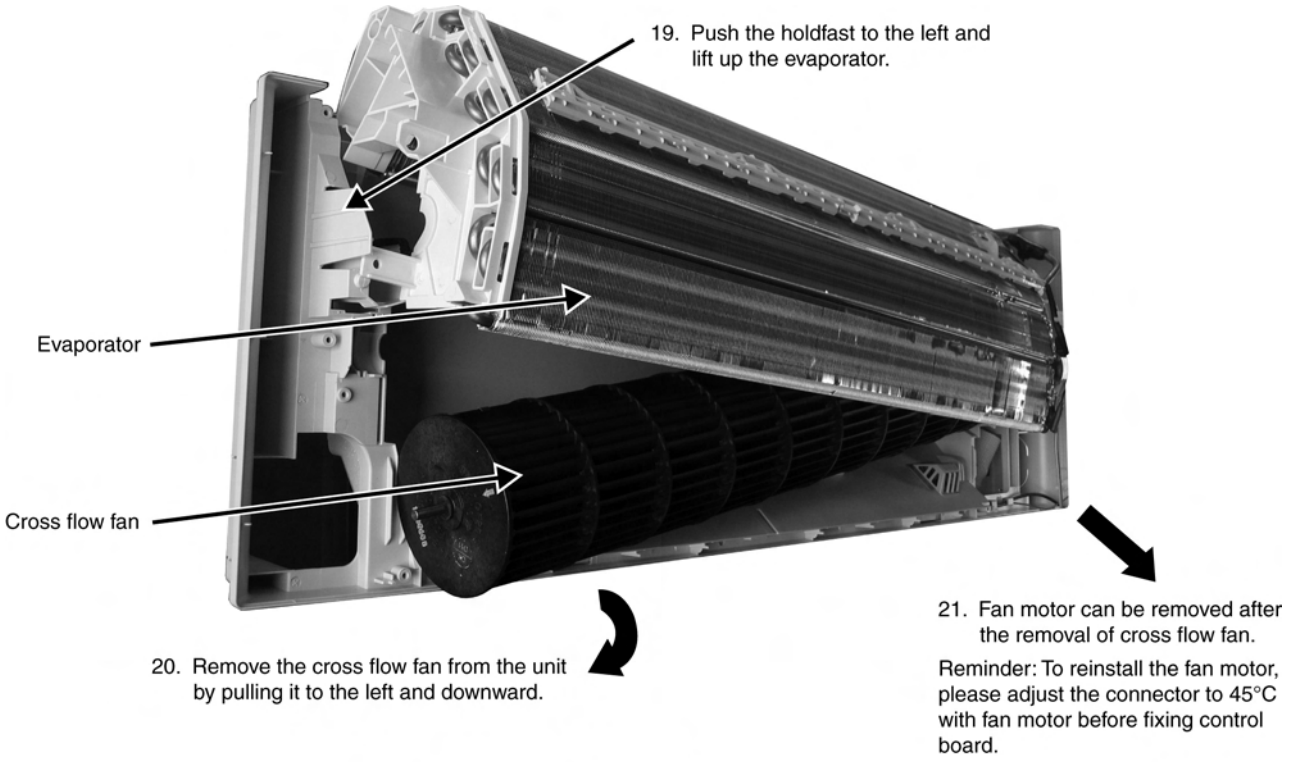


Figure 10

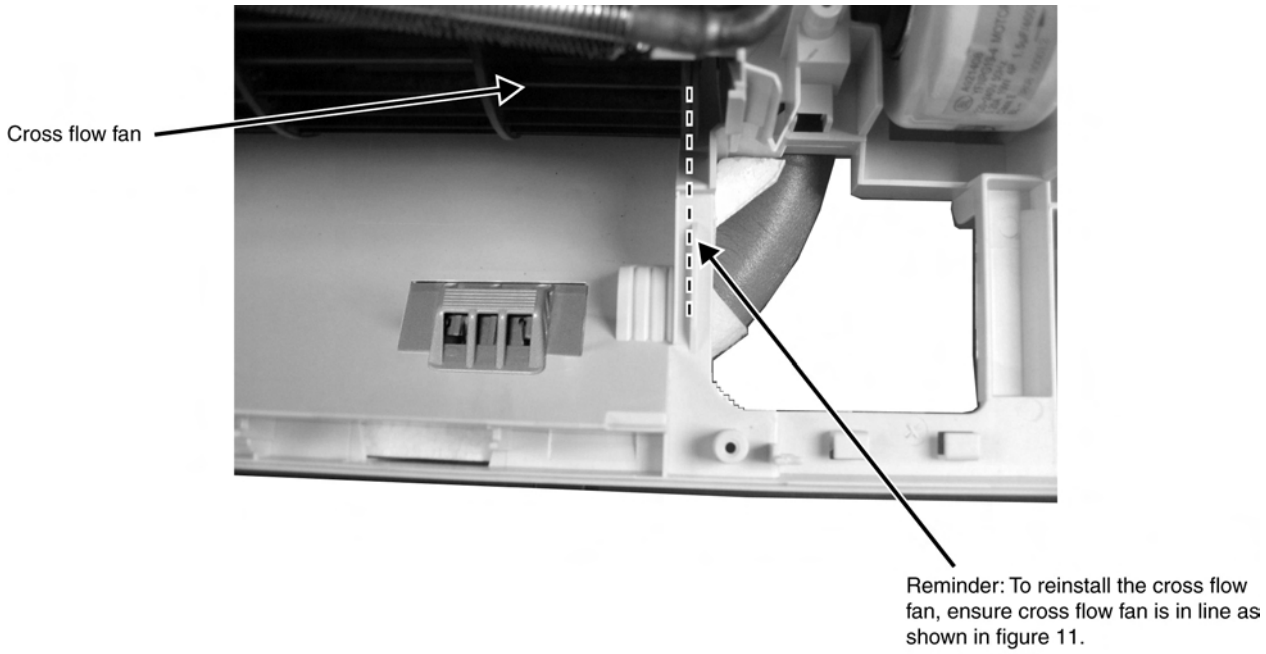


Figure 11

17.2. CS-E18MK CS-E21MK

17.2.1. Indoor Electronic Controllers, Cross Flow Fan and Indoor Fan Motor Removal Procedures

17.2.1.1. To remove front grille

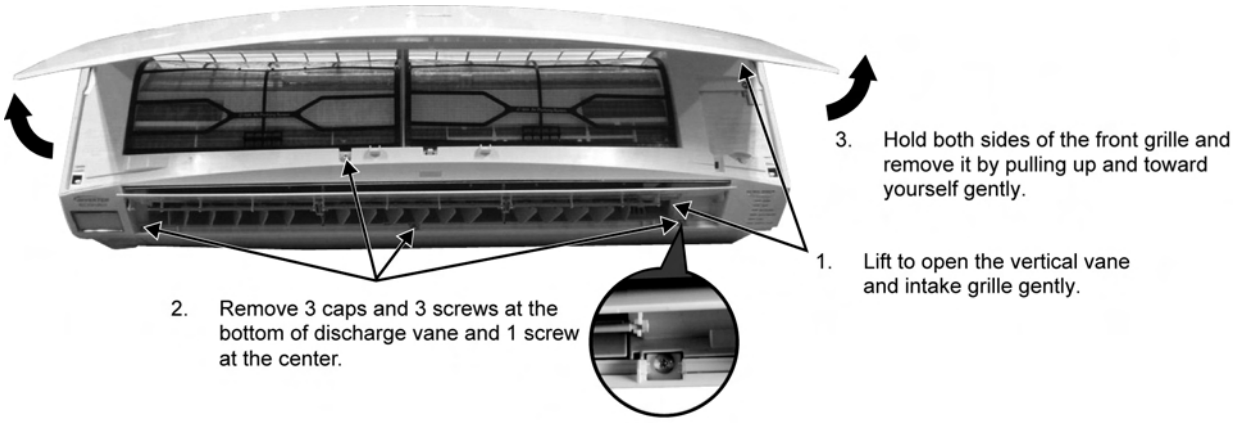


Figure 1

17.2.1.2. To remove horizontal vane

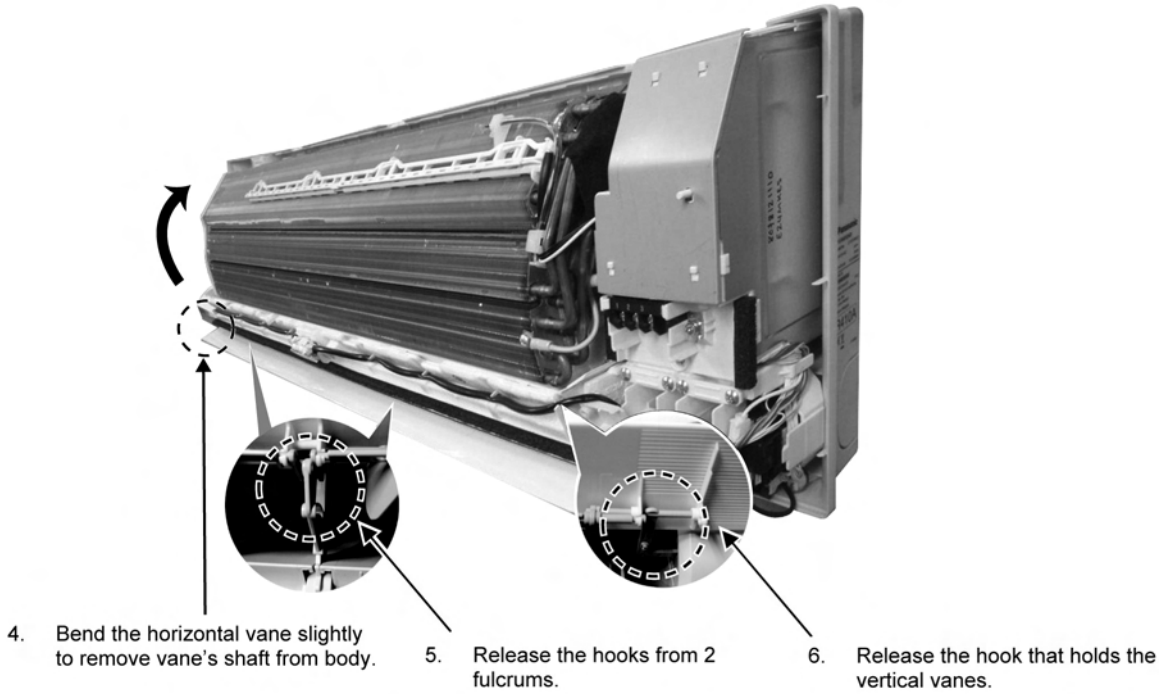
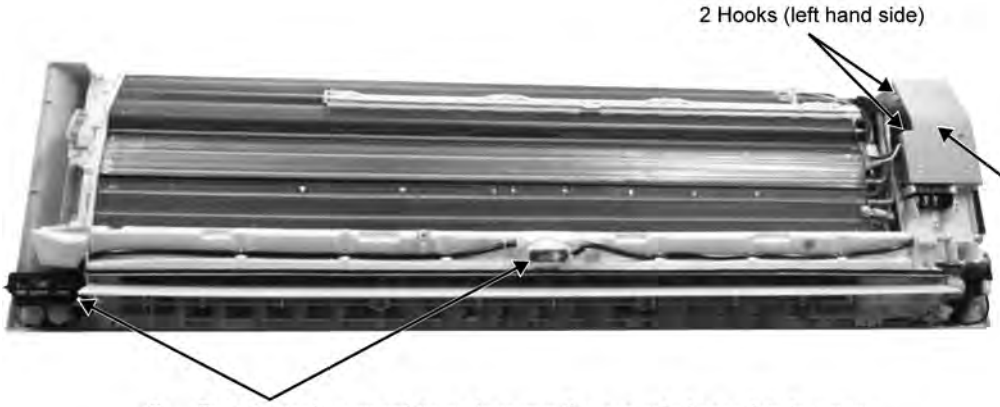


Figure 2

17.2.1.3. To remove power electronic controller



8. Remove the control board cover by releasing the 2 hooks.

7. Detach receiver complete and remove the eco patrol complete by screw.

Figure 3

13. Pull out the main electronic controller and power electronic controller halfway.

12. Remove screw to remove terminal board complete.

11. Detach the HV+ (White) & HV- (Black) terminal wires, CN1 and GND then remove the high voltage generator.

10. Detach the CN-DISP connector then remove the indicator complete.

9. Detach the Earth wire screw, Terminal wire (Black), Terminal wire (Red) and Earth wire screw (Green)

Figure 4

14. Detach 6 connectors as labeled from the electronic controller. Then pull out main controller gently

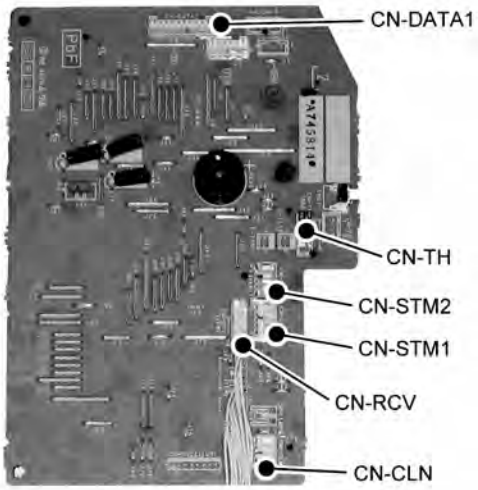
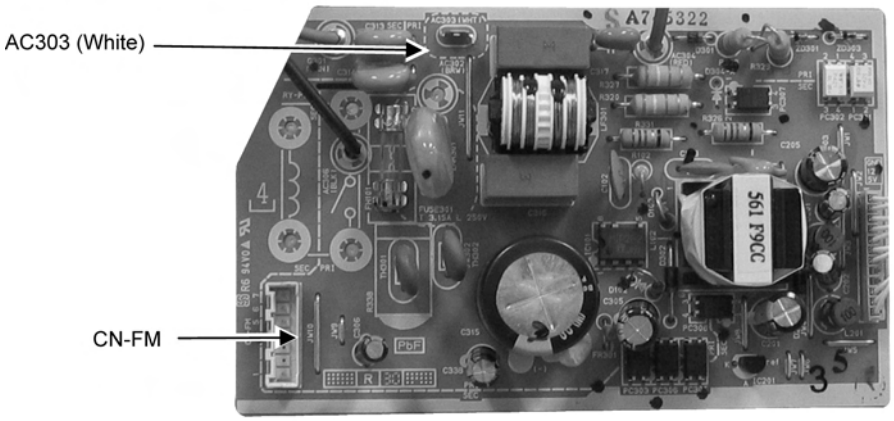


Figure 5



15. Detach the AC303 and CN-FM connectors from the electronic controller. Then pull out power electronic controller gently.

Figure 6

17.2.1.4. To remove discharge grille

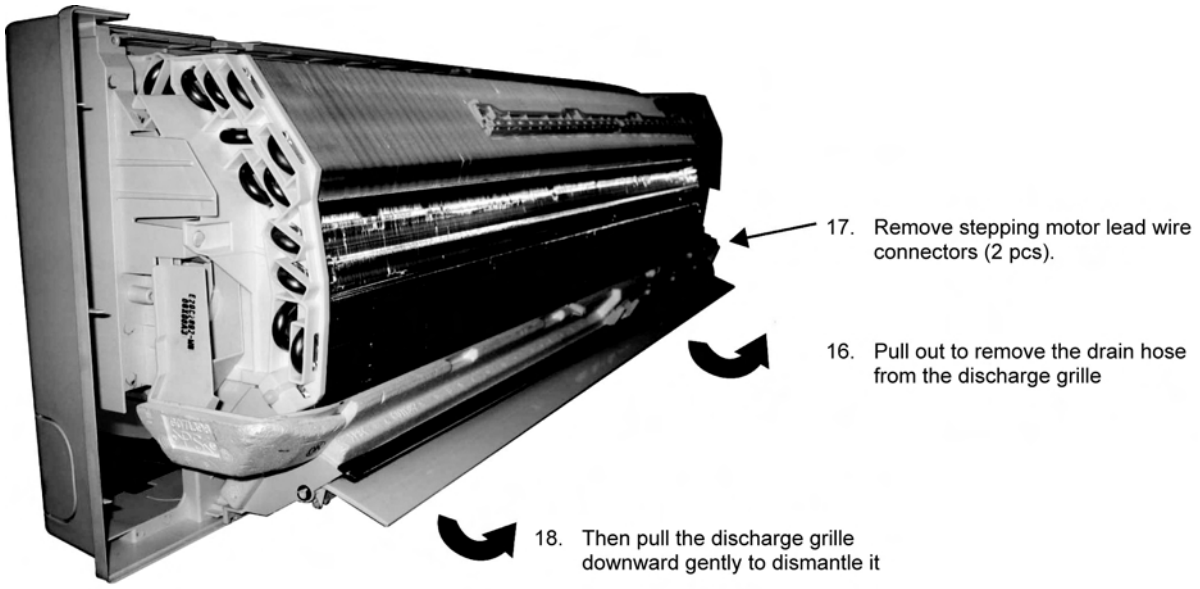


Figure 7

17.2.1.5. To remove control board

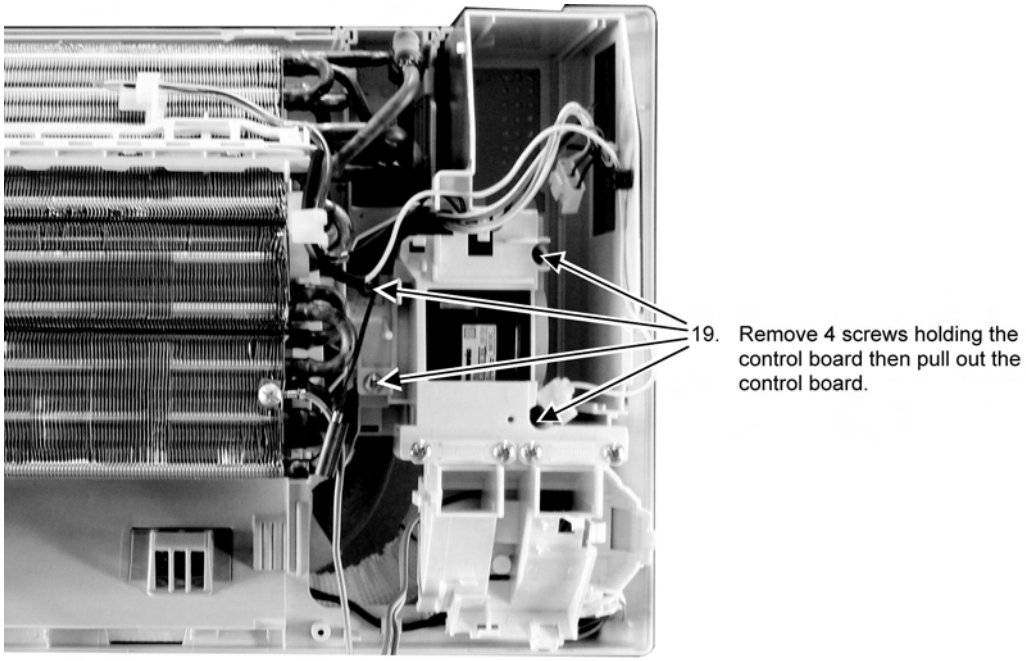
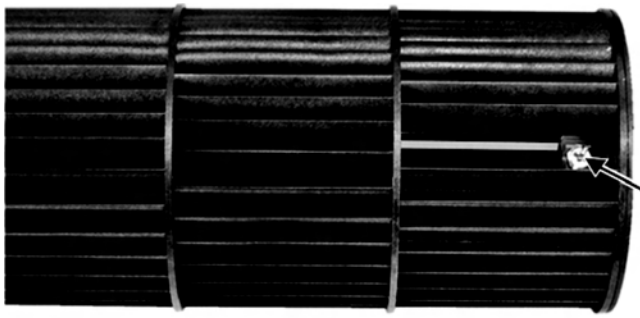


Figure 8

17.2.1.6. To remove cross flow fan and indoor fan motor



20. Remove the screw that holding the cross flow fan and fan motor axis.

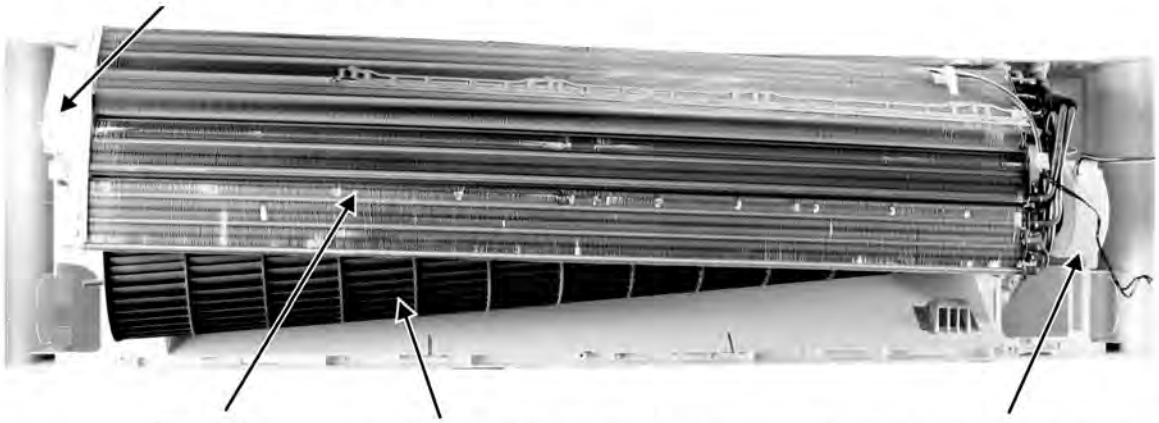
Figure 9

22. Remove the bearing by pulling it out gently

21. Remove the screw from the evaporator.

Figure 10

23. Push the holdfast to the left and lift up the evaporator.



Evaporator

24. Remove the cross flow fan from the unit by pulling it to the left and downward.

25. Fan motor can be removed after the removal of cross flow fan.

Reminder: To reinstall the fan motor, adjust the fan motor connector to 45° towards you before fixing control board.

Figure 11

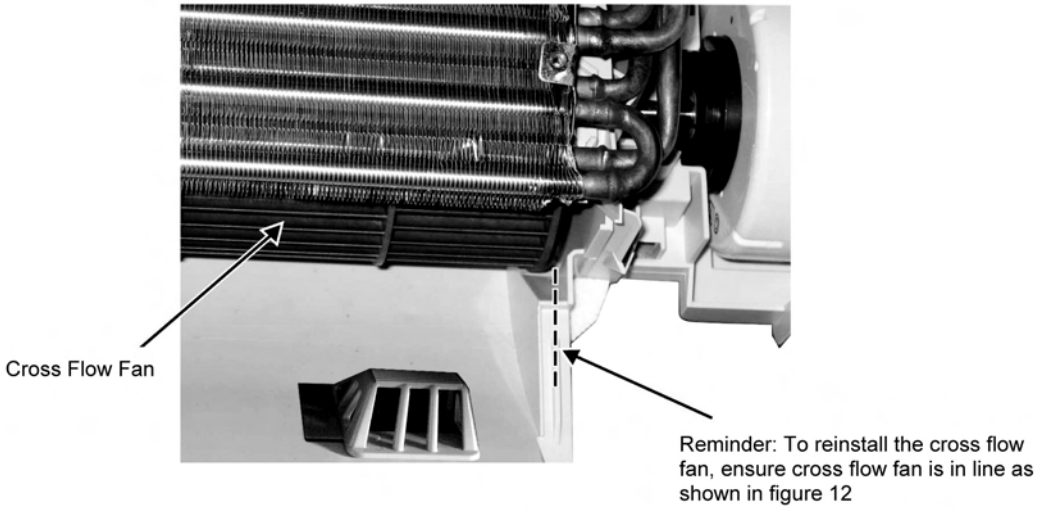

Cross Flow Fan
Reminder: To reinstall the cross flow fan, ensure cross flow fan is in line as shown in figure 12

Figure 12

17.3. Outdoor Electronic Controller Removal Procedure

17.3.1. CU-E7MKE CU-E9MKE CU-E12MKE CU-E15MKE CU-E7MKE-3 CU-E9MKE-3 CU-E12MKE-3

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

1. Remove the 3 screws of the Top Panel.

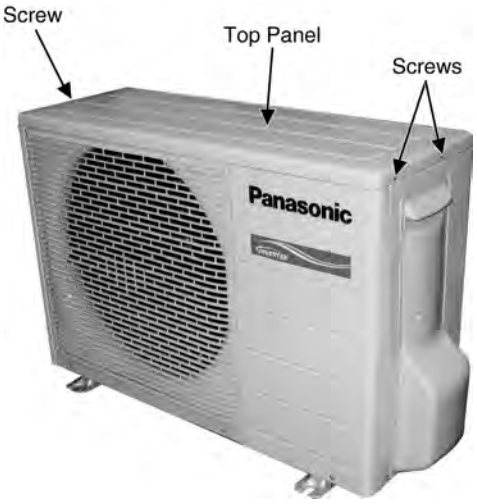


Fig. 1

2. Remove the 6 screws of the Front Panel.

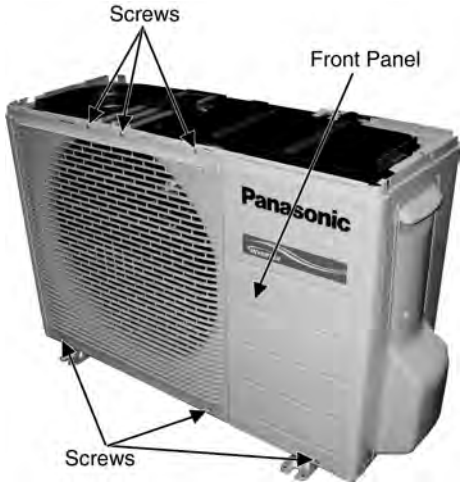


Fig. 2

3. Remove the screw of the Terminal Board Cover.
4. Remove the Top Cover of the Control Board by 4 hooks.

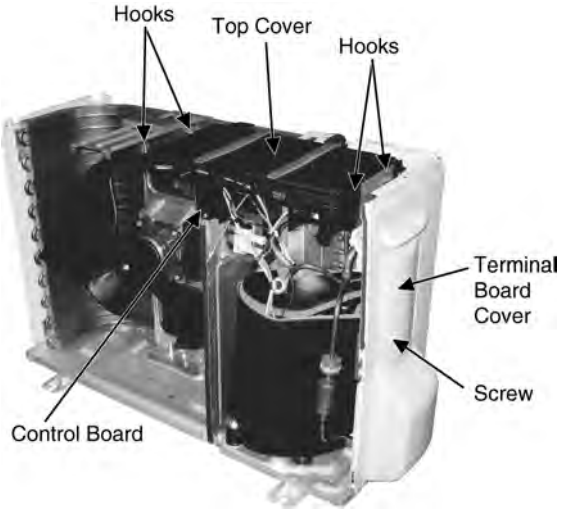


Fig. 3

5. Remove the Control Board as follows:

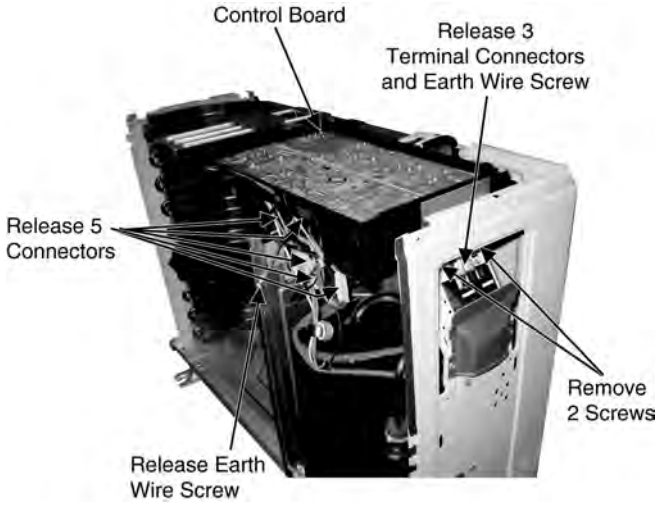


Fig. 4

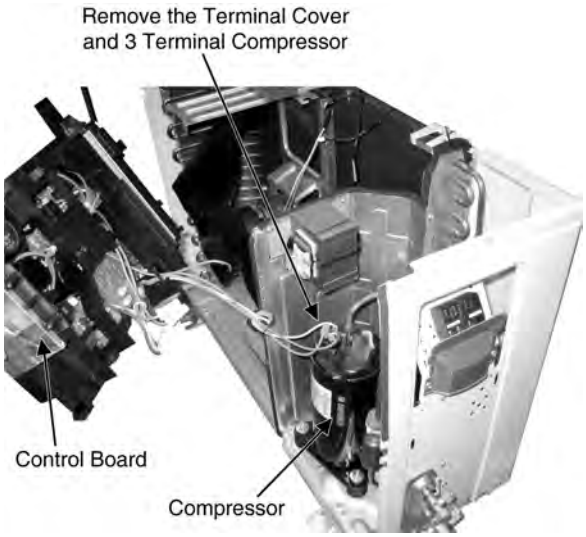


Fig. 5

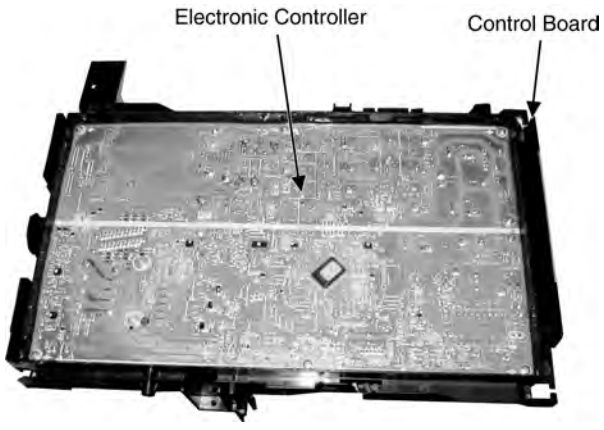


Fig. 6

17.3.2. CU-E18MKE CU-E21MKE

1. Remove the 4 screws of the Top Panel.

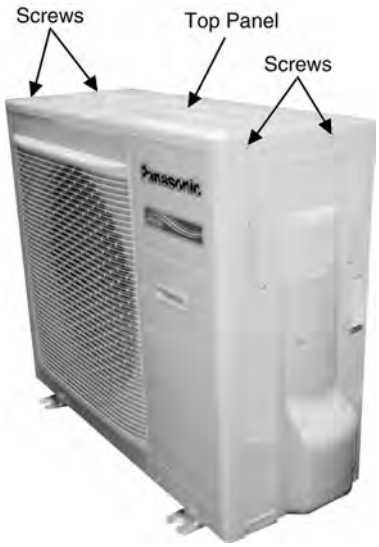


Fig. 1

2. Remove the 10 screws of the Front Panel.

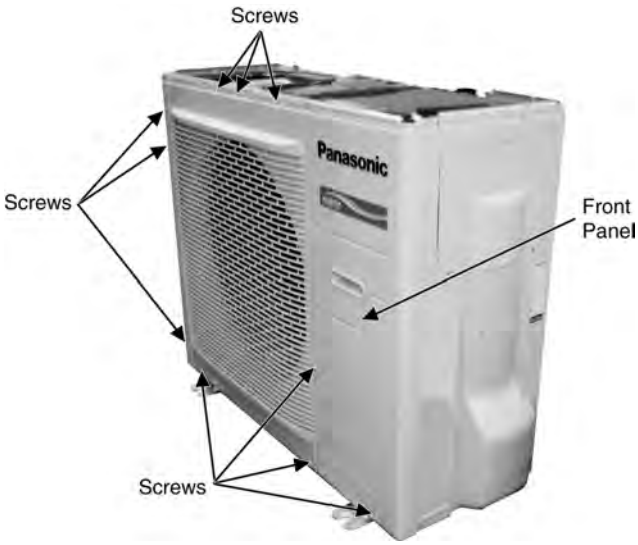


Fig. 2

3. Remove the Top Cover of the Electronic Controller.

Fig. 3

4. Remove the Control Board.

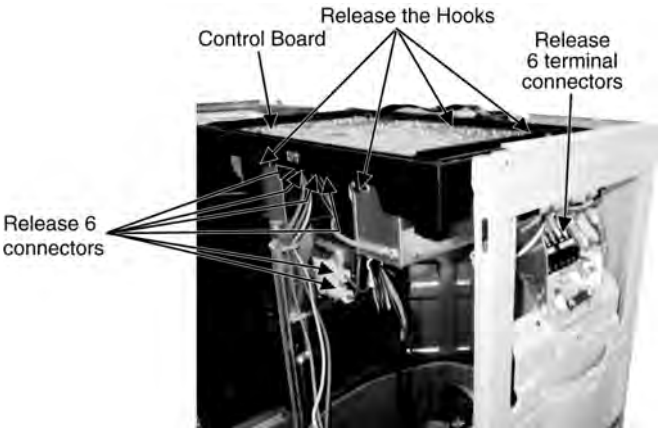


Fig. 4

5. Remove the 8 screws of the Electronic Controller.

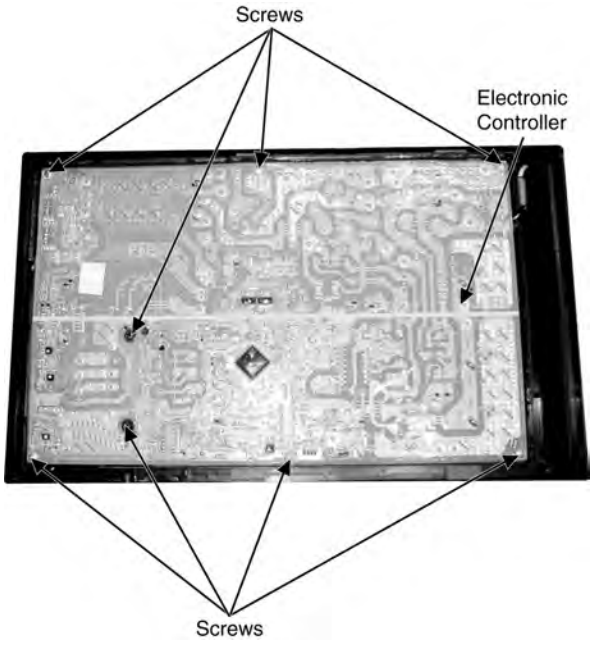


Fig. 5

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

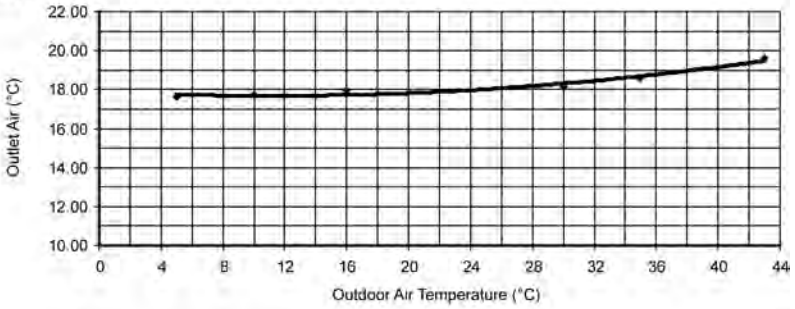
18 Technical Data

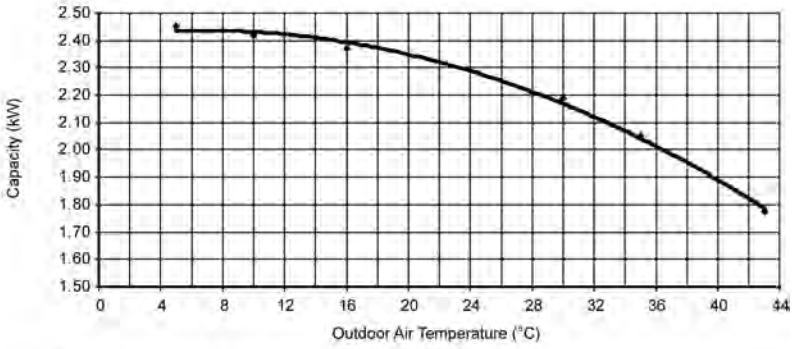
18.1. Operation Characteristics

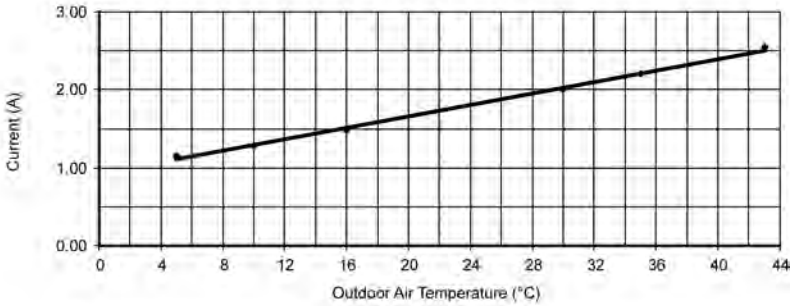
18.1.1. CU-E7MKE

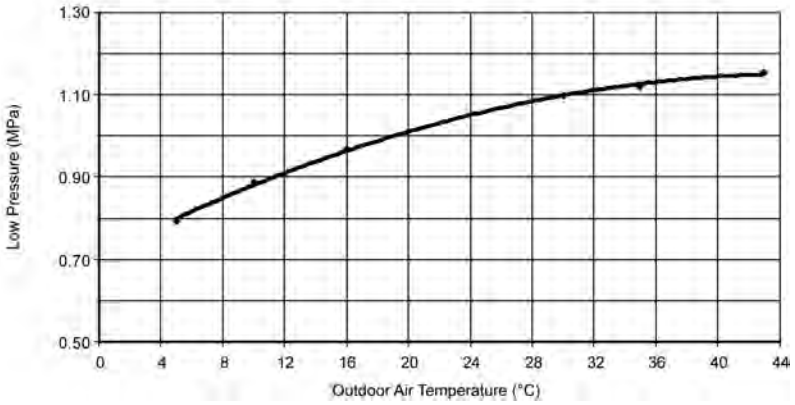
• Cooling Characteristic

[Condition] Indoor temperature: 27/19°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



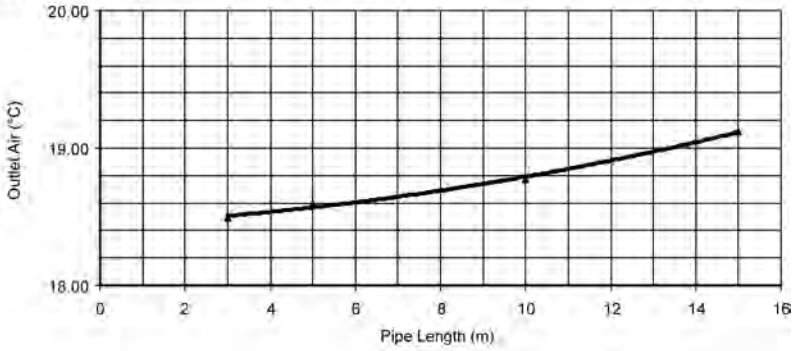


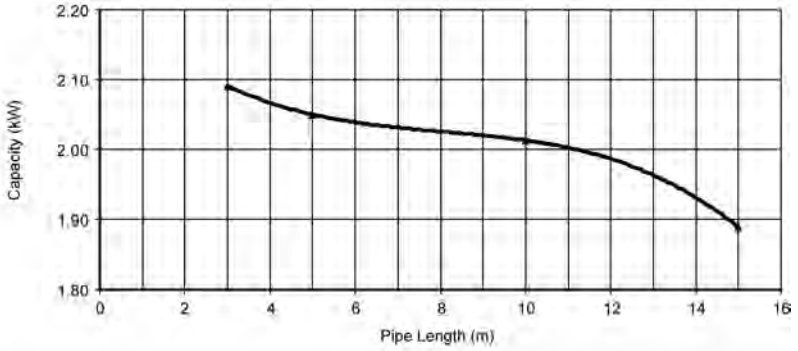


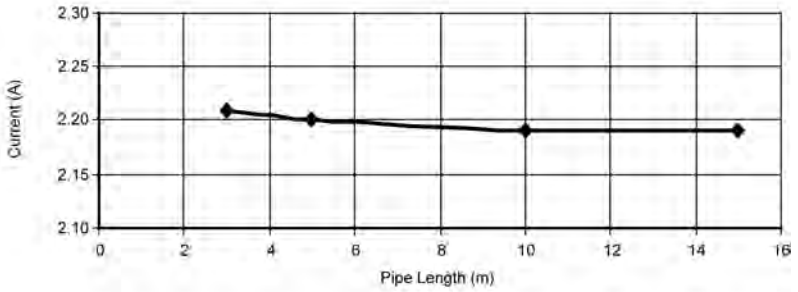


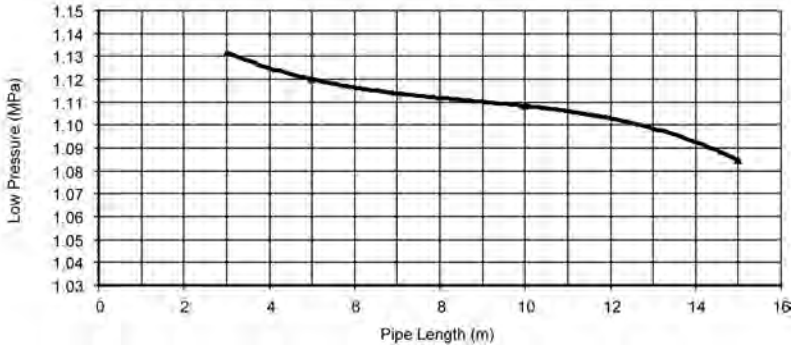
• Piping Length Characteristic

[Condition] Indoor temperature: 27/19°C, 35/-°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



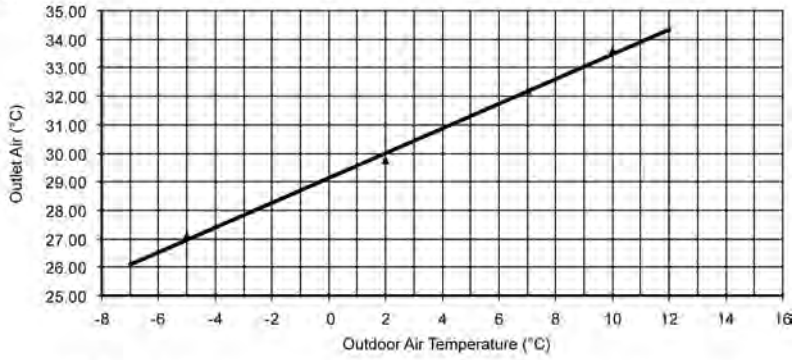


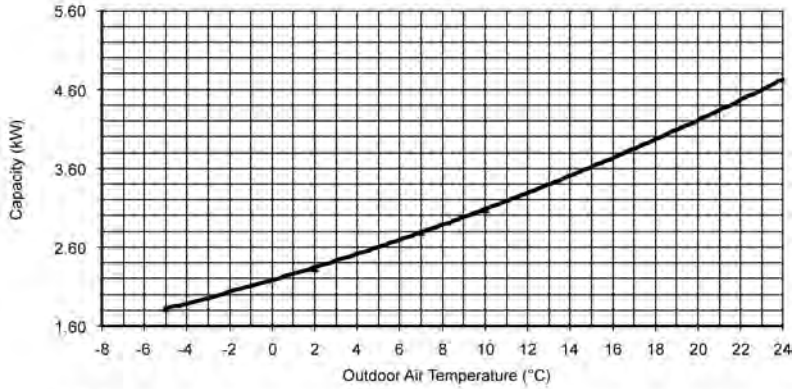


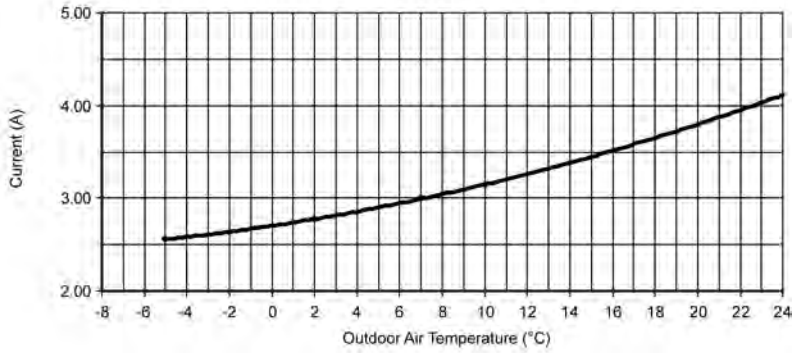


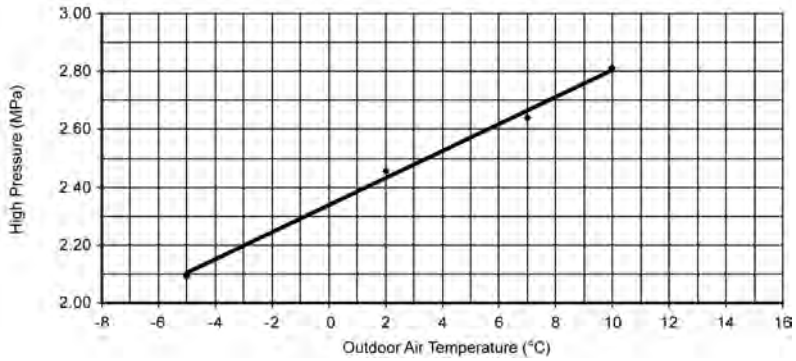
• Heating Characteristic

[Condition] Indoor temperature: 20/-°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_h
Voltage: 230V



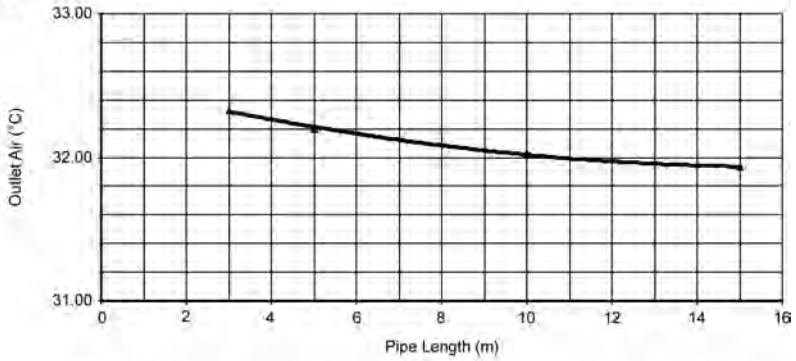


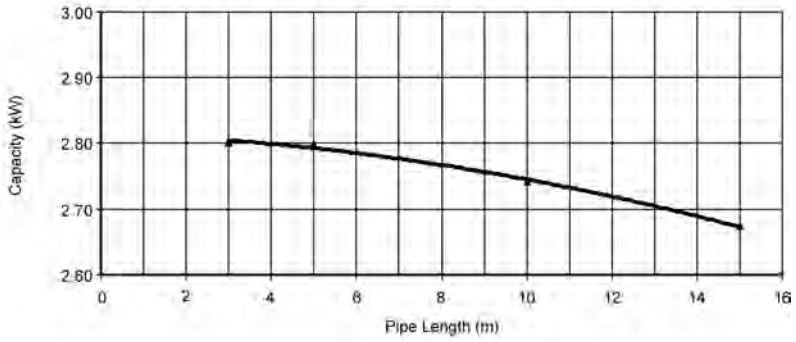


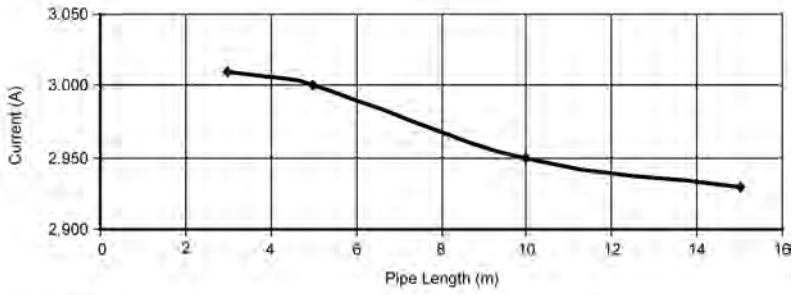


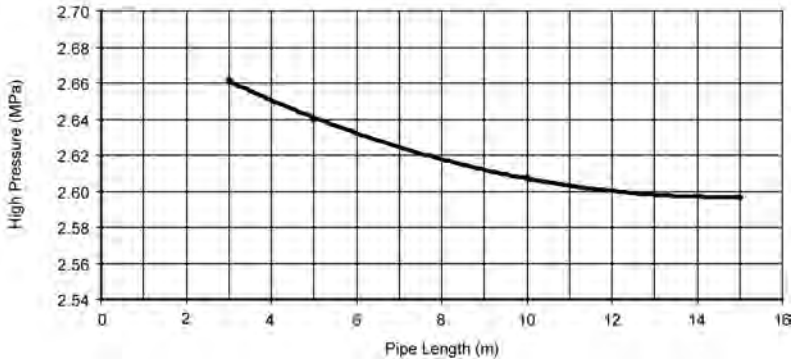
• Piping Length Characteristic

[Condition] Indoor temperature: 20/-°C, 7/6°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_h
Voltage: 230V





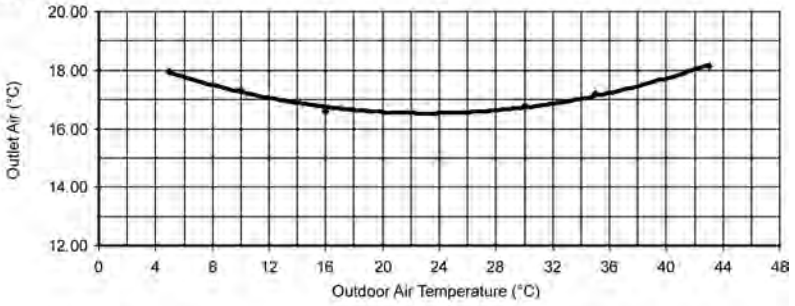


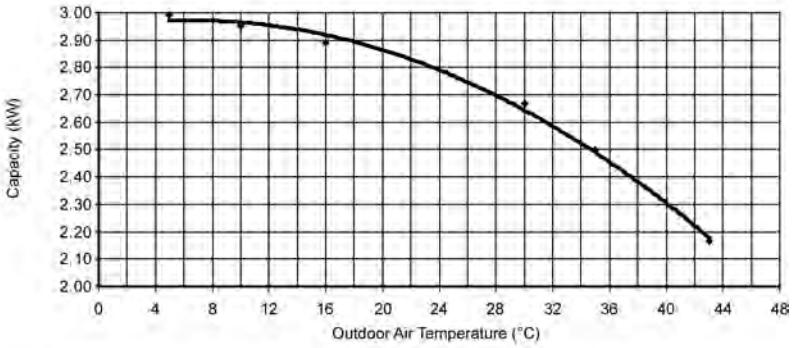


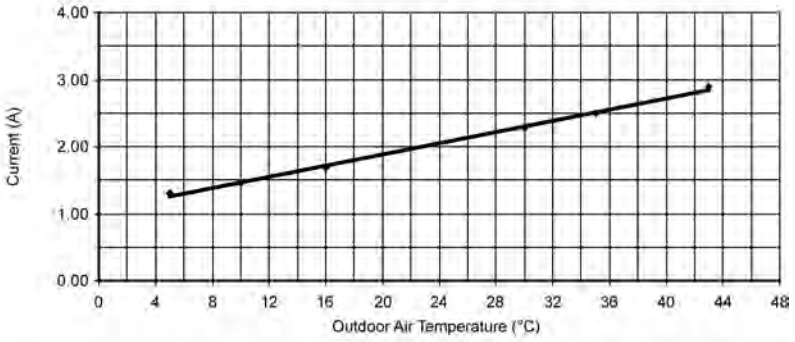
18.1.2. CU-E9MKE

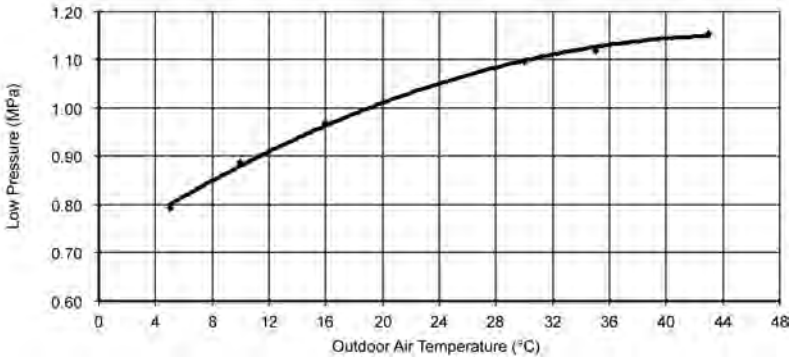
• Cooling Characteristic

[Condition] Indoor temperature: 27/19°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



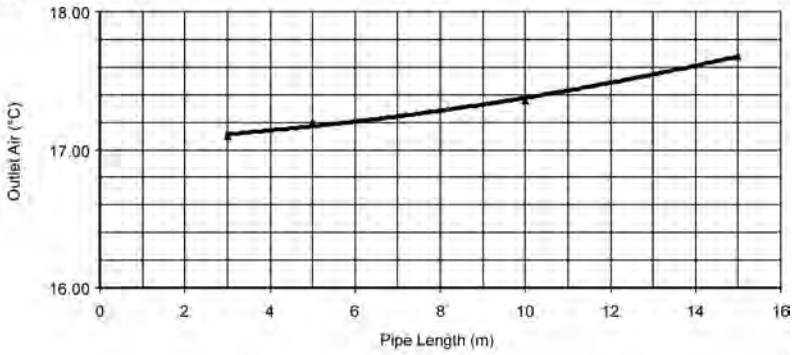


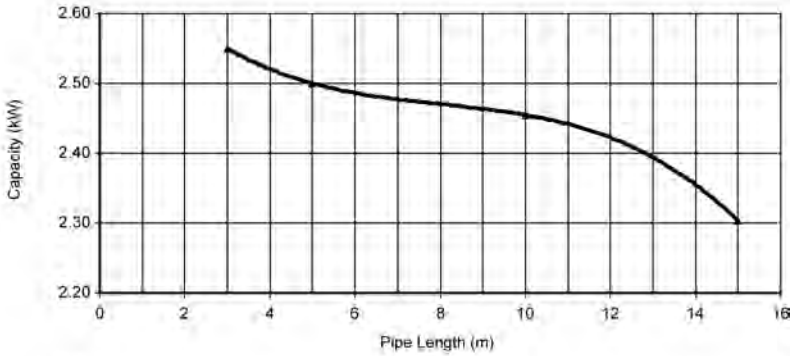


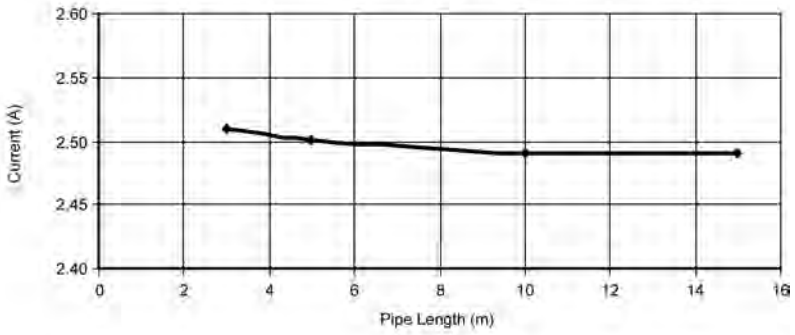


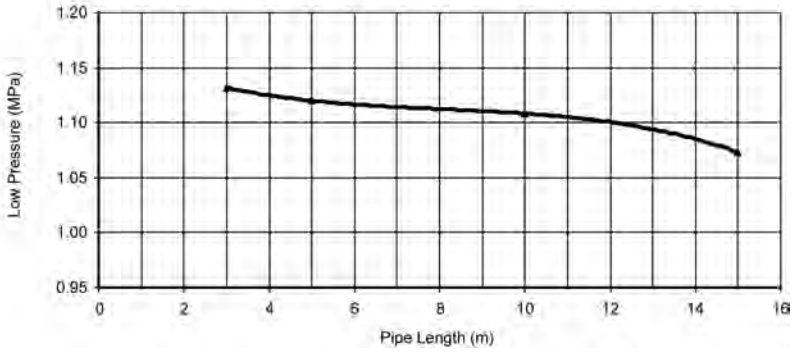
• Piping Length Characteristic

[Condition] Indoor temperature: 27/19°C, 35/-°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



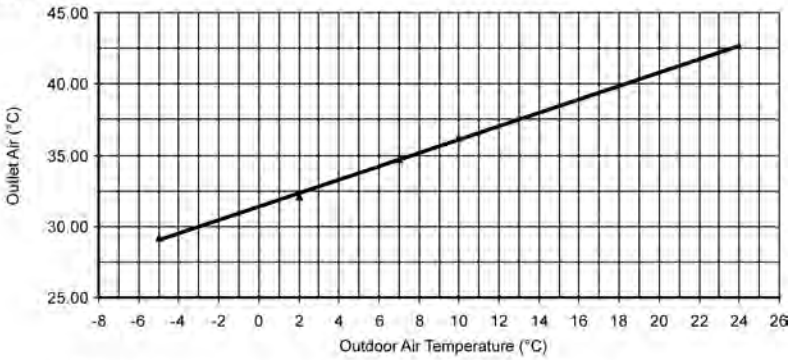


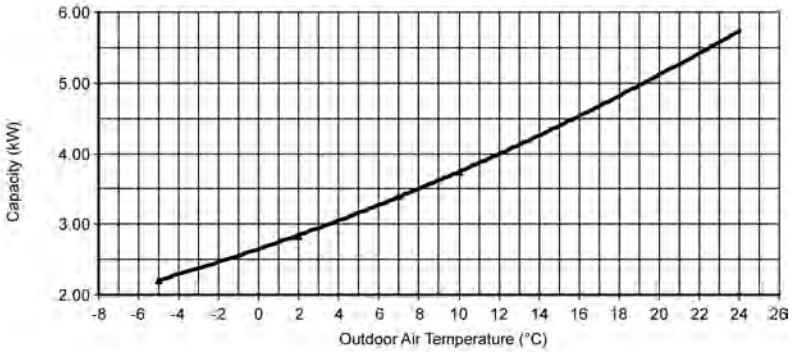


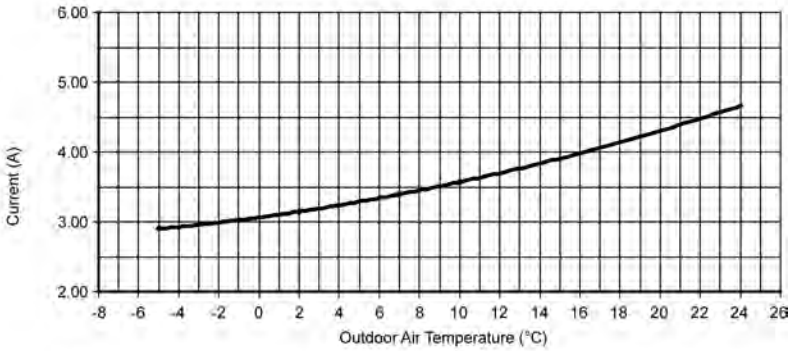


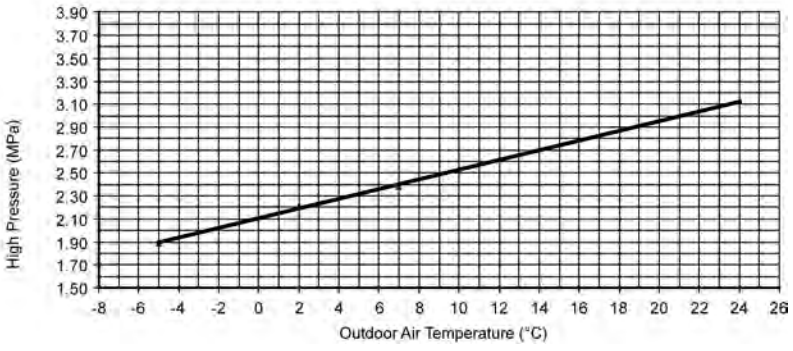
• Heating Characteristic

[Condition] Indoor temperature: 20/-°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_h
Voltage: 230V



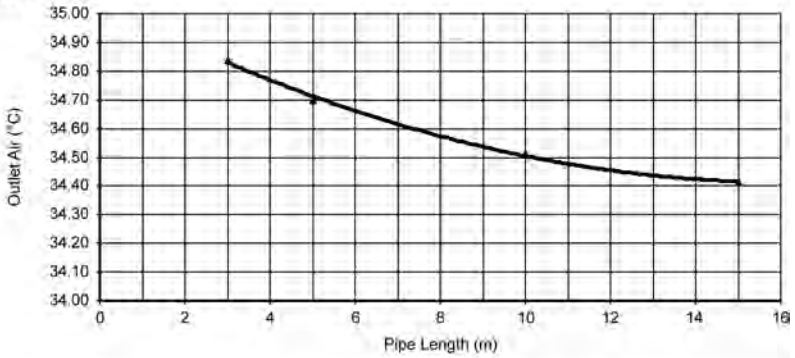


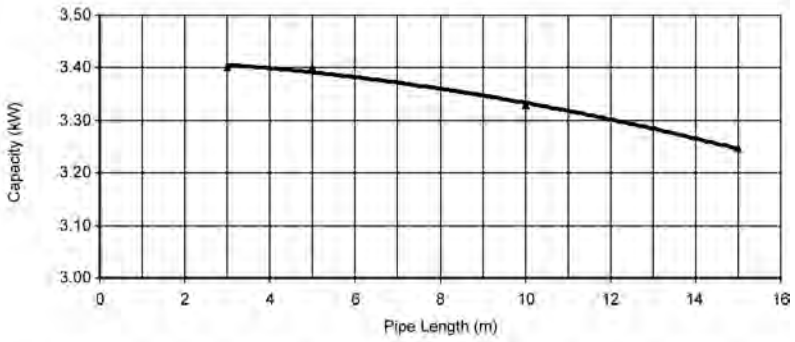


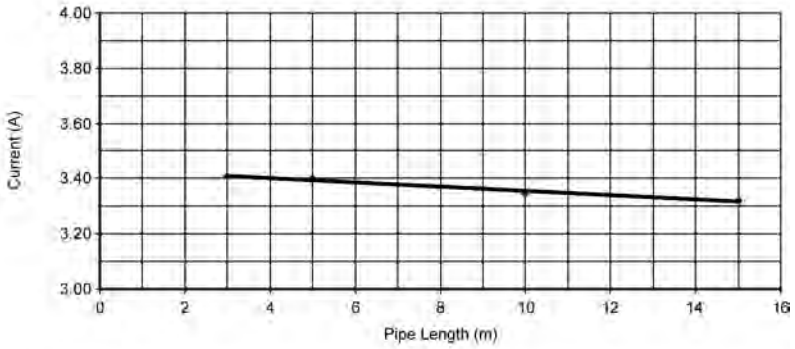


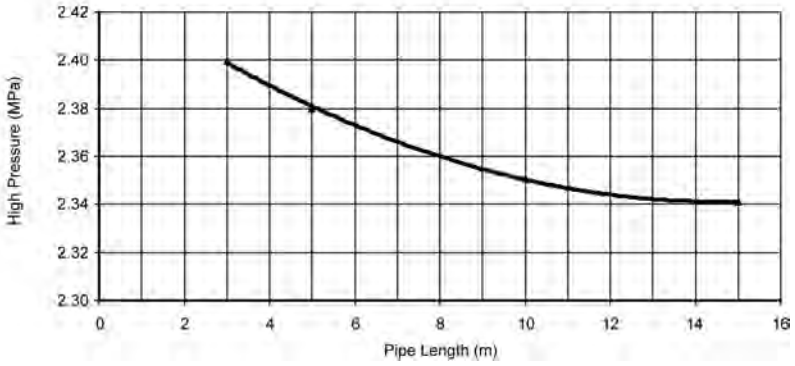
• Piping Length Characteristic

[Condition] Indoor temperature: 20/-°C, 7/6°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_{fi}
Voltage: 230V





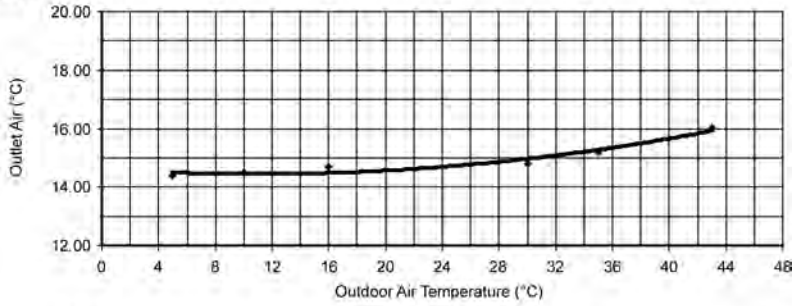


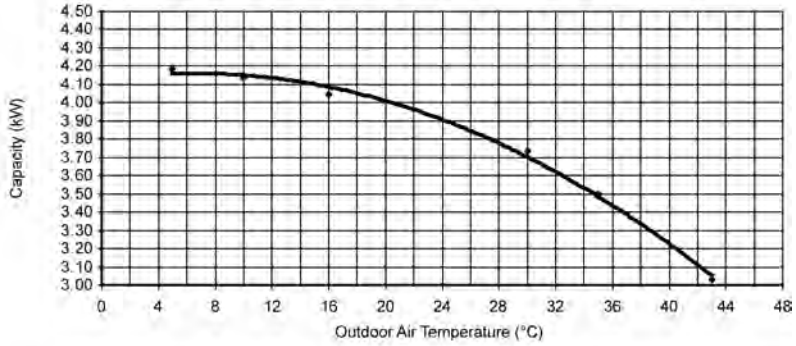


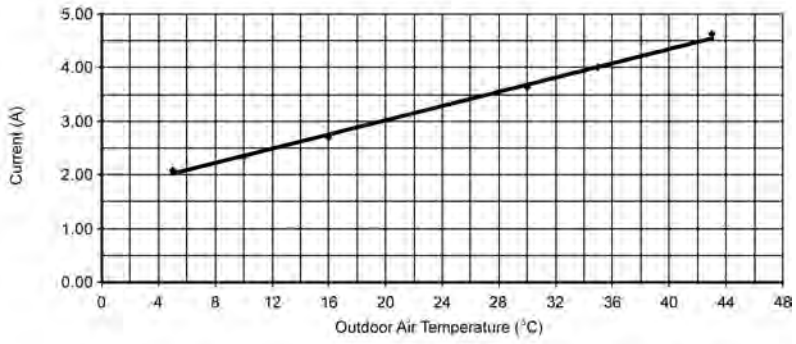
18.1.3. CU-E12MKE

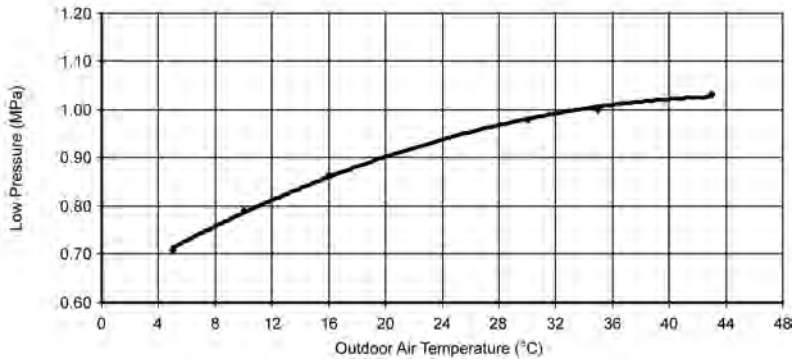
• Cooling Characteristic

[Condition] Indoor temperature: 27/19°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



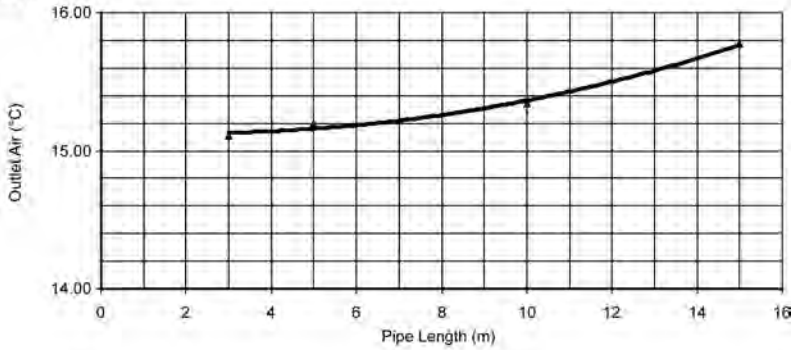


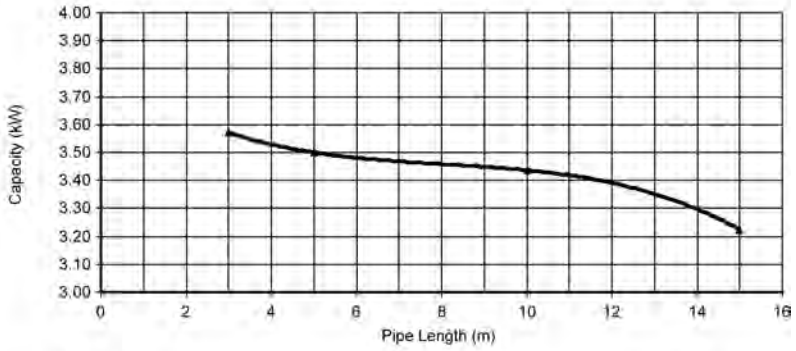


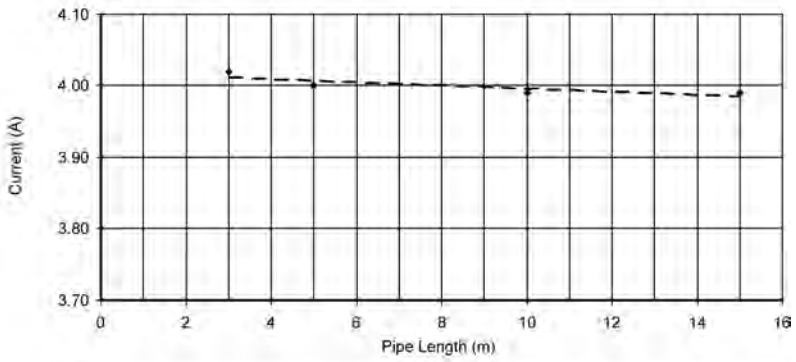


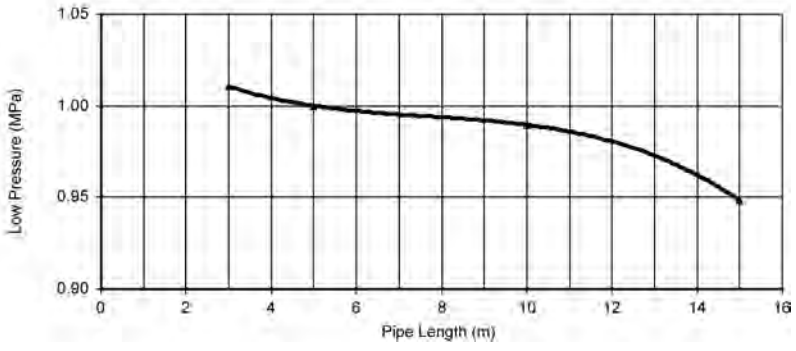
• Piping Length Characteristic

[Condition] Indoor temperature: 27/19°C, 35/-°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



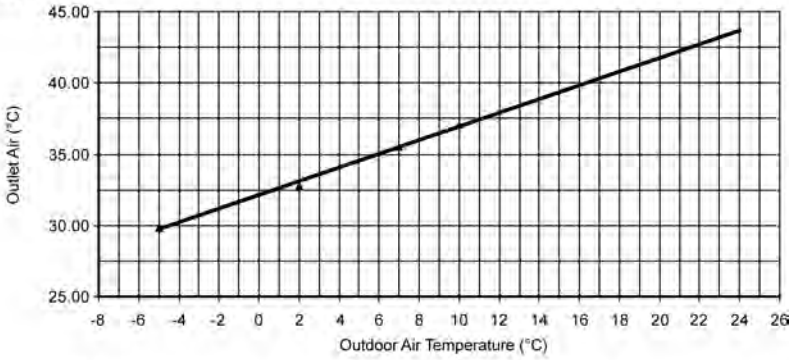


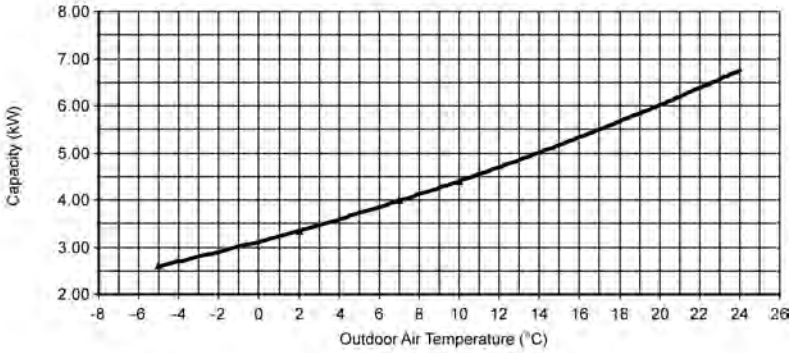


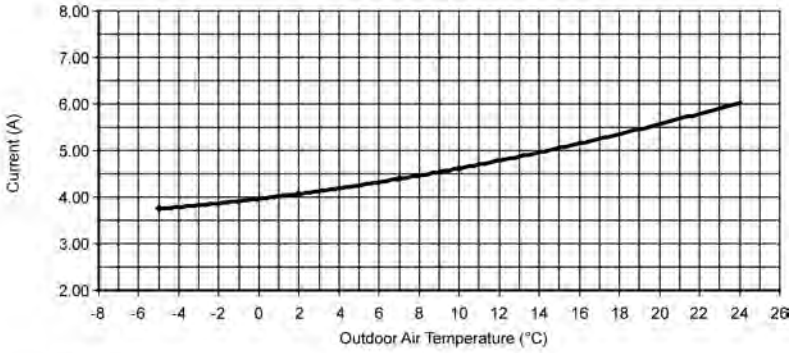


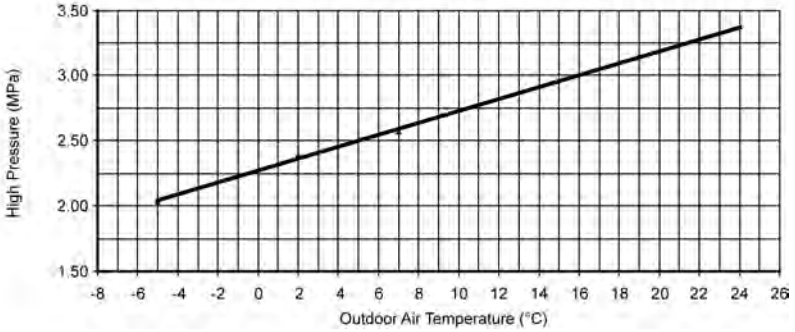
• Heating Characteristic

[Condition] Indoor temperature: 20/-°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_h
Voltage: 230V



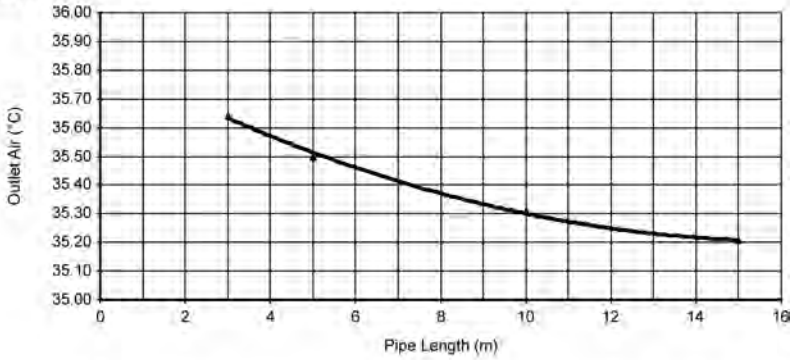


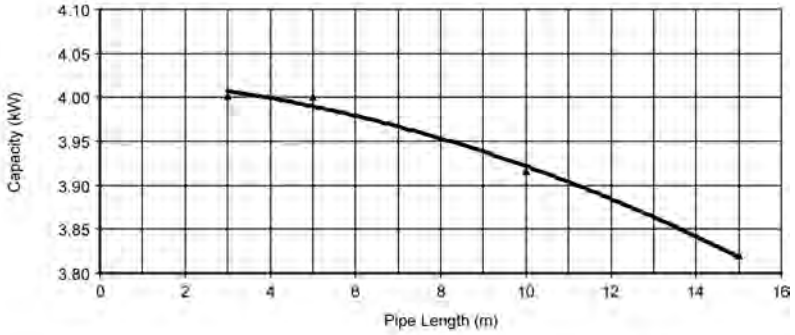


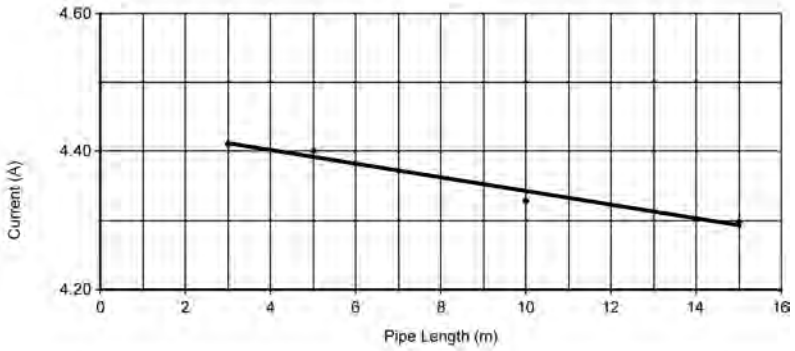


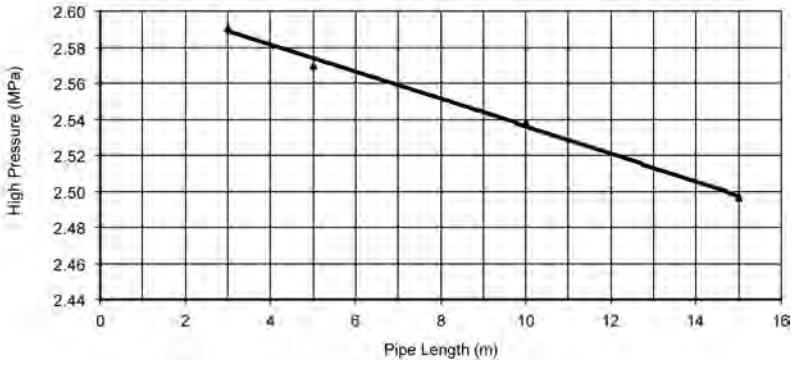
• Piping Length Characteristic

[Condition] Indoor temperature: 20/-°C, 7/6°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_{fi}
Voltage: 230V





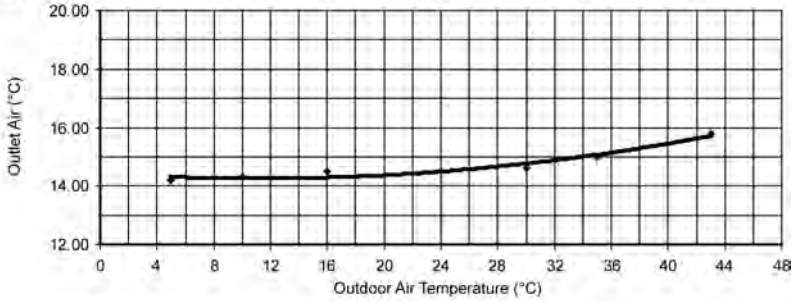


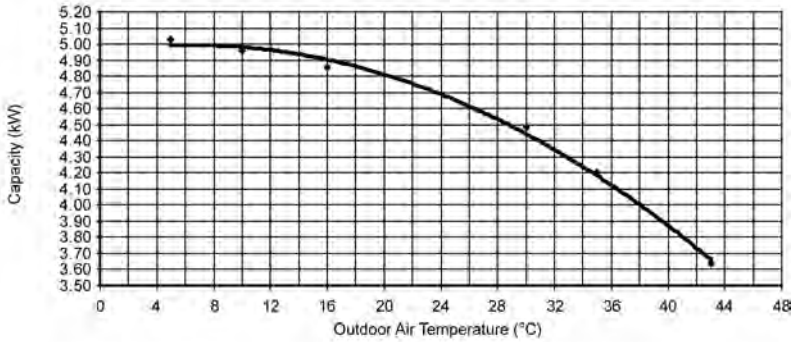


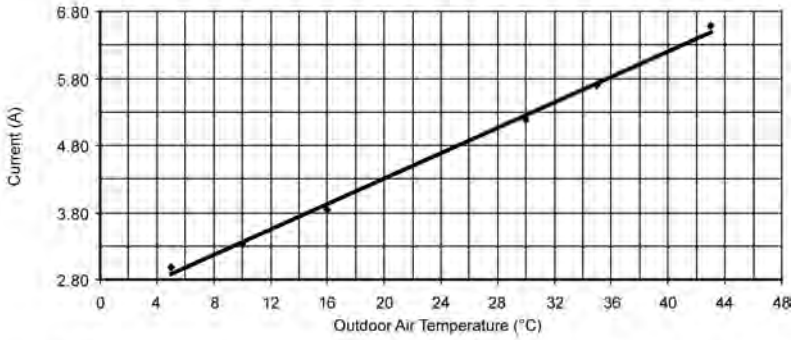
18.1.4. CU-E15MKE

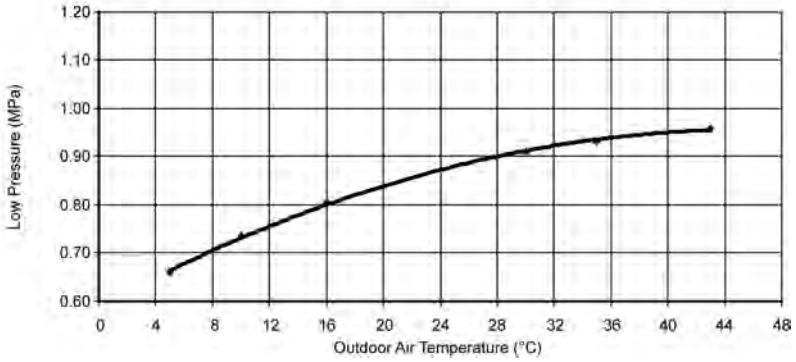
• Cooling Characteristic

[Condition] Indoor temperature: 27/19°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



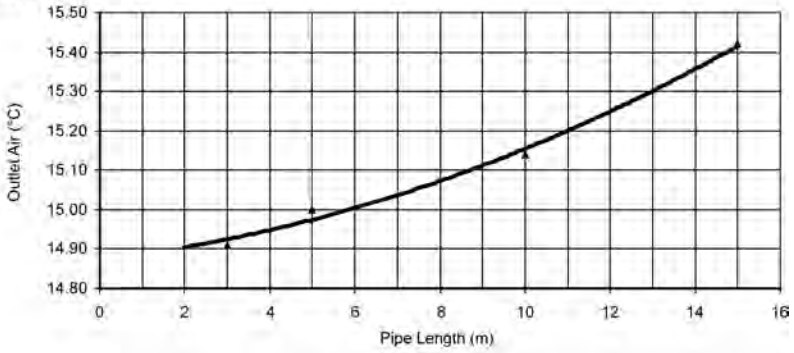


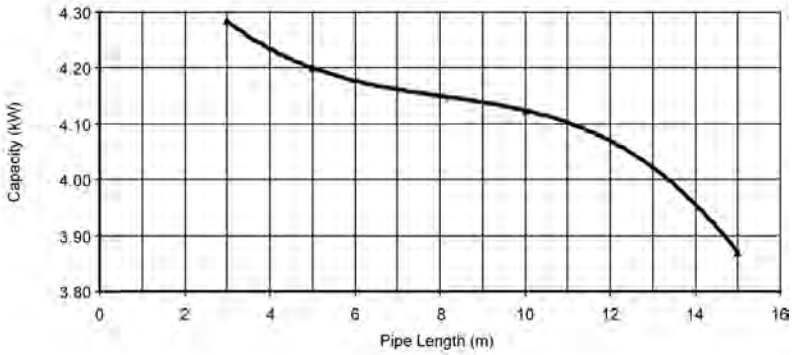


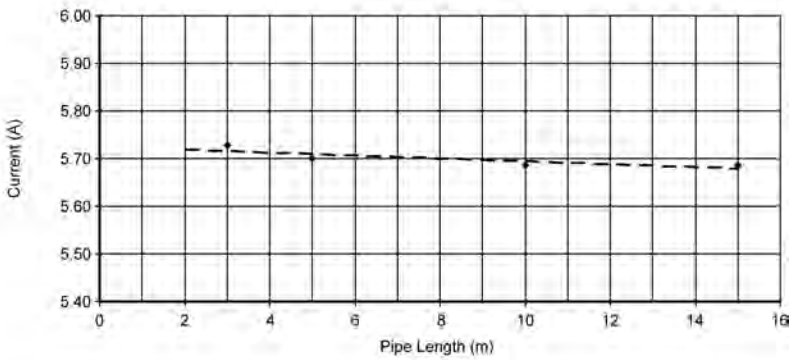


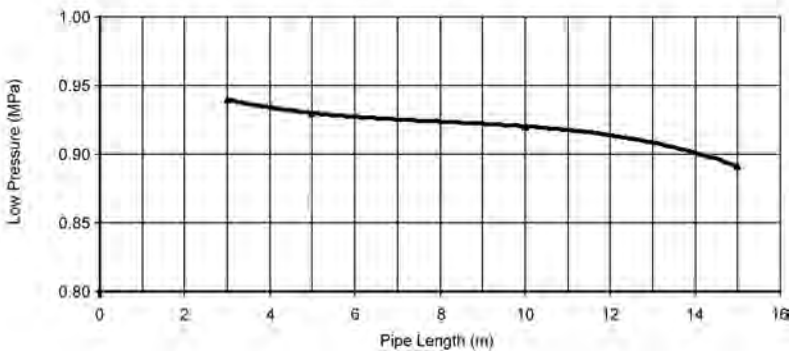
• Piping Length Characteristic

[Condition] Indoor temperature: 27/19°C, 35/-°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



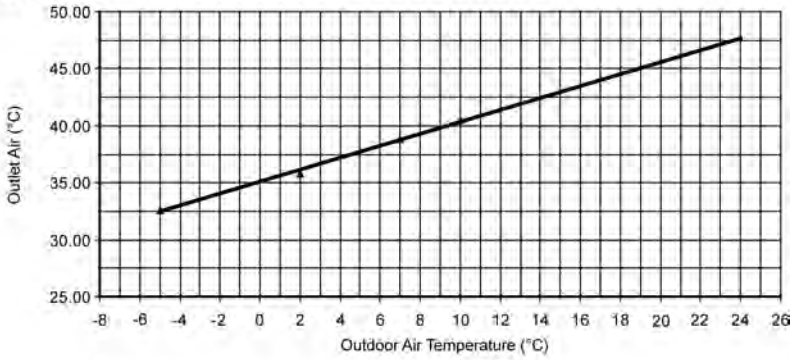


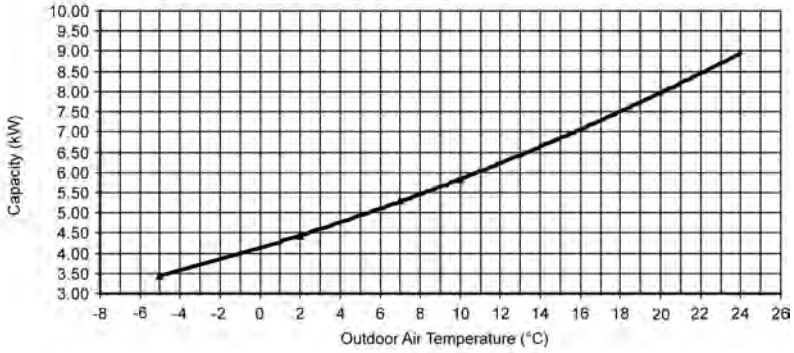


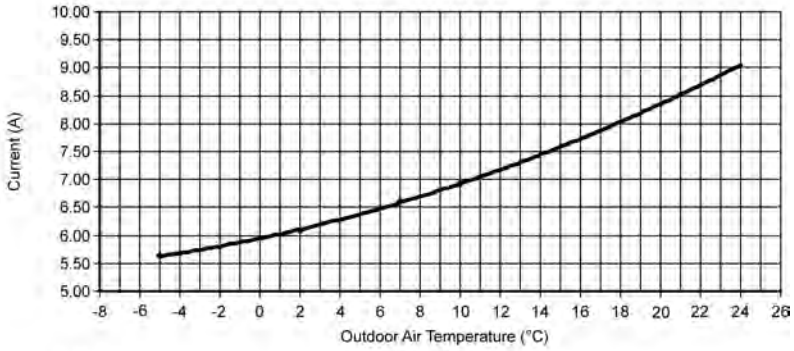


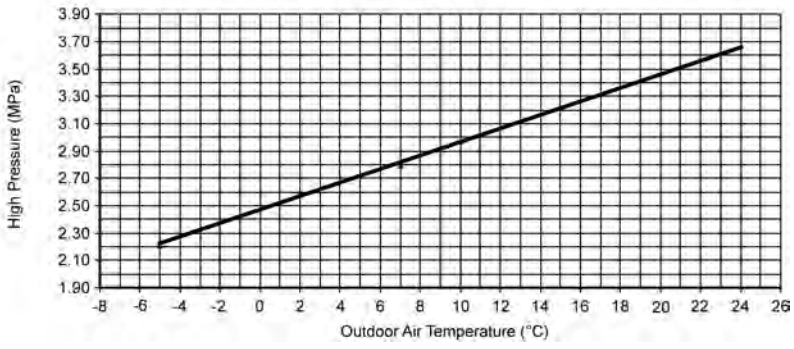
• Heating Characteristic

[Condition] Indoor temperature: 20/-°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_h
Voltage: 230V



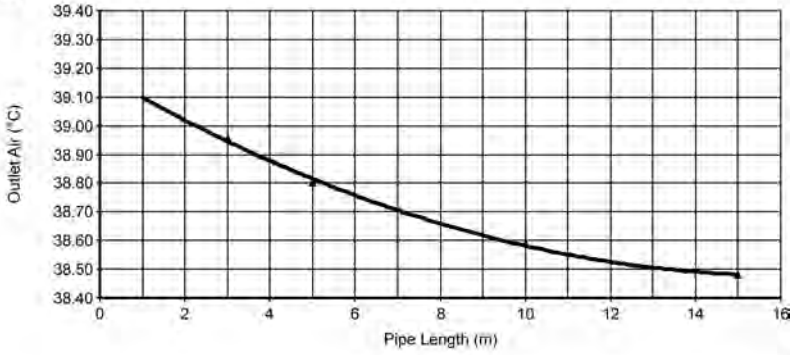


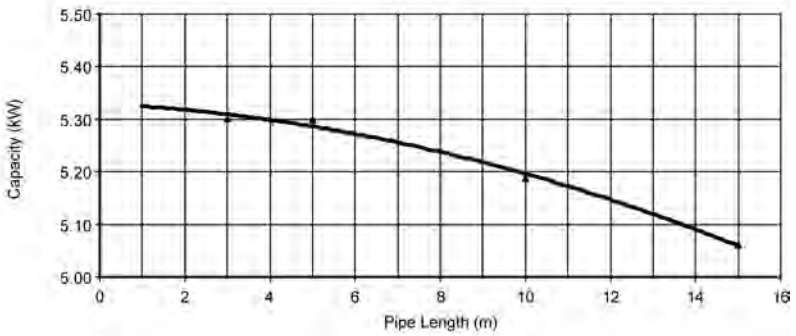


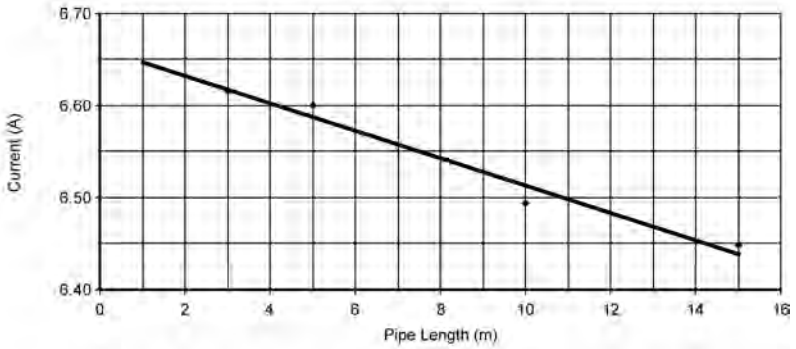


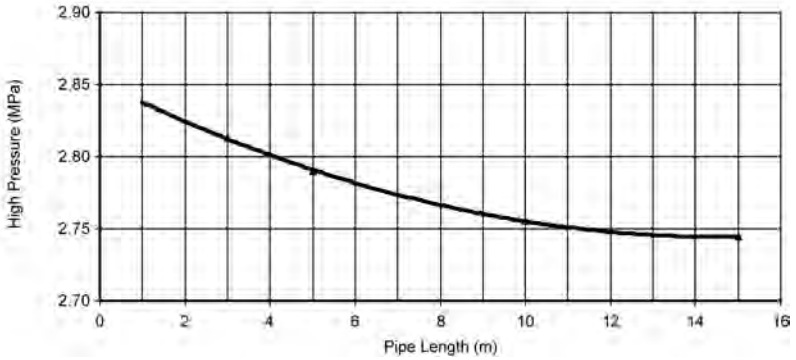
• Piping Length Characteristic

[Condition] Indoor temperature: 20/-°C, 7/6°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_{fi}
Voltage: 230V





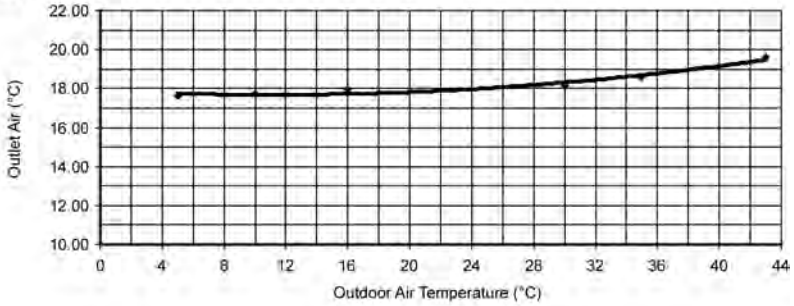


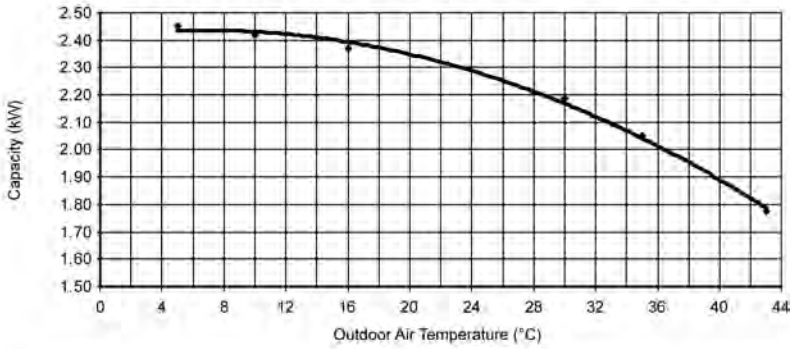


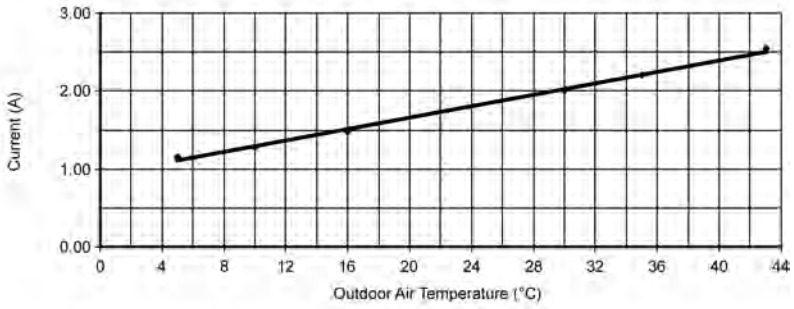
18.1.5. CU-E7MKE-3

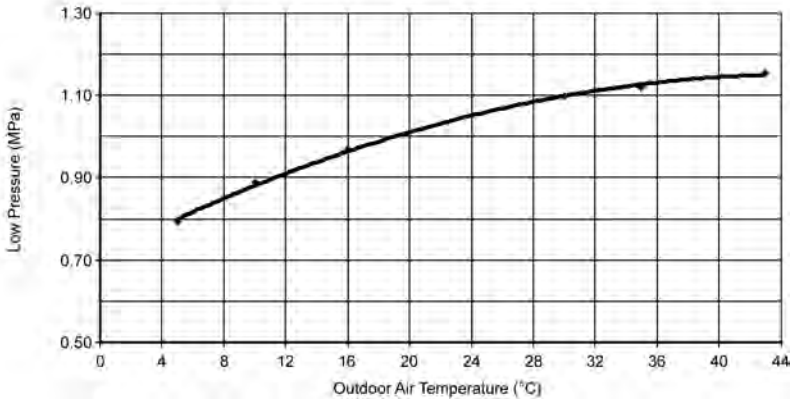
• Cooling Characteristic

[Condition] Indoor temperature: 27/19°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



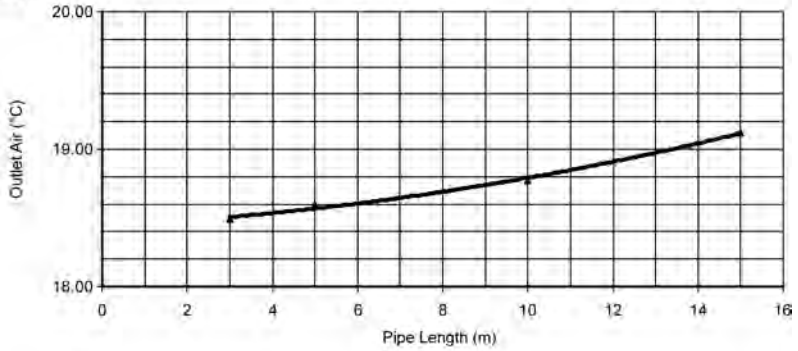


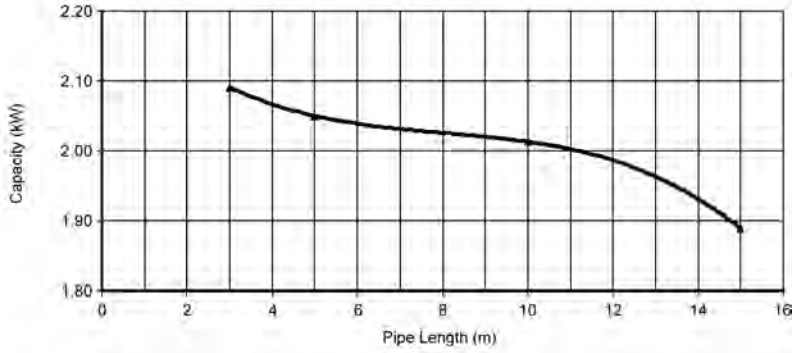


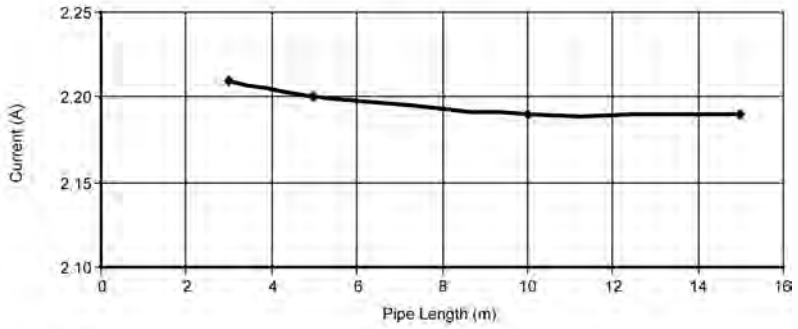


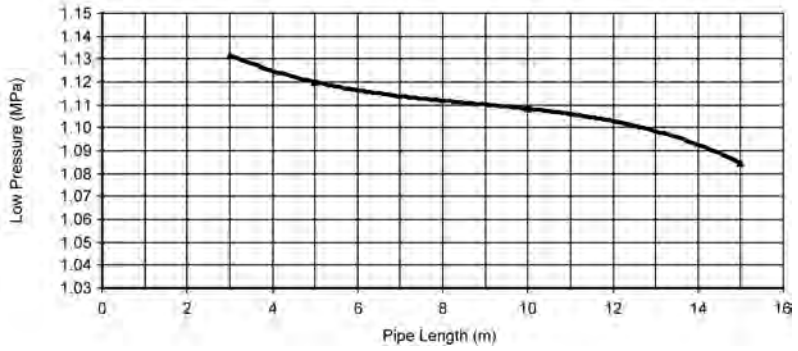
• Piping Length Characteristic

[Condition] Indoor temperature: 27/19°C, 35/-°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



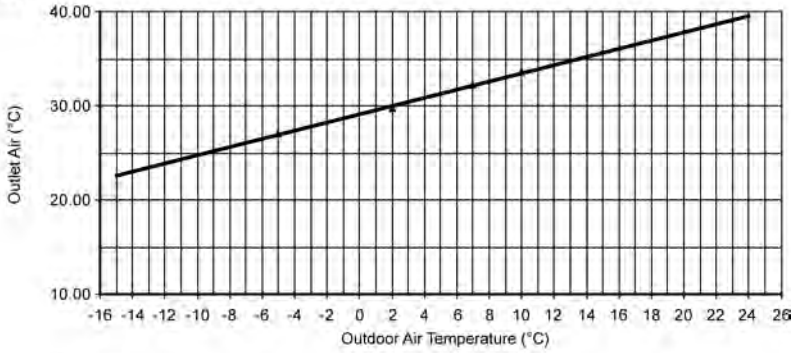


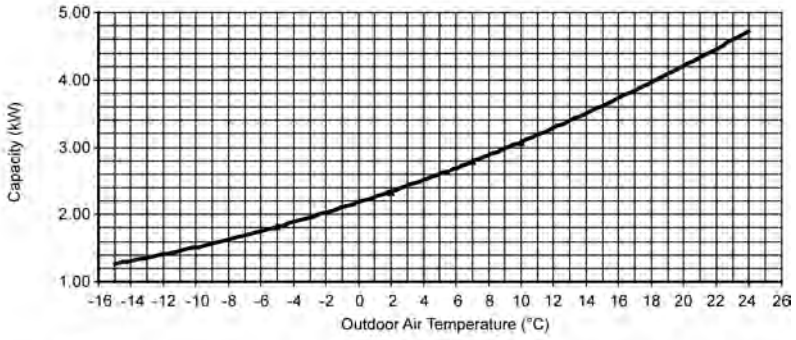


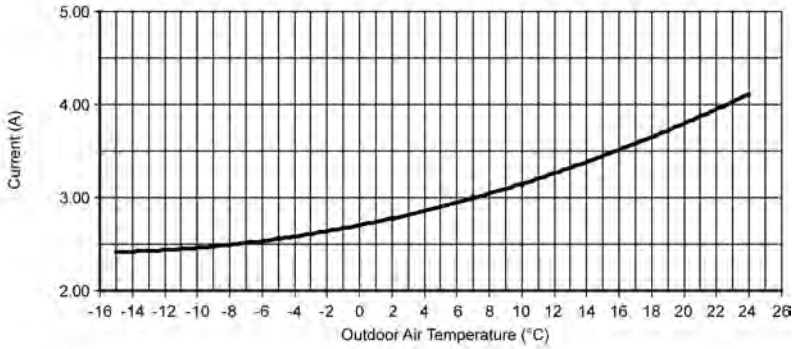


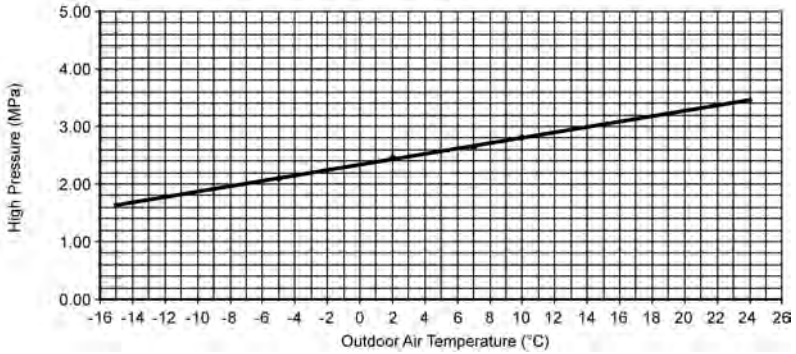
• Heating Characteristic

[Condition] Indoor temperature: 20/-°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_h
Voltage: 230V



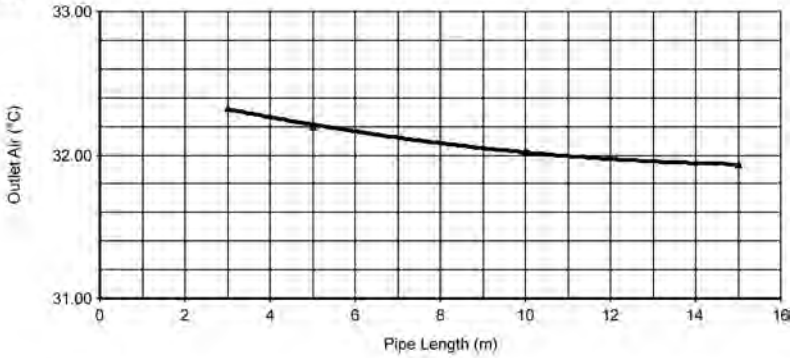


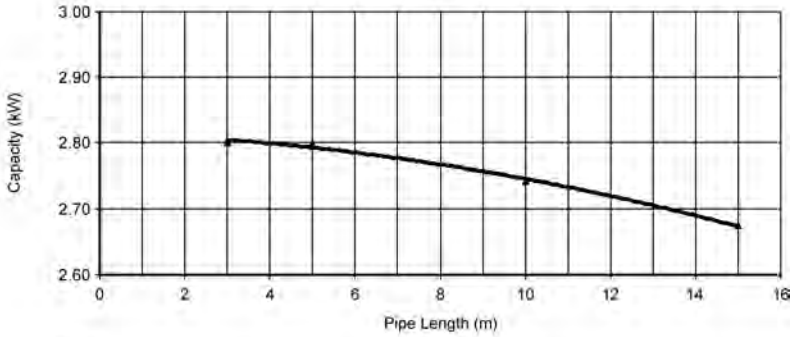


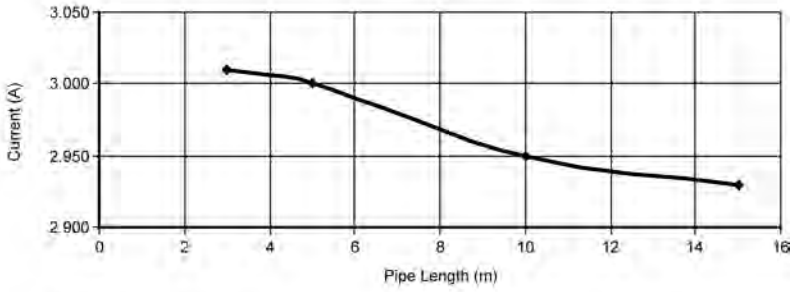


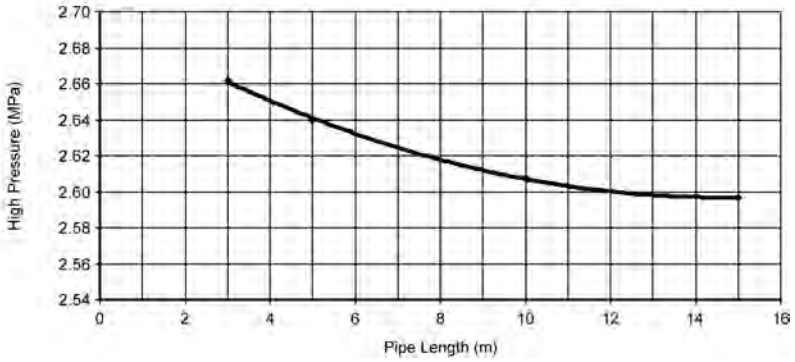
• Piping Length Characteristic

[Condition] Indoor temperature: 20/-°C, 7/6°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_{hi}
Voltage: 230V





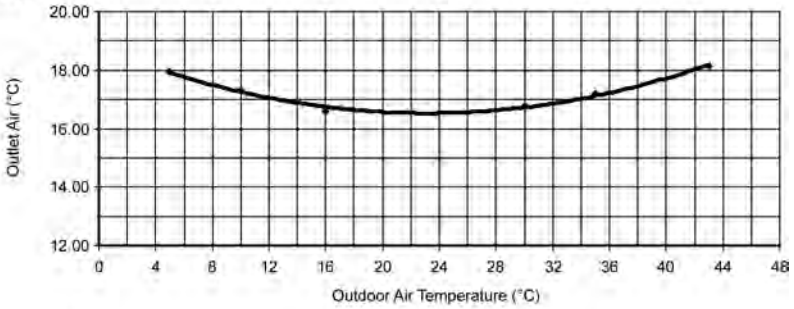


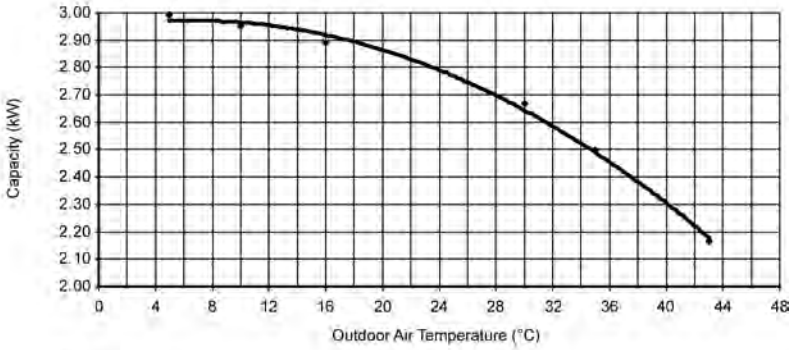


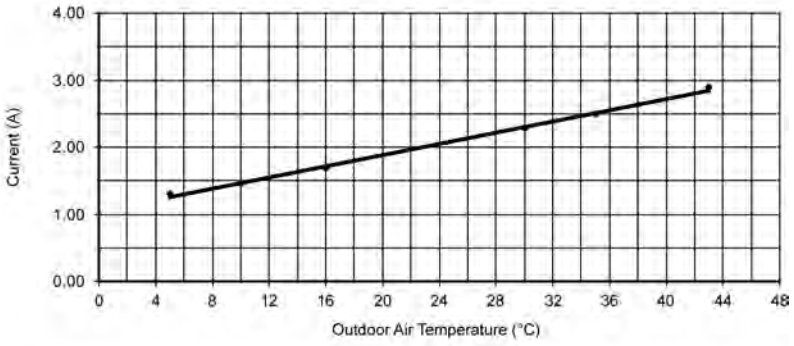
18.1.6. CU-E9MKE-3

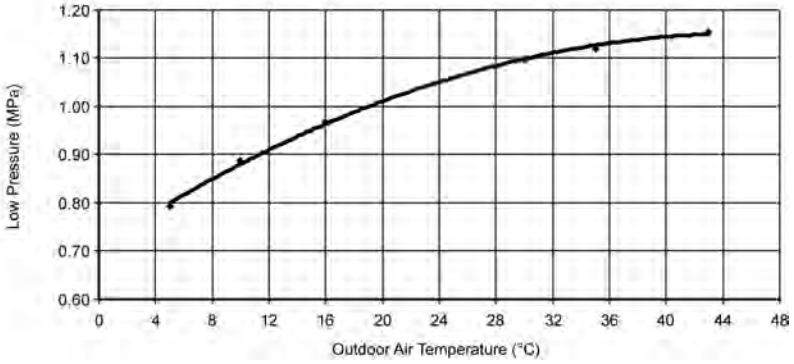
• Cooling Characteristic

[Condition] Indoor temperature: 27/19°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



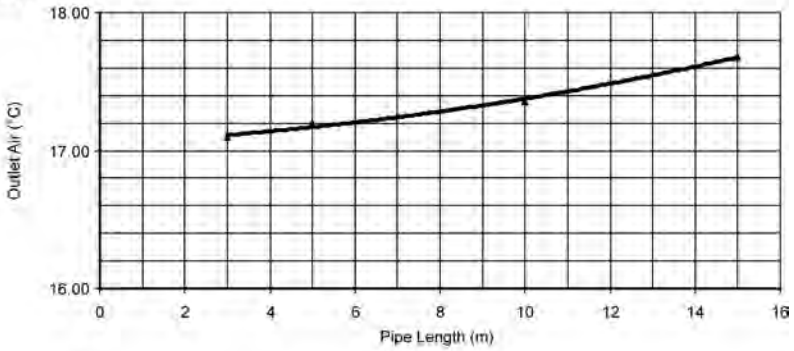


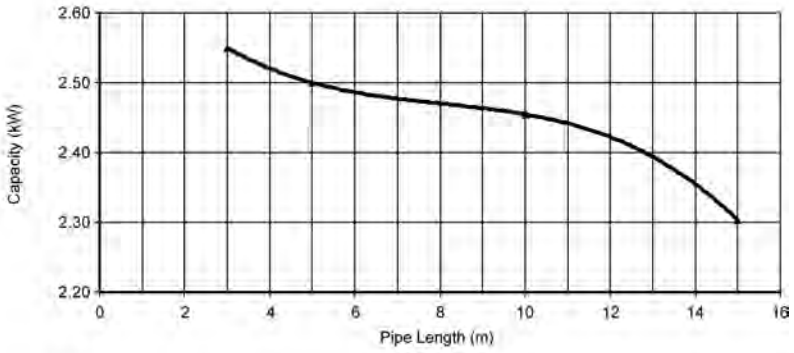


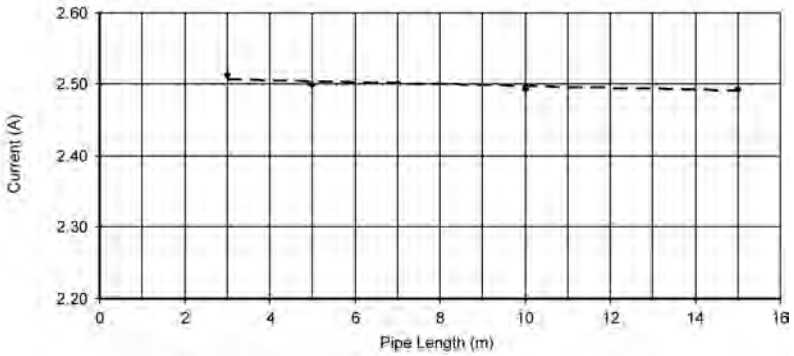


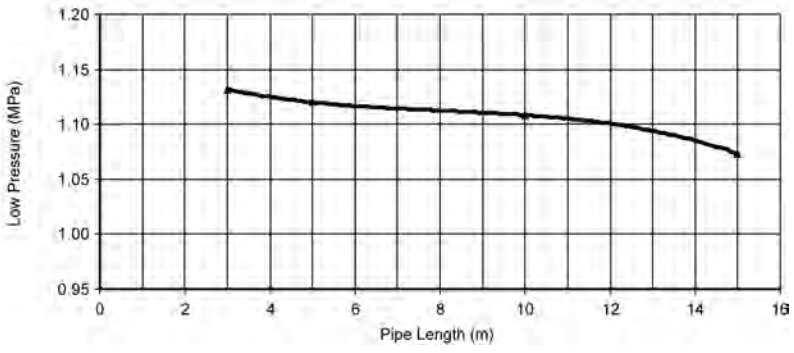
• Piping Length Characteristic

[Condition] Indoor temperature: 27/19°C, 35/-°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



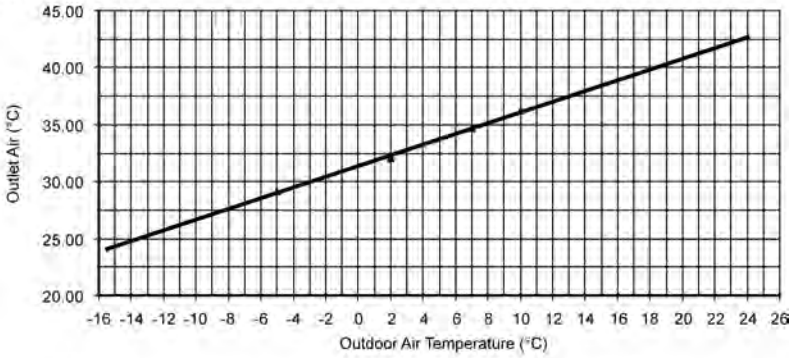


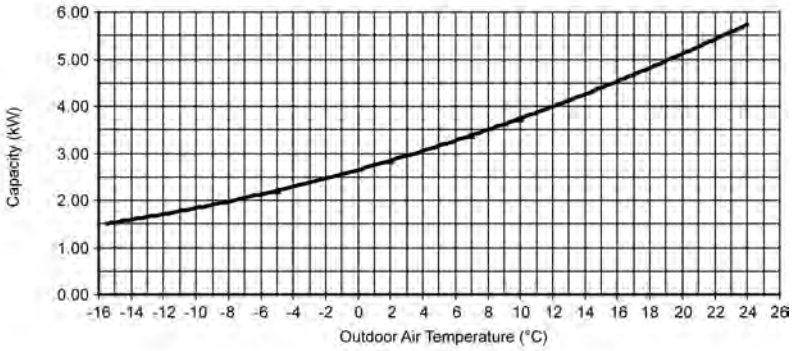


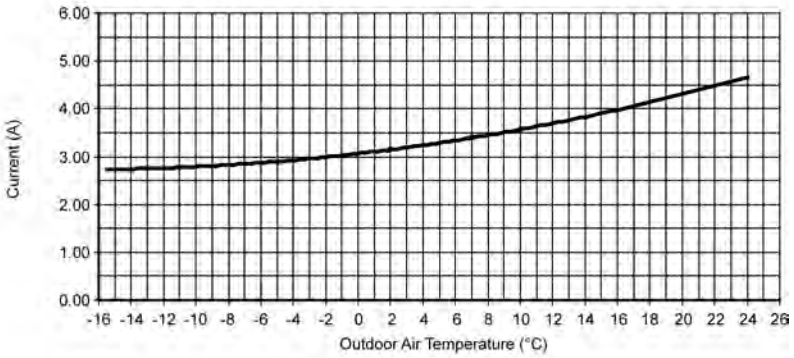


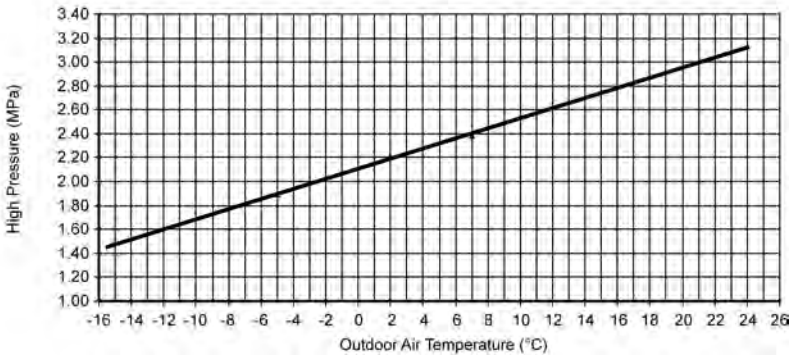
• Heating Characteristic

[Condition] Indoor temperature: 20/-°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_h
Voltage: 230V



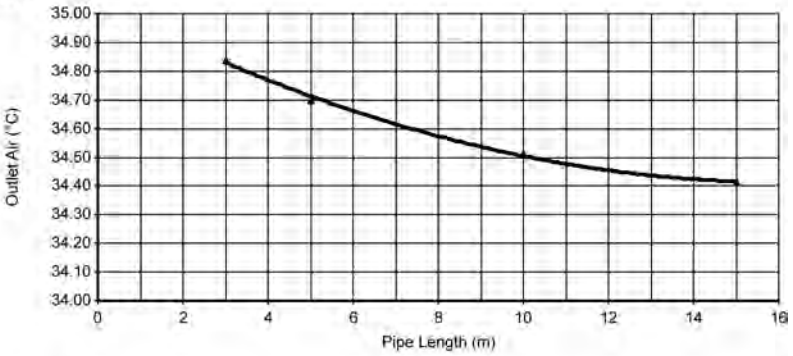


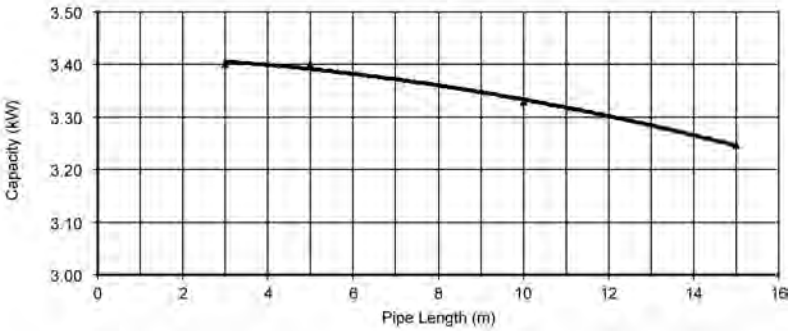


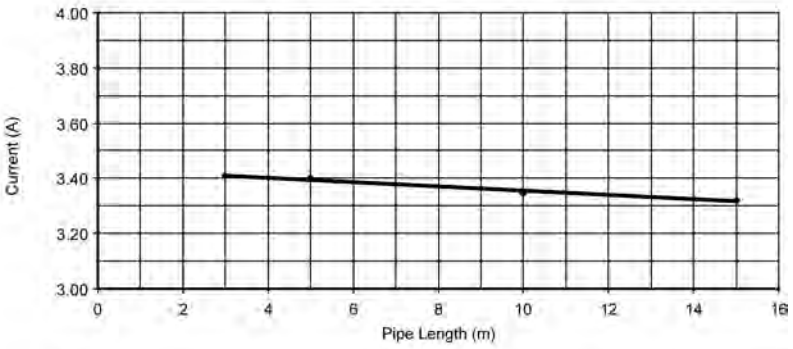


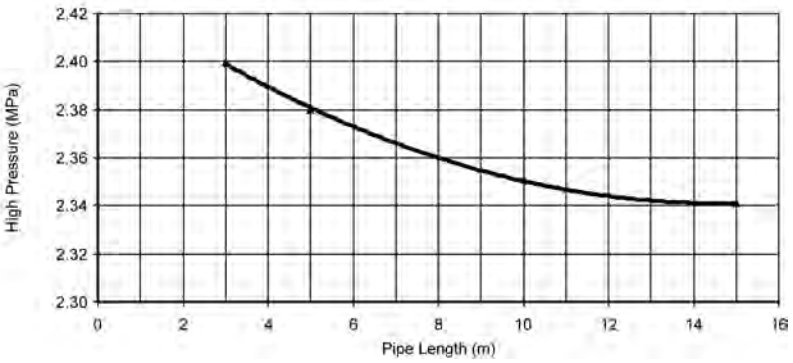
• Piping Length Characteristic

[Condition] Indoor temperature: 20/-°C, 7/6°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_{fi}
Voltage: 230V





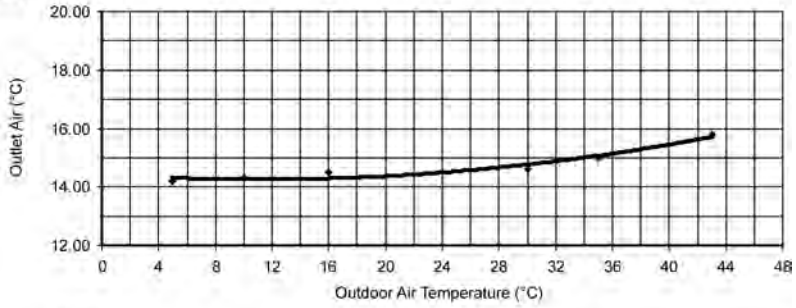


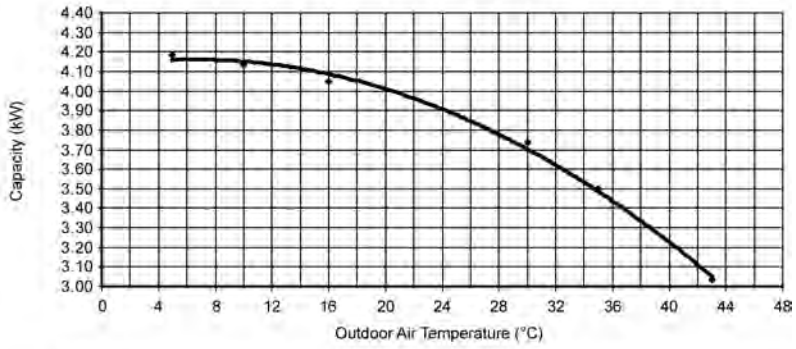


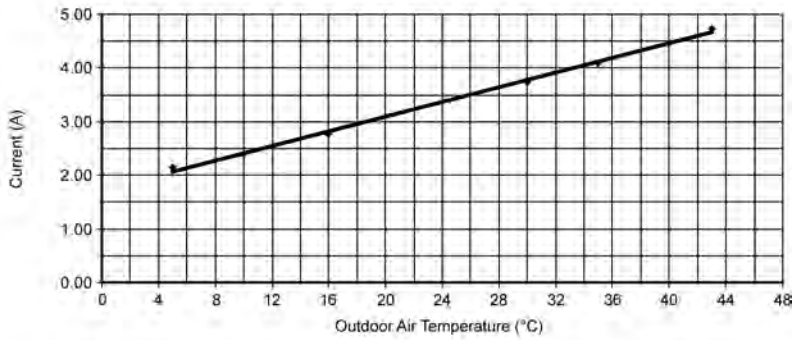
18.1.7. CU-E12MKE-3

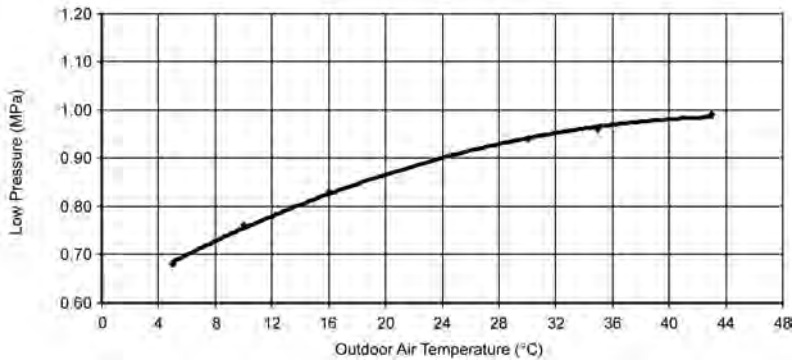
• Cooling Characteristic

[Condition] Indoor temperature: 27/19°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



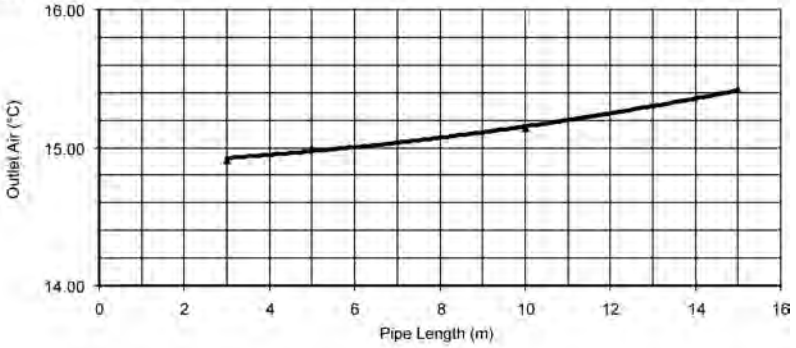


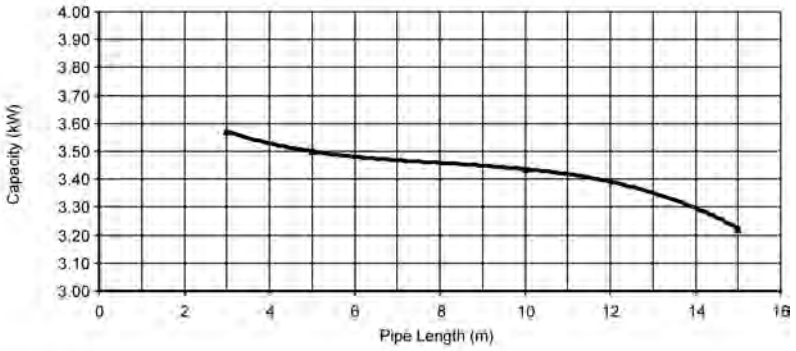


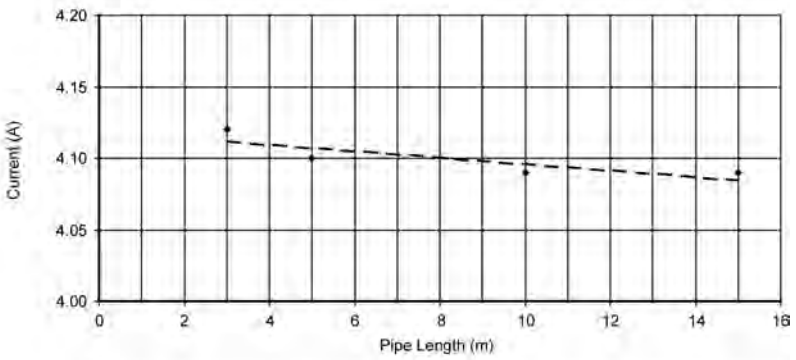


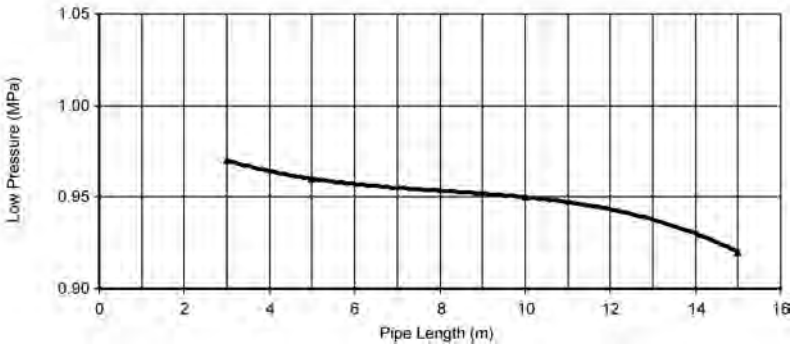
• Piping Length Characteristic

[Condition] Indoor temperature: 27/19°C, 35/-°C
Remote condition: High fan speed, Cool 16°C
Comp. Hz: F_c
Voltage: 230V



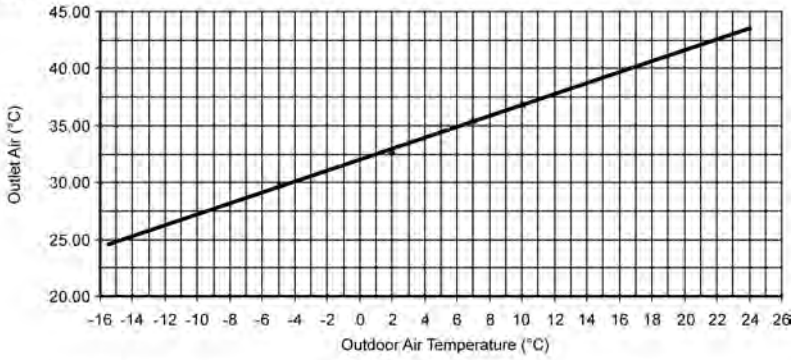


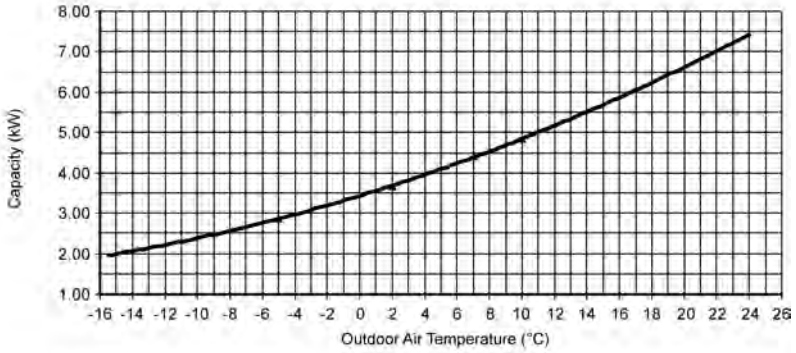


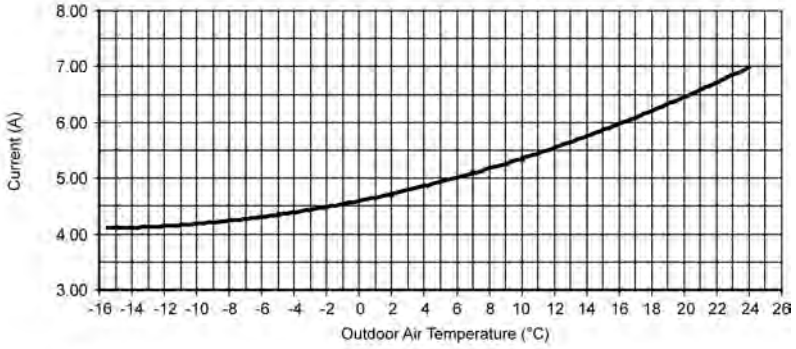


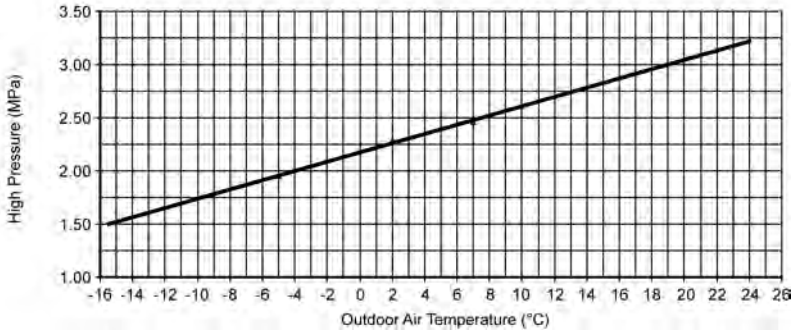
• Heating Characteristic

[Condition] Indoor temperature: 20/-°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_h
Voltage: 230V



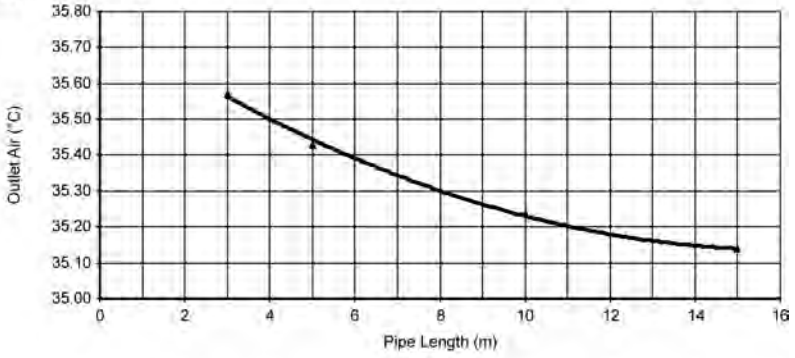


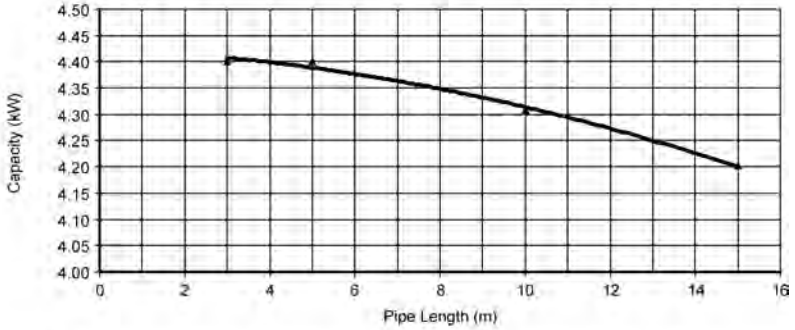


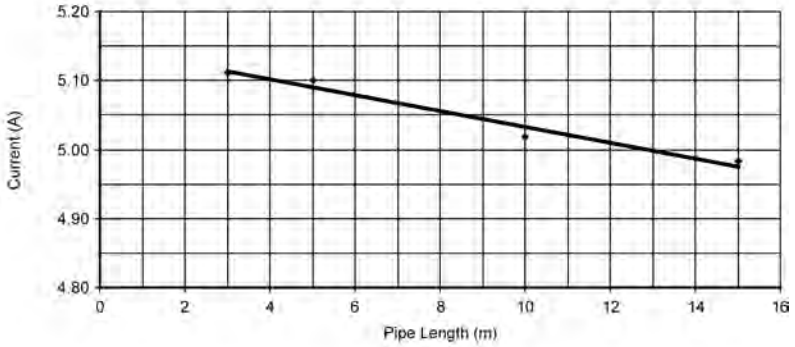


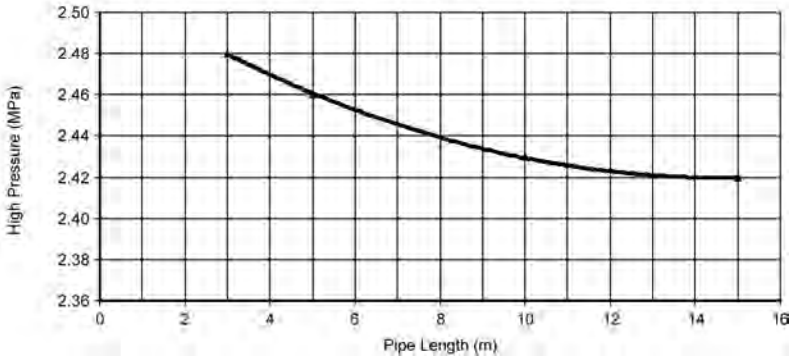
• Piping Length Characteristic

[Condition] Indoor temperature: 20/-°C, 7/6°C
Remote condition: High fan speed, Heat 30°C
Comp. Hz: F_h
Voltage: 230V





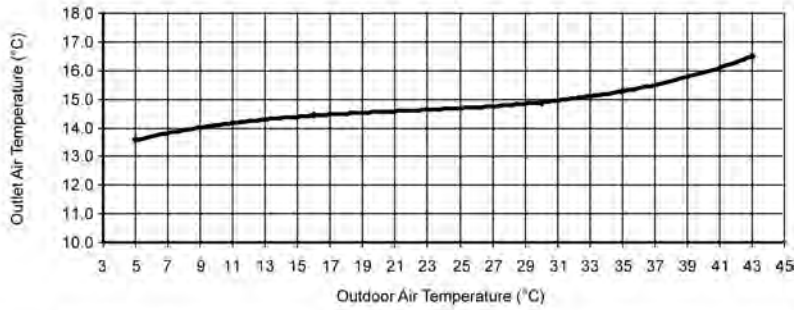


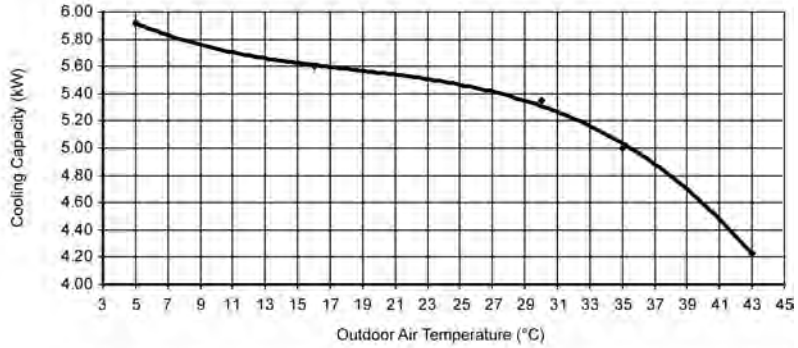


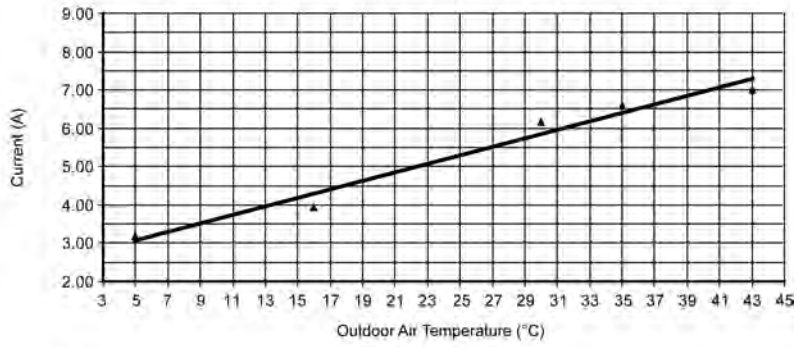
18.1.8. CU-E18MKE

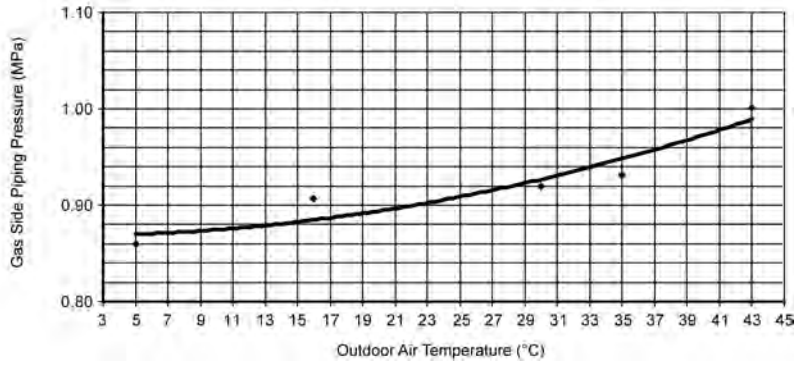
Cooling Characteristic at Different Outdoor Air Temperature

Condition
Indoor room temperature: 27/19°C
Remote control setting: HI FAN, COOL 16°C
Compressor frequency: F_C
Voltage: 230 V



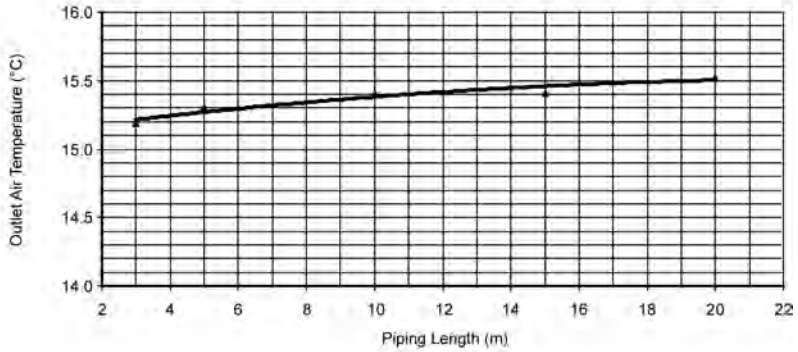


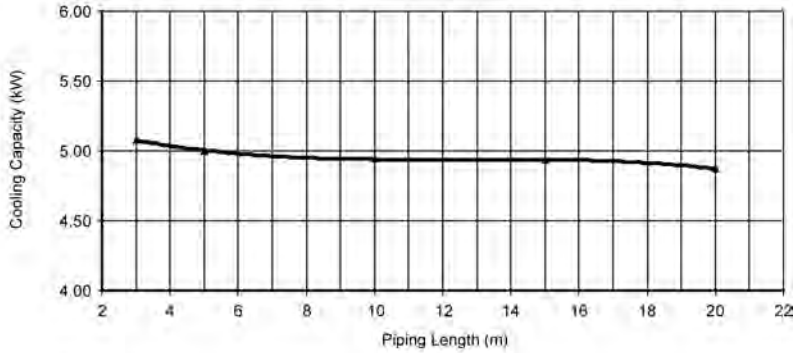


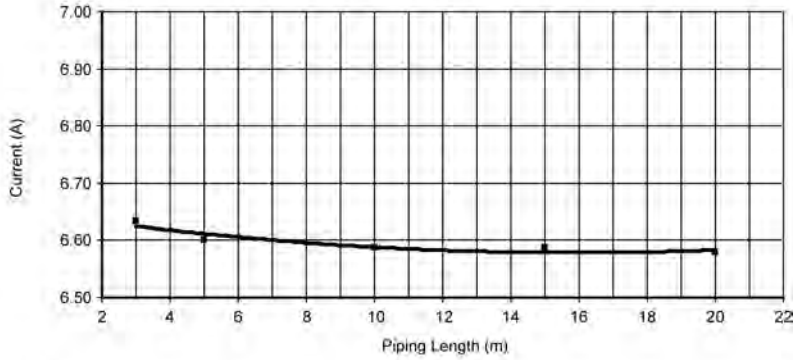


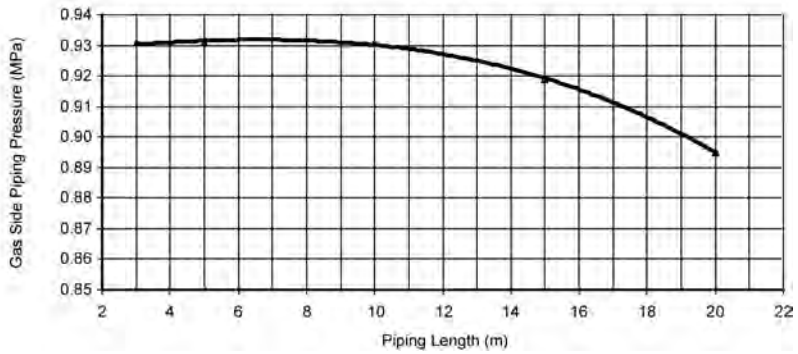
Cooling Characteristic at Different Piping Length

Condition
Indoor room temperature: 27/19°C
Remote control setting: HI FAN, COOL 16°C
Compressor frequency: F_C
Voltage: 230 V



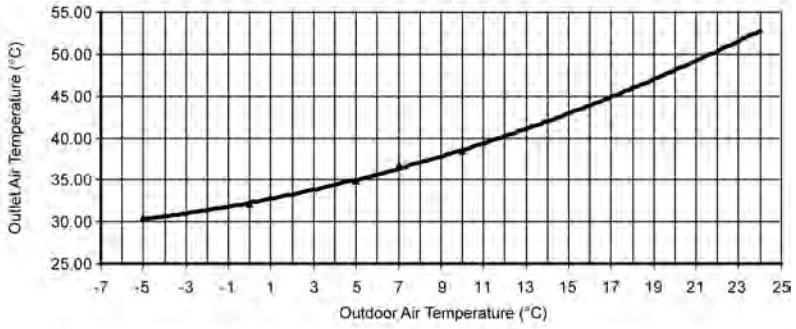


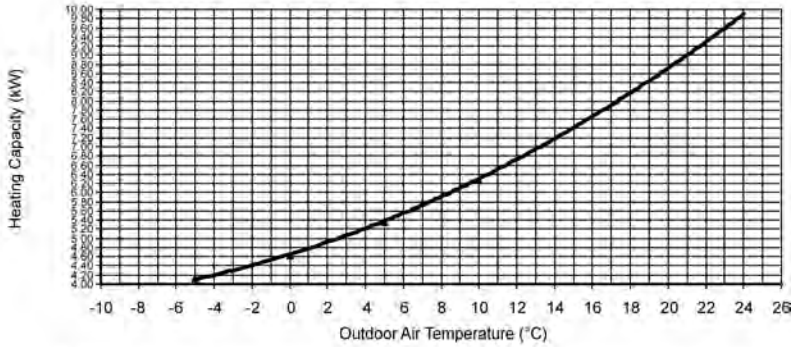


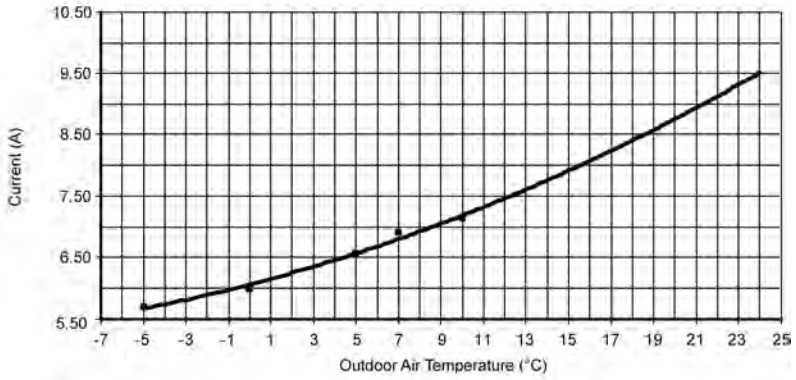


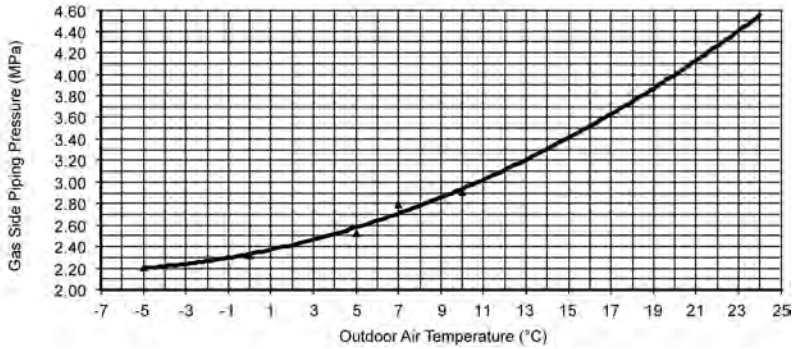
Heating Characteristic at Different Outdoor Air Temperature

Condition
Indoor room temperature: 20/-°C
Remote control setting: HI FAN, HEAT 30°C
Compressor frequency: F_h
Voltage: 230 V



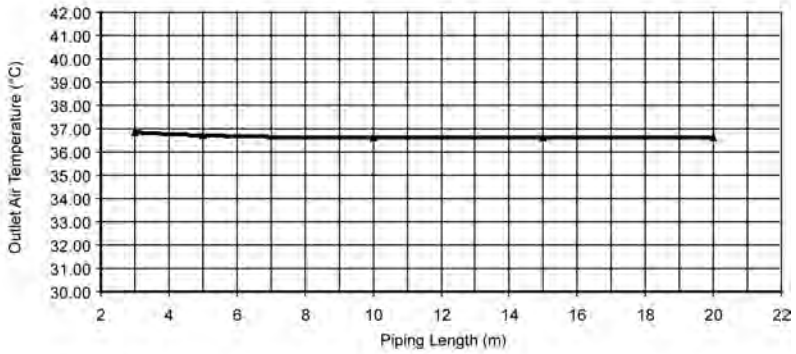


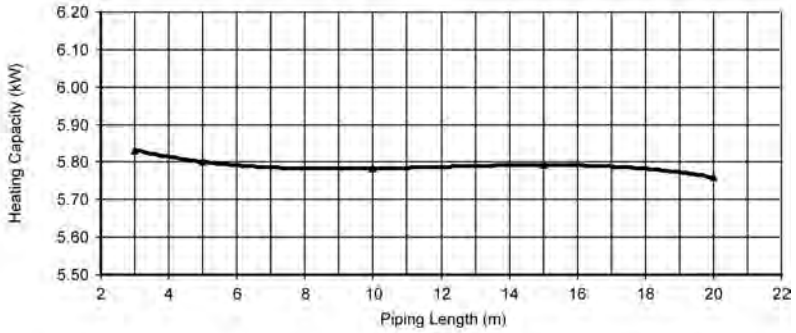


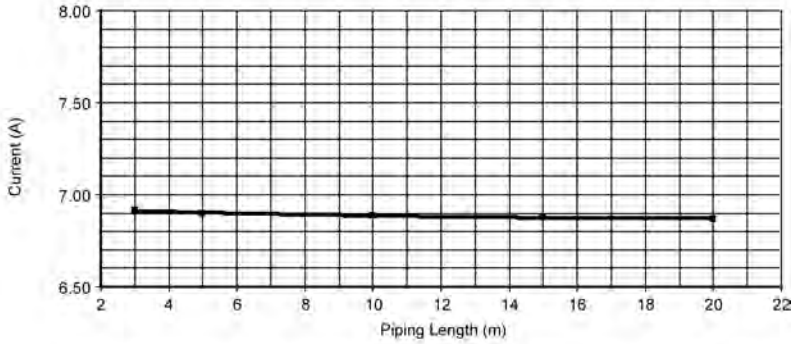


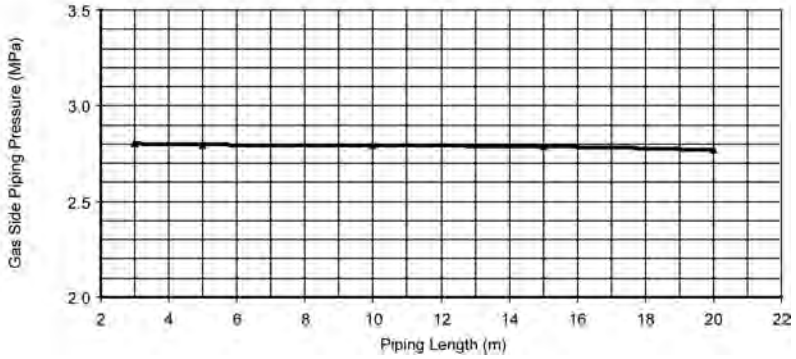
Heating Characteristic at Different Piping Length

Condition
Indoor room temperature: 20/-°C. 7/6°C
Remote control setting: HI FAN, HEAT 30°C
Compressor frequency: F_h
Voltage: 230 V





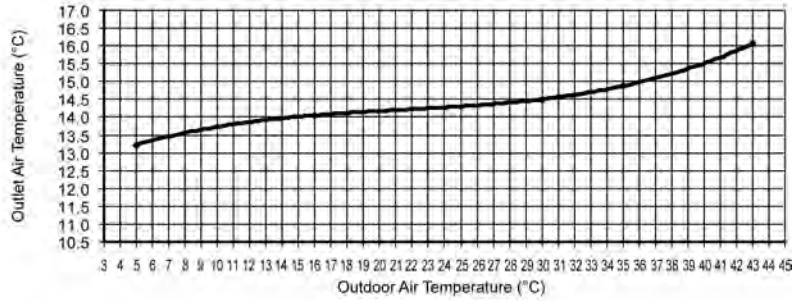


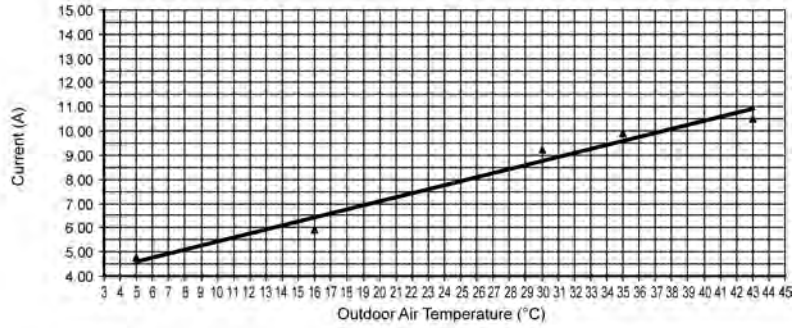


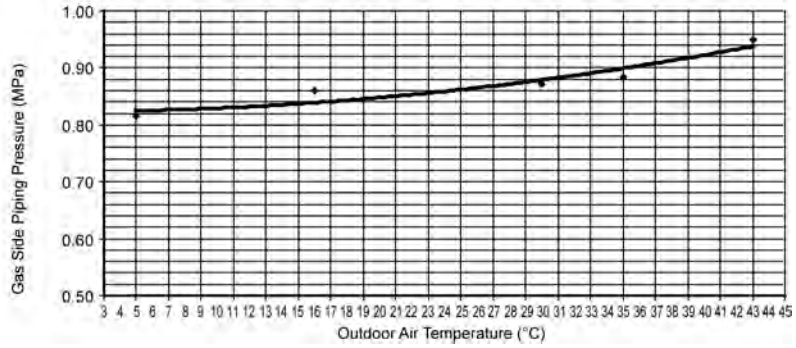
18.1.9. CU-E21MKE

Cooling Characteristic at Different Outdoor Air Temperature

Condition
Indoor room temperature: 27/19°C
Remote control setting: HI FAN, COOL 16°C
Compressor frequency: F_C
Voltage: 230 V

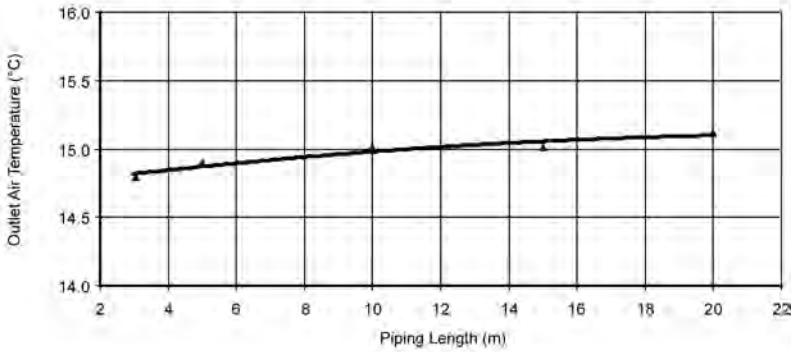


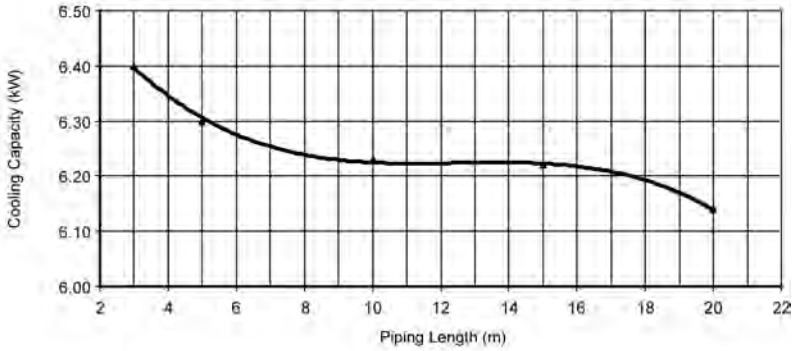


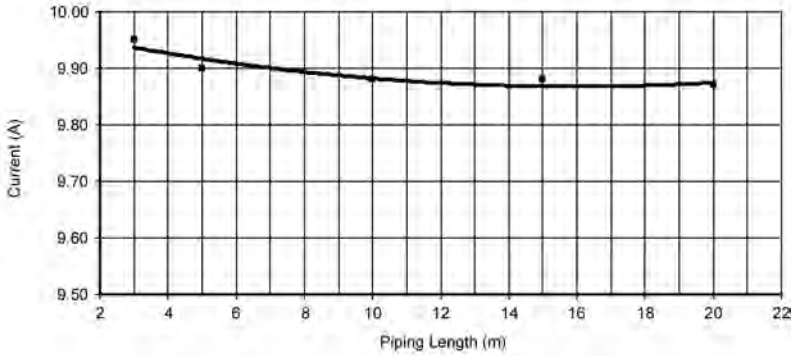


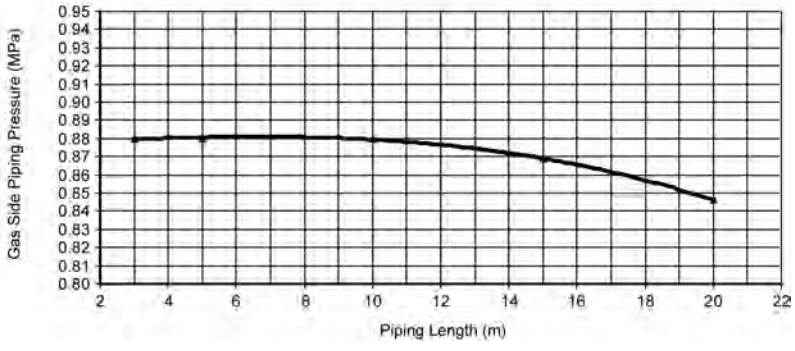
Cooling Characteristic at Different Piping Length

Condition
Indoor room temperature: 27/19°C
Remote control setting: HI FAN, COOL 16°C
Compressor frequency: F_c
Voltage: 230 V



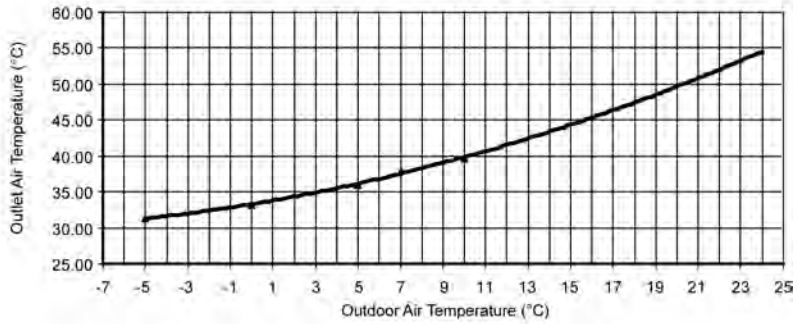


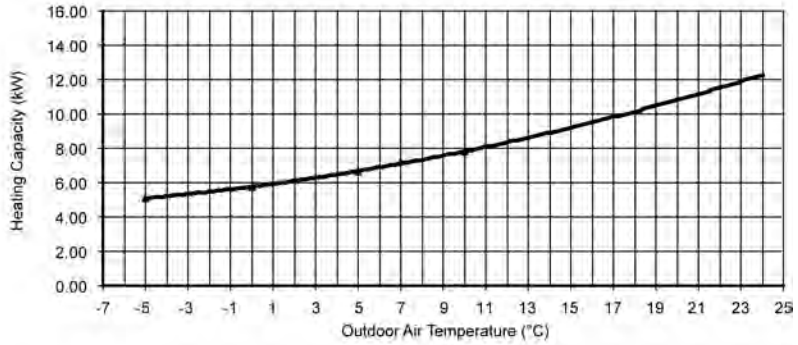


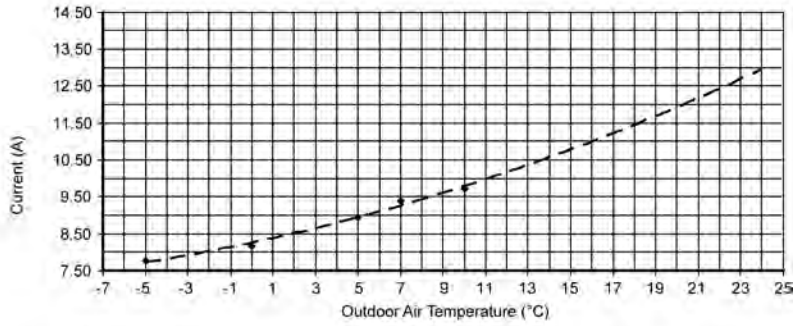


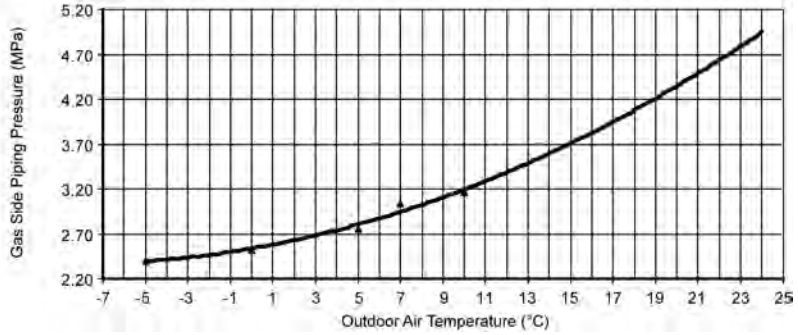
Heating Characteristic at Different Outdoor Air Temperature

Condition
Indoor room temperature: 20/-°C
Remote control setting: HI FAN, HEAT 30°C
Compressor frequency: F_h
Voltage: 230 V



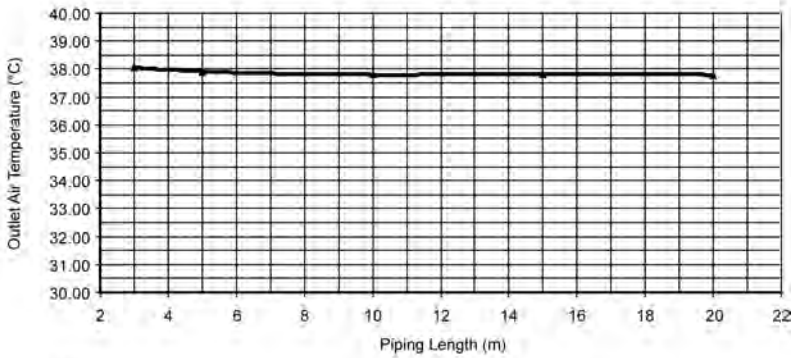


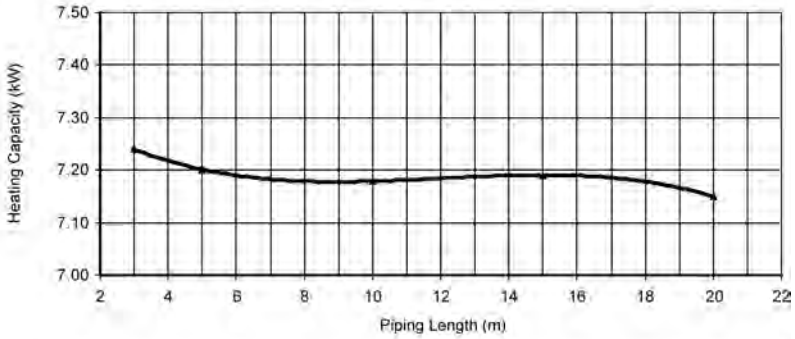


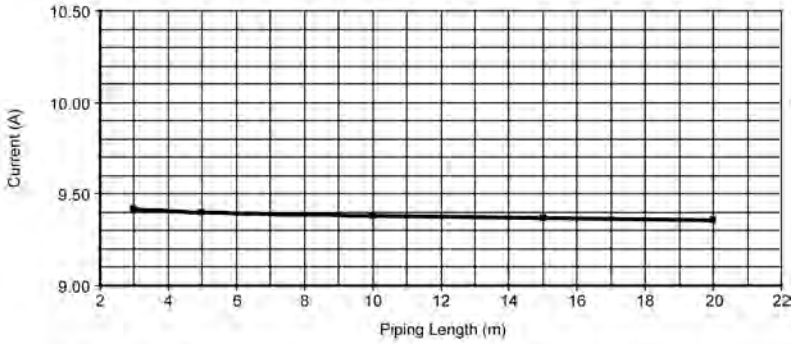


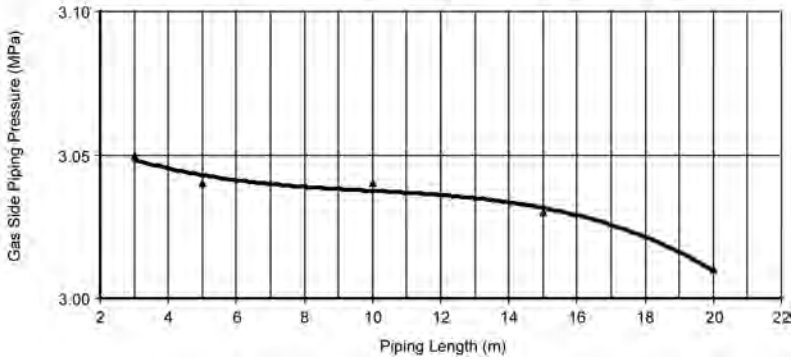
Heating Characteristic at Different Piping Length

Condition
Indoor room temperature: 20/-°C. 7/6°C
Remote control setting: HI FAN, HEAT 30°C
Compressor frequency: F_h
Voltage: 230 V









18.2. Sensible Capacity Chart

● **CU-E7MKE CU-E7MKE-3**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**
17.0°C	2.03	1.54	0.43	1.90	1.48	0.46	1.77	1.42	0.50	1.61	1.35	0.53
19.0°C				2.05		0.47						
19.5°C	2.23	1.61	0.44	2.09	1.55	0.47	1.94	1.49	0.50	1.77	1.42	0.54
22.0°C	2.43	1.67	0.45	2.27	1.61	0.48	2.12	1.55	0.51	1.92	1.48	0.55

● **CU-E9MKE CU-E9MKE-3**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**
17.0°C	2.48	1.88	0.49	2.32	1.80	0.53	2.16	1.73	0.57	1.96	1.65	0.61
19.0°C				2.50		0.54						
19.5°C	2.72	1.97	0.50	2.55	1.89	0.54	2.37	1.82	0.58	2.15	1.73	0.63
22.0°C	2.97	2.04	0.51	2.77	1.96	0.55	2.58	1.89	0.59	2.35	1.81	0.64

● **CU-E12MKE**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**
17.0°C	3.47	2.63	0.79	3.24	2.52	0.85	3.02	2.43	0.91	2.74	2.30	0.98
19.0°C				3.50		0.86						
19.5°C	3.81	2.76	0.80	3.56	2.65	0.86	3.31	2.55	0.92	3.01	2.43	1.00
22.0°C	4.15	2.86	0.82	3.88	2.75	0.88	3.61	2.65	0.94	3.28	2.53	1.01

● **CU-E12MKE-3**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**
17.0°C	3.47	2.63	0.83	3.24	2.52	0.90	3.02	2.43	0.96	2.74	2.30	1.03
19.0°C				3.50		0.91						
19.5°C	3.81	2.76	0.85	3.56	2.65	0.91	3.31	2.55	0.98	3.01	2.43	1.05
22.0°C	4.15	2.86	0.86	3.88	2.75	0.93	3.61	2.65	0.99	3.28	2.53	1.07

● **CU-E15MKE**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**
17.0°C	4.17	3.16	1.15	3.89	3.03	1.24	3.62	2.91	1.33	3.29	2.77	1.43
19.0°C				4.20		1.26						
19.5°C	4.57	3.31	1.18	4.28	3.18	1.27	3.98	3.06	1.35	3.62	2.91	1.46
22.0°C	4.99	3.43	1.20	4.66	3.30	1.29	4.33	3.18	1.38	3.94	3.03	1.49

● **CU-E18MKE**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**
17.0°C	4.96	3.76	1.35	4.64	3.61	1.45	4.31	3.47	1.55	3.92	3.29	1.67
19.0°C				5.00		1.47						
19.5°C	5.45	3.94	1.37	5.09	3.78	1.48	4.74	3.64	1.58	4.31	3.47	1.70
22.0°C	5.94	4.08	1.40	5.55	3.93	1.50	5.16	3.79	1.61	4.69	3.61	1.73

● **CU-E21MKE**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**	**TC**	**SHC**	**IP**
17.0°C	6.25	4.74	2.02	5.84	4.54	2.18	5.43	4.37	2.33	4.94	4.15	2.51
19.0°C				6.30		2.21						
19.5°C	6.86	4.96	2.06	6.41	4.77	2.22	5.97	4.59	2.37	5.42	4.37	2.56
22.0°C	7.48	5.14	2.10	6.99	4.95	2.26	6.50	4.77	2.42	5.91	4.55	2.61

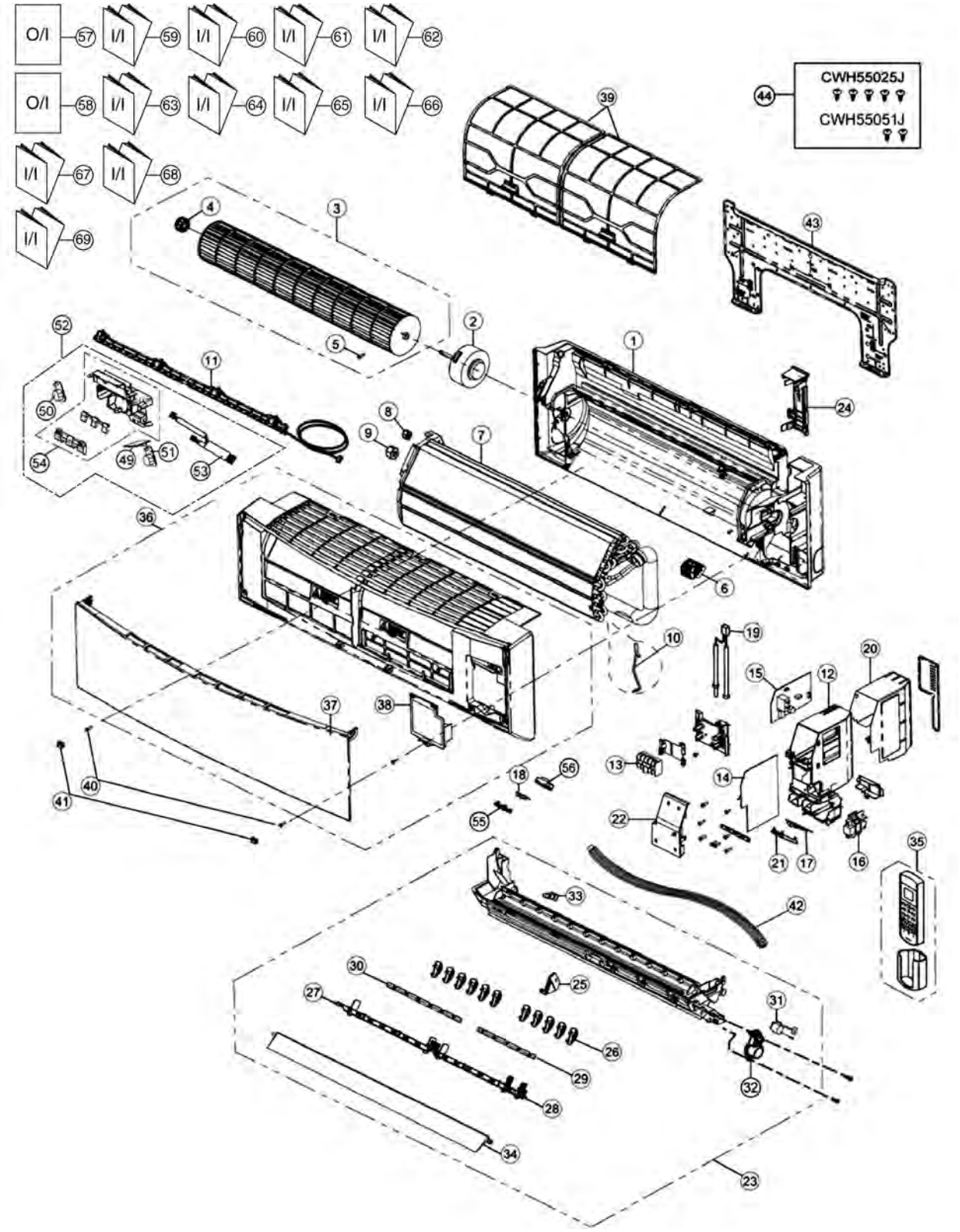
TC - Total Cooling Capacity (kW)
SHC - Sensible Heat Capacity (kW)
IP - Input Power (kW)

Indoor 27°C/19°C
Outdoor 35°C/24°C

19 Exploded View and Replacement Parts List

19.1. Indoor Unit

19.1.1. CS-E7MKEW CS-E9MKEW CS-E12MKEW CS-E15MKEW CS-XE7MKEW CS-XE9MKEW CS-XE12MKEW CS-XE15MKEW



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.

REF NO.	PART NAME & DESCRIPTION	QTY	CS-E7MKEW	CS-E9MKEW	CS-E12MKEW	CS-E15MKEW	REMARK
1	CHASSY COMPLETE	1	CWD50C1599	←	←	←	
2	FAN MOTOR	1	ARW7628AC	←	←	←	O
3	CROSS FLOW FAN COMPLETE	1	CWH02C1076	←	←	←	
4	BEARING ASS'Y	1	CWH64K007	←	←	←	
5	SCREW - CROSS FLOW FAN	1	CWH551146	←	←	←	
6	ION GENERATOR	1	CWH94C0028	←	←	←	
7	EVAPORATOR	1	CWB30C2960	CWB30C2755	CWB30C3359	CWB30C3360	
8	FLARE NUT (LIQUID)	1	CWT251030	←	←	←	
9	FLARE NUT (GAS)	1	CWT251031	←	←	CWT251032	
10	HOLDER SENSOR	1	CWH32143	←	←	←	
11	E-ION AIR PURIFYING SYSTEM	1	CWD93C1090	←	←	←	
12	CONTROL BOARD CASING	1	CWH102370	←	←	←	
13	TERMINAL BOARD COMPLETE	1	CWA28C2357	←	←	←	O
14	ELECTRONIC CONTROLLER - MAIN	1	CWA73C5607	CWA73C5608	CWA73C5609	CWA73C5610	O
15	ELECTRONIC CONTROLLER - POWER	1	CWA746253	←	←	←	O
16	ELECTRONIC CONTROLLER - HVU	1	CWA745348	←	←	←	O
17	ELECTRONIC CONTROLLER - INDICATOR	1	CWA746281	←	←	←	O
18	ELECTRONIC CONTROLLER - RECEIVER	1	CWA745288	←	←	←	O
19	SENSOR COMPLETE	1	CWA50C2401	←	←	←	O
20	CONTROL BOARD TOP COVER	1	CWH131350	←	←	←	
21	INDICATOR HOLDER	1	CWD933021	←	←	←	
22	CONTROL BOARD FRONT COVER	1	CWH13C1183	←	←	←	
23	DISCHARGE GRILLE COMPLETE	1	CWE20C3123	←	←	←	
24	BACK COVER CHASSIS	1	CWD933233	←	←	←	
25	FULCRUM	1	CWH621102	←	←	←	
26	VERTICAL VANE	11	CWE241350	←	←	←	
27	CONNECTING BAR	1	CWE261152	←	←	←	
28	CONNECTING BAR	1	CWE261217	←	←	←	
29	CONNECTING BAR	1	CWE261216	←	←	←	
30	CONNECTING BAR	1	CWE261215	←	←	←	
31	A.S.MOTOR, DC SINGLE 12V 300 OHM	1	CWA981264	←	←	←	O
32	A.S MOTOR, DC SINGLE 12V 300 OHM	1	CWA98K1015	←	←	←	O
33	CAP - DRAIN TRAY	1	CWH521096	←	←	←	
34	HORIZONTAL VANE	1	CWE24C1365	←	←	←	
35	REMOTE CONTROL COMPLETE	1	CWA75C3704	←	←	←	O
36	FRONT GRILLE COMPLETE	1	CWE11C4776	←	←	←	O
37	INTAKE GRILLE COMPLETE	1	CWE22C1678	←	←	←	
38	GRILLE DOOR	1	CWE14C1029	←	←	←	
39	E-ION FILTER	2	CWD00K1016	←	←	←	
40	SCREW - FRONT GRILLE	2	XTT4+16CFJ	←	←	←	
41	CAP - FRONT GRILLE	2	CWH521194	←	←	←	
42	DRAIN HOSE	1	CWH851173	←	←	←	
43	INSTALLATION PLATE	1	CWH361097	←	←	←	
44	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C1705	←	←	←	
49	ELECTRONIC CONTROLLER (COMPARATOR)	1	CWA746205	←	←	←	O
50	ELECTRONIC CONTROLLER (ECO SENSOR-L)	1	CWA745791	←	←	←	O
51	ELECTRONIC CONTROLLER (ECO SENSOR-R)	1	CWA746206	←	←	←	O
52	SENSOR COMPLETE (ECO)	1	CWA50C2758	←	←	←	O
53	LEAD WIRE - PCB ECO	1	CWA67C9160	←	←	←	
54	CONTROL BOARD CASING FOR PCB ECO	1	CWD93C1108	←	←	←	
55	COVER FOR RECEIVER (UPPER)	1	CWD933022	←	←	←	
56	COVER FOR RECEIVER (BOTTOM)	1	CWD933209	←	←	←	
57	OPERATING INSTRUCTION	1	CWF567918	←	←	←	
58	OPERATING INSTRUCTION	1	CWF567919	←	←	←	
59	INSTALLATION INSTRUCTION	1	CWF614771	←	←	←	

REF NO.	PART NAME & DESCRIPTION	QTY	CS-E7MKEW	CS-E9MKEW	CS-E12MKEW	CS-E15MKEW	REMARK
60	INSTALLATION INSTRUCTION	1	CWF614772	←	←	←	
61	INSTALLATION INSTRUCTION	1	CWF614773	←	←	←	
62	INSTALLATION INSTRUCTION	1	CWF614774	←	←	←	
63	INSTALLATION INSTRUCTION	1	CWF614775	←	←	←	
64	INSTALLATION INSTRUCTION	1	CWF614776	←	←	←	
65	INSTALLATION INSTRUCTION	1	CWF614777	←	←	←	
66	INSTALLATION INSTRUCTION	1	CWF614778	←	←	←	
67	INSTALLATION INSTRUCTION	1	CWF614779	←	←	←	
68	INSTALLATION INSTRUCTION	1	CWF614780	←	←	←	
69	INSTALLATION INSTRUCTION	1	CWF614781	←	←	←	

(NOTE)

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

REF NO.	PART NAME & DESCRIPTION	QTY	CS-XE7MKEW	CS-XE9MKEW	CS-XE12MKEW	CS-XE15MKEW	REMARK
1	CHASSY COMPLETE	1	CWD50C1605	←	←	←	
2	FAN MOTOR	1	ARW7628AC	←	←	←	O
3	CROSS FLOW FAN COMPLETE	1	CWH02C1076	←	←	←	
4	BEARING ASS'Y	1	CWH64K007	←	←	←	
5	SCREW - CROSS FLOW FAN	1	CWH551146	←	←	←	
6	ION GENERATOR	1	CWH94C0028	←	←	←	
7	EVAPORATOR	1	CWB30C2960	CWB30C2755	CWB30C3359	CWB30C3360	
8	FLARE NUT (LIQUID)	1	CWT251030	←	←	←	
9	FLARE NUT (GAS)	1	CWT251031	←	←	CWT251032	
10	HOLDER SENSOR	1	CWH32143	←	←	←	
11	E-ION AIR PURIFYING SYSTEM	1	CWD93C1090	←	←	←	
12	CONTROL BOARD CASING	1	CWH102370	←	←	←	
13	TERMINAL BOARD COMPLETE	1	CWA28C2357	←	←	←	O
14	ELECTRONIC CONTROLLER - MAIN	1	CWA73C5607	CWA73C5608	CWA73C5609	CWA73C5610	O
15	ELECTRONIC CONTROLLER - POWER	1	CWA746253	←	←	←	O
16	ELECTRONIC CONTROLLER - HVU	1	CWA745348	←	←	←	O
17	ELECTRONIC CONTROLLER - INDICATOR	1	CWA746281	←	←	←	O
18	ELECTRONIC CONTROLLER - RECEIVER	1	CWA745288	←	←	←	O
19	SENSOR COMPLETE	1	CWA50C2401	←	←	←	O
20	CONTROL BOARD TOP COVER	1	CWH131350	←	←	←	
21	INDICATOR HOLDER	1	CWD933021	←	←	←	
22	CONTROL BOARD FRONT COVER	1	CWH13C1183	←	←	←	
23	DISCHARGE GRILLE COMPLETE	1	CWE20C3139	←	←	←	
24	BACK COVER CHASSIS	1	CWD933233A	←	←	←	
25	FULCRUM	1	CWH621102	←	←	←	
26	VERTICAL VANE	11	CWE241350	←	←	←	
27	CONNECTING BAR	1	CWE261152	←	←	←	
28	CONNECTING BAR	1	CWE261217	←	←	←	
29	CONNECTING BAR	1	CWE261216	←	←	←	
30	CONNECTING BAR	1	CWE261215	←	←	←	
31	A.S.MOTOR, DC SINGLE 12V 300 OHM	1	CWA981264	←	←	←	O
32	A.S MOTOR, DC SINGLE 12V 300 OHM	1	CWA98K1015	←	←	←	O
33	CAP - DRAIN TRAY	1	CWH521096	←	←	←	
34	HORIZONTAL VANE	1	CWE24C1378	←	←	←	
35	REMOTE CONTROL COMPLETE	1	CWA75C3704	←	←	←	O
36	FRONT GRILLE COMPLETE	1	CWE11C4775	←	←	←	O
37	INTAKE GRILLE COMPLETE	1	CWE22C1677	←	←	←	
38	GRILLE DOOR	1	CWE14C1038	←	←	←	
39	E-ION FILTER	2	CWD00K1016	←	←	←	
40	SCREW - FRONT GRILLE	2	XTT4+16CFJ	←	←	←	
41	CAP - FRONT GRILLE	2	CWH521194A	←	←	←	
42	DRAIN HOSE	1	CWH851173	←	←	←	
43	INSTALLATION PLATE	1	CWH361097	←	←	←	
44	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C1705	←	←	←	
49	ELECTRONIC CONTROLLER (COMPARATOR)	1	CWA746205	←	←	←	O
50	ELECTRONIC CONTROLLER (ECO SENSOR-L)	1	CWA745791	←	←	←	O
51	ELECTRONIC CONTROLLER (ECO SENSOR-R)	1	CWA746206	←	←	←	O
52	SENSOR COMPLETE (ECO)	1	CWA50C2758	←	←	←	O
53	LEAD WIRE - PCB ECO	1	CWA67C9160	←	←	←	
54	CONTROL BOARD CASING FOR PCB ECO	1	CWD93C1108	←	←	←	
55	COVER FOR RECEIVER (UPPER)	1	CWD933022	←	←	←	
56	COVER FOR RECEIVER (BOTTOM)	1	CWD933209	←	←	←	
57	OPERATING INSTRUCTION	1	CWF567918	←	←	←	
58	OPERATING INSTRUCTION	1	CWF567919	←	←	←	
59	INSTALLATION INSTRUCTION	1	CWF614771	←	←	←	

REF NO.	PART NAME & DESCRIPTION	QTY	CS-XE7MKEW	CS-XE9MKEW	CS-XE12MKEW	CS-XE15MKEW	REMARK
60	INSTALLATION INSTRUCTION	1	CWF614772	←	←	←	
61	INSTALLATION INSTRUCTION	1	CWF614773	←	←	←	
62	INSTALLATION INSTRUCTION	1	CWF614774	←	←	←	
63	INSTALLATION INSTRUCTION	1	CWF614775	←	←	←	
64	INSTALLATION INSTRUCTION	1	CWF614776	←	←	←	
65	INSTALLATION INSTRUCTION	1	CWF614777	←	←	←	
66	INSTALLATION INSTRUCTION	1	CWF614778	←	←	←	
67	INSTALLATION INSTRUCTION	1	CWF614779	←	←	←	
68	INSTALLATION INSTRUCTION	1	CWF614780	←	←	←	
69	INSTALLATION INSTRUCTION	1	CWF614781	←	←	←	

(NOTE)

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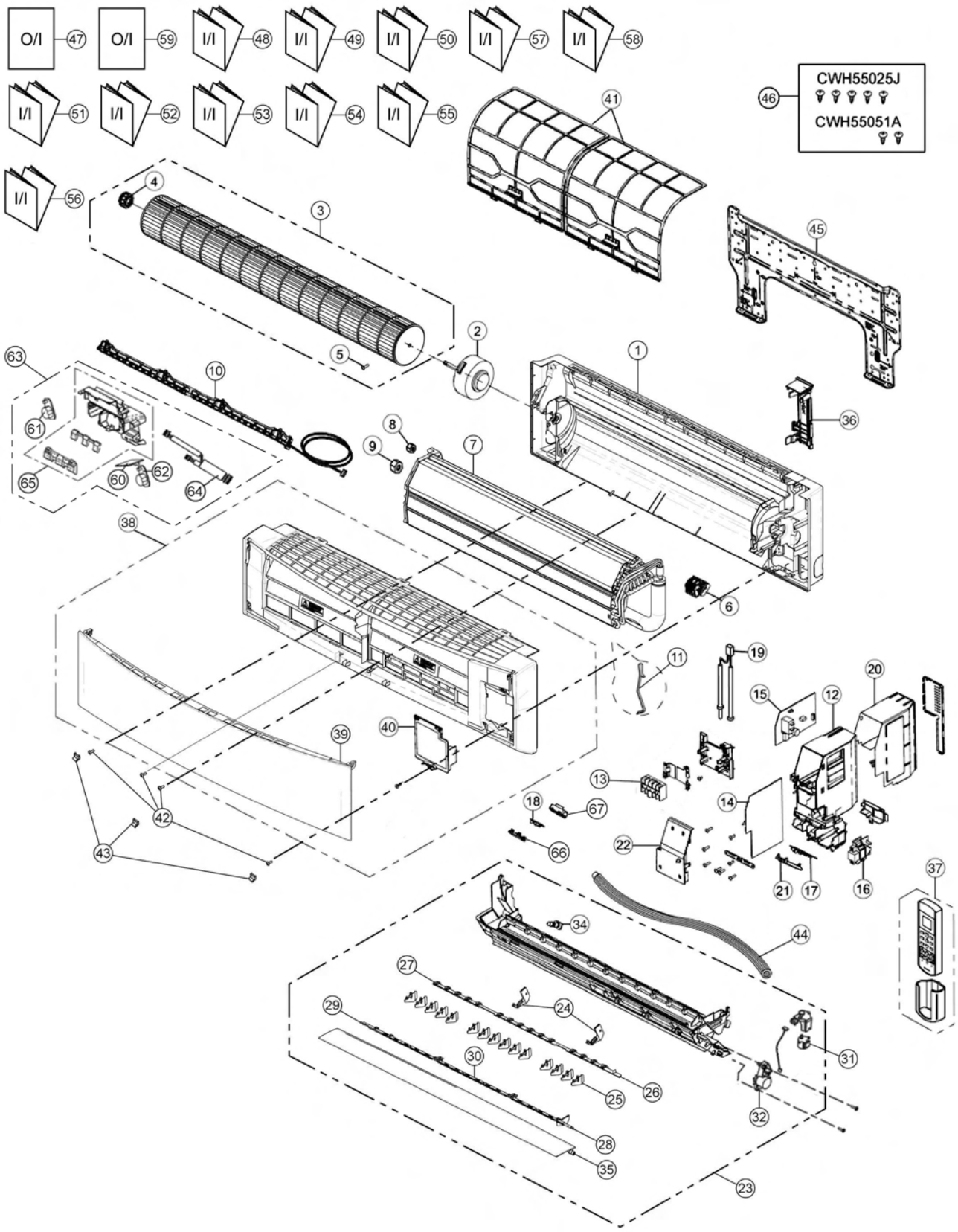
19.1.2. CS-E18MKEW CS-E21MKEW CS-XE18MKEW CS-XE21MKEW



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.

REF NO.	PART NAME & DESCRIPTION	QTY	CS-E18MKEW	CS-E21MKEW	CS-XE18MKEW	CS-XE21MKEW	REMARK
1	CHASSY COMPLETE	1	CWD50C1623	←	CWD50C1604	←	
2	FAN MOTOR	1	ARW7627AC	←	←	←	O
3	CROSS FLOW FAN COMPLETE	1	CWH02C1077	←	←	←	
4	BEARING ASS'Y	1	CWH64K007	←	←	←	
5	SCREW - CROSS FLOW FAN	1	CWH551146	←	←	←	
6	ION GENERATOR	1	CWH94C0028	←	←	←	
7	EVAPORATOR	1	CWB30C2900	←	←	←	
8	FLARE NUT (LIQUID)	1	CWT251030	←	←	←	
9	FLARE NUT (GAS)	1	CWT251032	←	←	←	
10	E-ION AIR PURIFYING SYSTEM	1	CWD93C1090	←	←	←	
11	HOLDER SENSOR	1	CWH32143	←	←	←	
12	CONTROL BOARD CASING	1	CWH102370	←	←	←	
13	TERMINAL BOARD COMPLETE	1	CWA28C2357	←	←	←	O
14	ELECTRONIC CONTROLLER - MAIN	1	CWA73C5612	CWA73C5613	CWA73C5612	CWA73C5613	O
15	ELECTRONIC CONTROLLER - POWER	1	CWA746253	←	←	←	O
16	ELECTRONIC CONTROLLER - HVU	1	CWA745348	←	←	←	O
17	ELECTRONIC CONTROLLER - INDICATOR	1	CWA746281	←	←	←	O
18	ELECTRONIC CONTROLLER - RECEIVER	1	CWA745288	←	←	←	O
19	SENSOR COMPLETE	1	CWA50C2401	←	←	←	O
20	CONTROL BOARD TOP COVER	1	CWH131350	←	←	←	
21	INDICATOR HOLDER	1	CWD933021	←	←	←	
22	CONTROL BOARD FRONT COVER	1	CWH13C1183	←	←	←	
23	DISCHARGE GRILLE COMPLETE	1	CWE20C3124	←	CWE20C3140	←	
24	FULCRUM	2	CWH621103	←	←	←	
25	VERTICAL VANE	15	CWE241355	←	←	←	
26	CONNECTING BAR	1	CWE261220	←	←	←	
27	CONNECTING BAR	1	CWE261158	←	←	←	
28	CONNECTING BAR	1	CWE261221	←	←	←	
29	CONNECTING BAR	1	CWE261159	←	←	←	
30	CONNECTING BAR	1	CWE261160	←	←	←	
31	A.S MOTOR, DC SINGLE 12V 300 OHM	1	CWA98K1015	←	←	←	O
32	A.S.MOTOR, DC SINGLE 12V 300 OHM	1	CWA981241	←	←	←	O
34	CAP - DRAIN TRAY	1	CWH521096	←	←	←	
35	HORIZONTAL VANE	1	CWE24C1379	←	←	←	
36	BACK COVER CHASSIS	1	CWD933031	←	CWD933031A	←	
37	REMOTE CONTROL COMPLETE	1	CWA75C3704	←	←	←	O
38	FRONT GRILLE COMPLETE	1	CWE11C4784	←	CWE11C4908	←	O
39	INTAKE GRILLE COMPLETE	1	CWE22C1680	←	CWE22C1679	←	
40	GRILLE DOOR	1	CWE14C1029	←	CWE14C1038	←	
41	E-ION FILTER	2	CWD00K1017	←	←	←	
42	SCREW - FRONT GRILLE	3	XTT4+16CFJ	←	←	←	
43	CAP - FRONT GRILLE	3	CWH521194	←	CWH521194A	←	
44	DRAIN HOSE	1	CWH851173	←	←	←	
45	INSTALLATION PLATE	1	CWH361098	←	←	←	
46	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C1705	←	←	←	
47	OPERATING INSTRUCTION	1	CWF567918	←	←	←	
48	INSTALLATION INSTRUCTION	1	CWF614771	←	←	←	
49	INSTALLATION INSTRUCTION	1	CWF614772	←	←	←	
50	INSTALLATION INSTRUCTION	1	CWF614773	←	←	←	
51	INSTALLATION INSTRUCTION	1	CWF614774	←	←	←	
52	INSTALLATION INSTRUCTION	1	CWF614775	←	←	←	
53	INSTALLATION INSTRUCTION	1	CWF614776	←	←	←	
54	INSTALLATION INSTRUCTION	1	CWF614777	←	←	←	
55	INSTALLATION INSTRUCTION	1	CWF614778	←	←	←	
56	INSTALLATION INSTRUCTION	1	CWF614779	←	←	←	

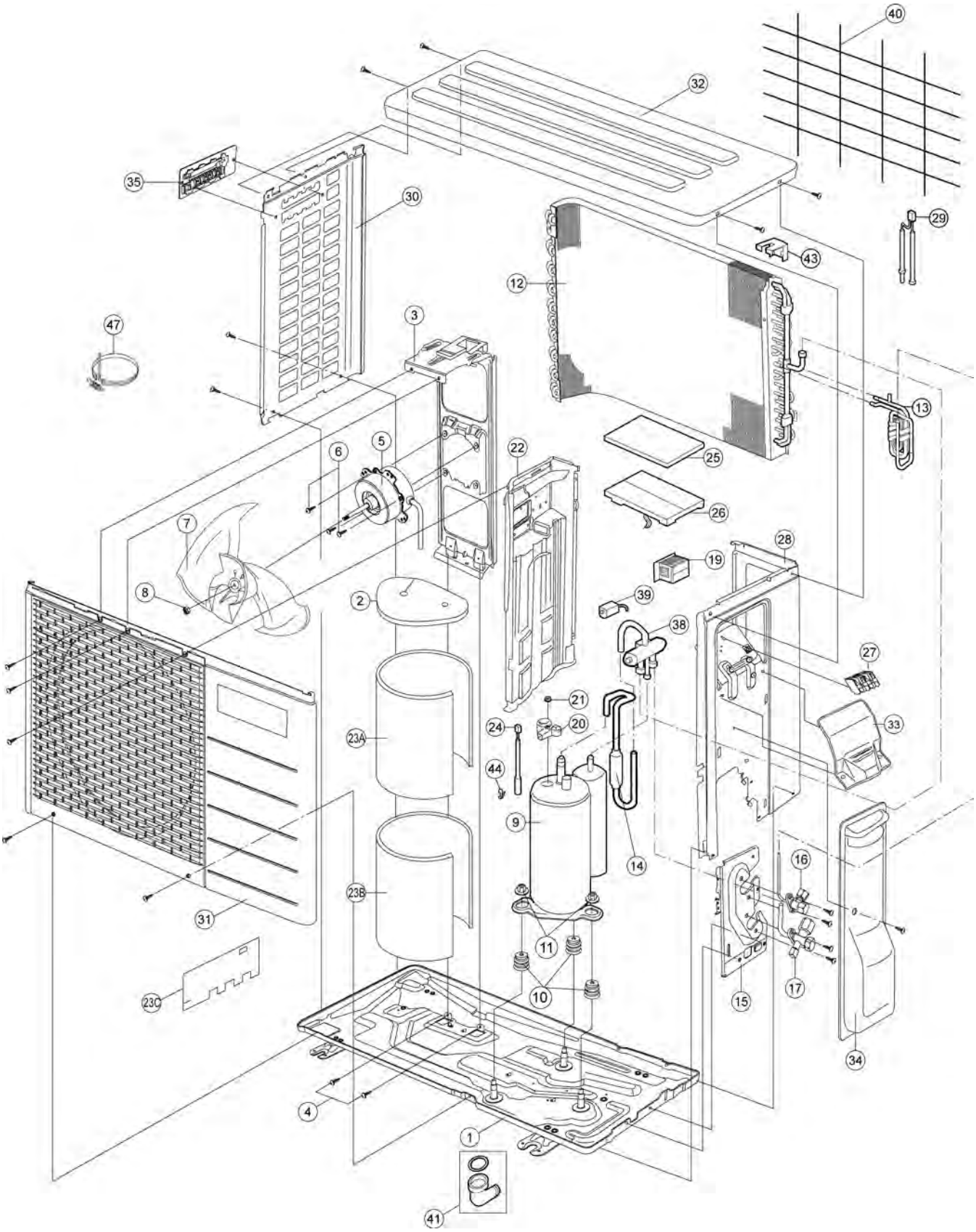
REF NO.	PART NAME & DESCRIPTION	QTY	CS-E18MKEW	CS-E21MKEW	CS-XE18MKEW	CS-XE21MKEW	REMARK
57	INSTALLATION INSTRUCTION	1	CWF614780	←	←	←	
58	INSTALLATION INSTRUCTION	1	CWF614781	←	←	←	
59	OPERATING INSTRUCTION	1	CWF567919	←	←	←	
60	ELECTRONIC CONTROLLER (COMPARATOR)	1	CWA746205	←	←	←	O
61	ELECTRONIC CONTROLLER (ECO SENSOR-L)	1	CWA745791	←	←	←	O
62	ELECTRONIC CONTROLLER (ECO SENSOR-R)	1	CWA746206	←	←	←	O
63	SENSOR COMPLETE (ECO)	1	CWA50C2759	←	←	←	O
64	LEAD WIRE - PCB ECO	1	CWA67C9218	←	←	←	
65	CONTROL BOARD CASING FOR PCB ECO	1	CWD93C1108	←	←	←	
66	COVER FOR RECEIVER (UPPER)	1	CWD933022	←	←	←	
67	COVER FOR RECEIVER (BOTTOM)	1	CWD933209	←	←	←	

(Note)

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

19.2. Outdoor Unit

19.2.1. CU-E7MKE CU-E9MKE CU-E12MKE CU-E15MKE CU-E7MKE-3 CU-E9MKE-3 CU-E12MKE-3



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.

REF NO.	DESCRIPTION & NAME	QTY	CU-E7MKE	CU-E9MKE	CU-E12MKE	CU-E15MKE	REMARK
1	CHASSY ASS'Y	1	CWD50K2073	←	←	←	
2	SOUND PROOF MATERIAL	1	CWG302447	-	CWG302570	-	
3	FAN MOTOR BRACKET	1	CWD541089	←	←	←	
4	SCREW - FAN MOTOR BRACKET	2	CWH551217	←	←	←	
5	FAN MOTOR	1	CWA951536	CWA951553	ARS6411AC	CWA951555	O
6	SCREW - FAN MOTOR MOUNT	4	CWH55252J	←	←	←	
7	PROPELLER FAN ASSY	1	CWH03K1010	←	←	←	
8	NUT - PROPELLER FAN	1	CWH56053J	←	←	←	
9	COMPRESSOR	1	5RS092XCD21	5RS102XBC21	5RS102XLA21	5RS102XBC21	O
10	ANTI-VIBRATION BUSHING	3	CWH50077	←	←	←	
11	NUT-COMPRESSOR MOUNT	3	CWH56000J	←	←	←	
12	CONDENSER	1	CWB32C2985	CWB32C2448	CWB32C2874	CWB32C2448	
13	TUBE ASSY (CAP, CHECK VALVE)	1	CWT01C5305	CWT01C4850	CWT01C5307	CWT01C4852	
14	DISCHARGE MUFFLER	1	CWB121010	←	←	←	
15	HOLDER - COUPLING	1	CWH351023	←	←	←	
16	2 WAYS VALVE (LIQUID)	1	CWB021400	CWB021301	CWB021400	CWB021301	O
17	3 WAYS VALVE (GAS)	1	CWB011374	←	←	CWB011367	O
19	REACTOR	1	G0C193J00002	←	G0C193J00004	←	
20	TERMINAL COVER	1	CWH171039A	←	←	←	
21	NUT-TERMINAL COVER	1	CWH7080300J	←	←	←	
22	SOUND PROOF BOARD	1	CWH151172	←	←	←	
23A	SOUND PROOF MATERIAL	1	CWG302443	CWG302292	←	←	
23B	SOUND PROOF MATERIAL	1	-	CWG302293	CWG302569	CWG302293	
24	SENSOR CO.(OUTDOOR COMPRESSOR TEMP)	1	CWA50C2205	←	←	←	O
25	CONTROL BOARD COVER (TOP)	1	CWH131264	←	←	←	
26	ELECTRONIC CONTROLLER - MAIN	1	CWA73C5621R	CWA73C5616R	CWA73C5619R	CWA73C5620R	O
27	TERMINAL BOARD ASSY	1	CWA28K1110J	←	←	←	O
28	CABINET SIDE PLATE (R)	1	CWE04C1116	←	←	←	
29	SENSOR CO.(OUTDOOR AIR AND HEAT EXCHANGE TEMP)	1	CWA50C2764	←	←	←	O
30	CABINET SIDE PLATE (L)	1	CWE041248A	←	←	←	
31	CABINET FRONT PLATE CO.	1	CWE06C1039	←	←	←	
32	CABINET TOP PLATE	1	CWE031014A	←	←	←	
33	PLATE-C.B.COVER	1	CWH131301	←	←	←	
34	CONTROL BOARD COVER COMPLETE	1	CWH13C1211	←	←	←	
35	HANDLE	1	CWE161010	←	←	←	
38	4-WAYS VALVE	1	CWB001037J	←	←	←	
39	V-COIL COMPLETE	1	CWA43C2431	←	←	←	
40	WIRE NET	1	CWD041111A	←	←	←	
41	ACCESSORY CO. (DRAIN ELBOW)	1	-	←	←	CWG87C900	
43	HOLDER SENSOR	1	CWH321023	←	←	←	
44	HOLDER SENSOR	1	CWH32143	←	←	←	

(NOTE)

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- "O" marked parts are recommended to be kept in stock.

REF NO.	DESCRIPTION & NAME	QTY	CU-E7MKE-3	CU-E9MKE-3	CU-E12MKE-3	REMARK
1	CHASSY ASS'Y	1	CWD50K2073	←	←	
2	SOUND PROOF MATERIAL	1	CWG302314	←	←	
3	FAN MOTOR BRACKET	1	CWD541089	←	←	
4	SCREW - FAN MOTOR BRACKET	2	CWH551217	←	←	
5	FAN MOTOR	1	CWA951536	CWA951553	CWA951699	O
6	SCREW - FAN MOTOR MOUNT	4	CWH55252J	←	←	
7	PROPELLER FAN ASSY	1	CWH03K1010	←	←	
8	NUT - PROPELLER FAN	1	CWH56053J	←	←	
9	COMPRESSOR	1	5RS092XCD21	5RS102XBC21	←	O
10	ANTI-VIBRATION BUSHING	3	CWH50077	←	←	
11	NUT-COMPRESSOR MOUNT	3	CWH56000J	←	←	
12	CONDENSER	1	CWB32C2985	CWB32C2448	←	
13	TUBE ASSY (CAP, CHECK VALVE)	1	CWT01C5305	CWT01C4850	CWT01C4851	
14	DISCHARGE MUFFLER	1	CWB121010	←	←	
15	HOLDER - COUPLING	1	CWH351023	←	←	
16	2 WAYS VALVE (LIQUID)	1	CWB021400	CWB021301	←	O
17	3 WAYS VALVE (GAS)	1	CWB011374	←	←	O
19	REACTOR	1	G0C193J00002	←	G0C193J00004	
20	TERMINAL COVER	1	CWH171039A	←	←	
21	NUT-TERMINAL COVER	1	CWH7080300J	←	←	
22	SOUND PROOF BOARD	1	CWH151172	←	←	
23A	SOUND PROOF MATERIAL	1	CWG302316	←	←	
23B	SOUND PROOF MATERIAL	1	CWG302317	←	←	
23C	SOUND PROOF MATERIAL	1	CWG302315	←	←	
24	SENSOR CO.(OUTDOOR COMPRESSOR TEMP)	1	CWA50C2205	←	←	O
25	CONTROL BOARD COVER (TOP)	1	CWH131264	←	←	
26	ELECTRONIC CONTROLLER - MAIN	1	CWA73C5622R	CWA73C5617R	CWA73C5618R	O
27	TERMINAL BOARD ASSY	1	CWA28K1110J	←	←	O
28	CABINET SIDE PLATE (R)	1	CWE04C1116	←	←	
29	SENSOR CO.(OUTDOOR AIR AND HEAT EXCHANGE TEMP)	1	CWA50C2764	←	←	O
30	CABINET SIDE PLATE (L)	1	CWE041248A	←	←	
31	CABINET FRONT PLATE CO.	1	CWE06C1039	CWE06C1136	←	
32	CABINET TOP PLATE	1	CWE031014A	←	←	
33	PLATE-C.B.COVER	1	CWH131301	←	←	
34	CONTROL BOARD COVER COMPLETE	1	CWH13C1211	←	←	
35	HANDLE	1	CWE161010	←	←	
38	4-WAYS VALVE	1	CWB001037J	←	←	
39	V-COIL COMPLETE	1	CWA43C2431	←	←	
40	WIRE NET	1	CWD041111A	←	←	
41	ACCESSORY CO.(DRAIN ELBOW)	1	CWG87C900	←	←	
43	HOLDER SENSOR	1	CWH321023	←	←	
44	HOLDER SENSOR	1	CWH32143	←	←	
47	CRANKCASE HEATER	1	CWA341044	←	←	

(NOTE)

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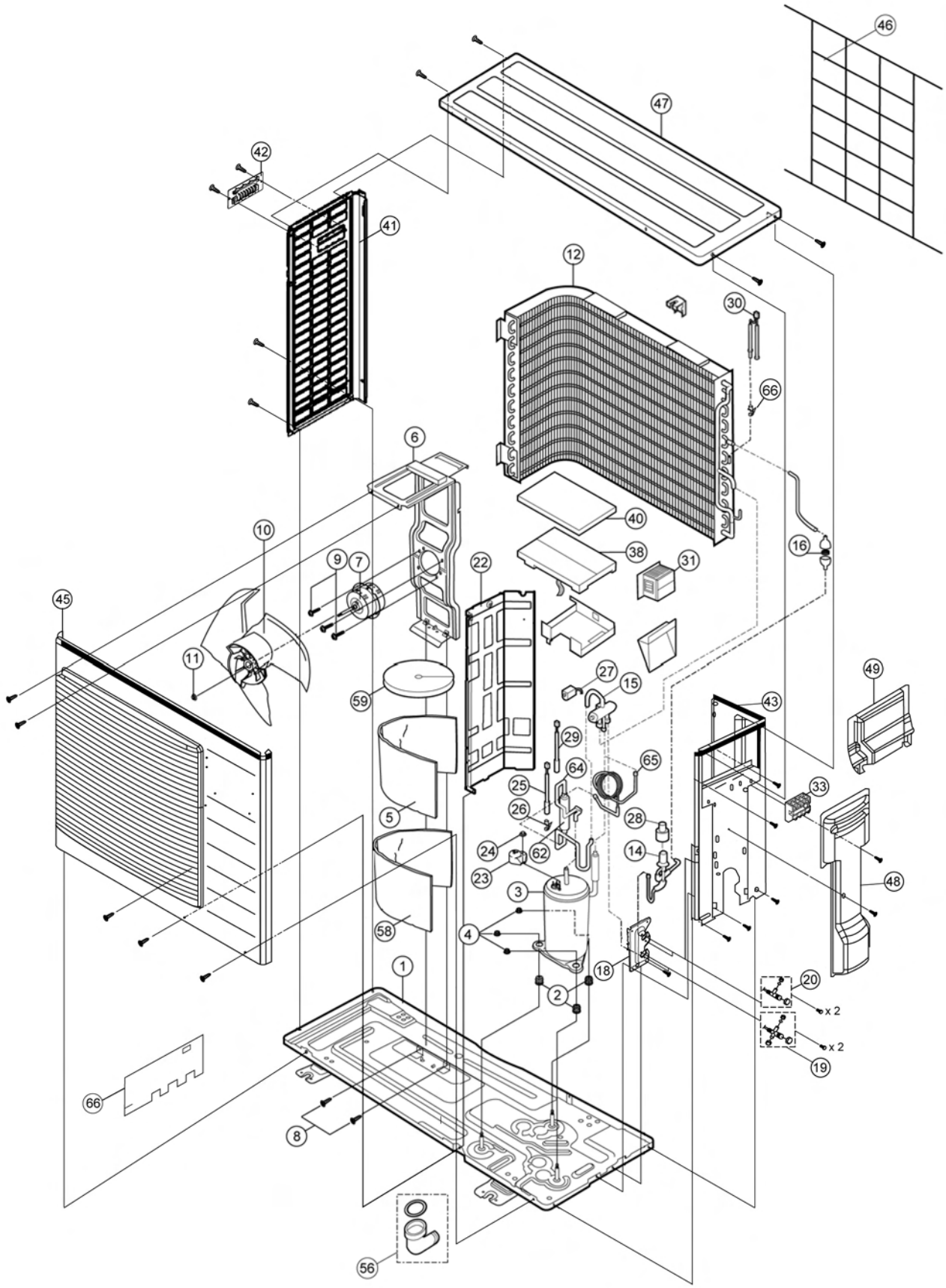
19.2.2. CU-E18MKE CU-E21MKE



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.

REF NO.	DESCRIPTION & NAME	QTY	CU-E18MKE	CU-E21MKE	REMARK
1	CHASSY ASSY	1	CWD52K1261	←	
2	ANTI - VIBRATION BUSHING	3	CWH50077	←	
3	COMPRESSOR	1	5RD132XBA21	←	O
4	NUT - COMPRESSOR MOUNT	3	CWH56000J	←	
5	SOUND PROOF MATERIAL	1	CWG302629	←	
6	BRACKET FAN MOTOR	1	CWD541153	←	
7	FAN MOTOR	1	ARW8401AC	←	O
8	SCREW-BRACKET FAN MOTOR	2	CWH551217	←	
9	SCREW - FAN MOTOR MOUNT	3	CWH551106J	←	
10	PROPELLER FAN ASS'Y	1	CWH03K1065	←	
11	NUT - PROPELLER FAN	1	CWH56053J	←	
12	CONDENSER COMPLETE	1	CWB32C3120	CWB32C3121	
14	TUBE ASSY (EXP.VALVE)	1	CWT027621	←	
15	4-WAYS VALVE	1	CWB001026J	←	
16	STRAINER	1	CWB11094	←	
18	HOLDER COUPLING	1	CWH351056	←	
19	3-WAYS VALVE (GAS)	1	CWB011361	←	O
20	2-WAYS VALVE (LIQUID)	1	CWB021292	←	O
22	SOUND PROOF BOARD	1	CWH151257	←	
23	TERMINAL COVER	1	CWH171039	←	
24	NUT-TERMINAL COVER	1	CWH7080300J	←	
25	SENSOR CO (COMP.TOP)	1	CWA50C2185	←	O
26	HOLDER-SENSOR	2	CWH32143	←	
27	V-COIL COMPLETE (4 WAY VALVE)	1	CWA43C2169J	←	
28	V-COIL COMPLETE FOR EXP.VALVE	1	CWA43C2257	←	
29	SENSOR CO (COMP.DISCHARGE)	1	CWA50C2656	←	O
30	SENSOR-COMPLETE	1	CWA50C2517	←	O
31	REACTOR	1	G0C203J00003	←	
33	TERMINAL BOARD ASSY	1	CWA28K1110J	←	O
38	ELECTRONIC CONTROLLER - MAIN	1	CWA73C5603R	CWA73C5602R	O
40	CONTROL BOARD COVER (TOP PCB)	1	CWH131333	←	
41	CABINET SIDE PLATE (L)	1	CWE041520A	←	
42	HANDLE	1	CWE161010	←	
43	CABINET SIDE PLATE (R)	1	CWE041555A	←	
45	CABINET FRONT PLATE ASSY	1	CWE06K1077	←	
46	WIRE NET	1	CWD041155A	←	
47	CABINET TOP PLATE	1	CWE031083A	←	
48	CONTROL BOARD COVER COMPLETE	1	CWH13C1238	←	
49	CONTROL BOARD COVER	1	CWH131409A	←	
56	ACCESSORY CO. (DRAIN ELBOW)	1	CWG87C900	←	
59	SOUND PROOF MATERIAL	1	CWG302633	←	
59	SOUND PROOF MATERIAL	1	CWG302630	←	
62	RECEIVER	1	CWB14011	-	
64	OIL SEPARATER ASS'Y	1	-	CWB16K1022	

REF NO.	DESCRIPTION & NAME	QTY	CU-E18MKE	CU-E21MKE	REMARK
65	CAPILLARY TUBE ASSY	1	-	CWB15K1376	
66	SOUND PROOF MATERIAL	1	-	CWG302632	

(NOTE)

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