

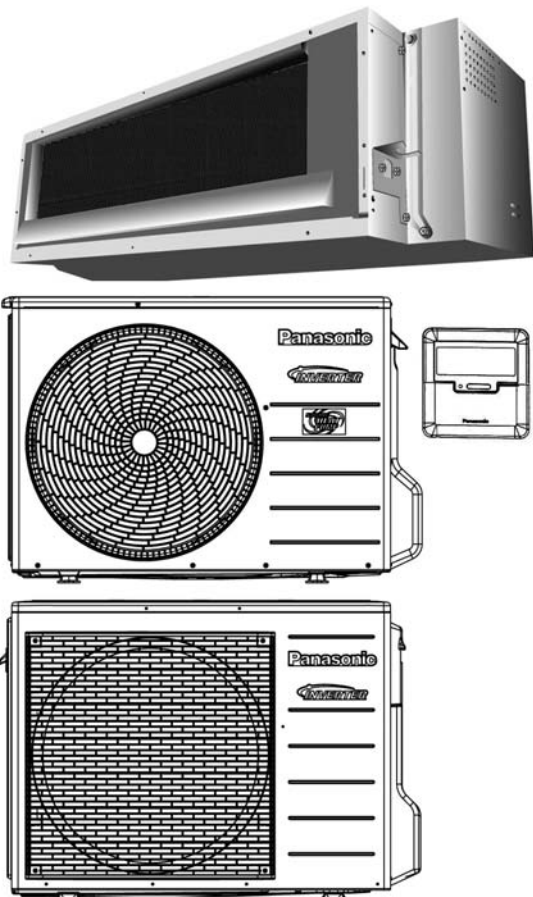
Service Manual

Air Conditioner

Indoor Unit
CS-E9PD3EA
CS-E12PD3EA

Outdoor Unit
CU-E9PD3EA
CU-E12PD3EA

Destination
Europe



Please file and use this manual together with the service manual for Model No. CU-2E15PBE CU-2E18PBE CU-3E18PBE CU-4E23PBE, Order No. PAPAMY1301048CE and CU-4E27PBE CU-5E34PBE Order No. PAPAMY1303046CE

WARNING

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

IMPORTANT SAFETY NOTICE

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



PRECAUTION OF LOW TEMPERATURE

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

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2. Specifications

2.1 CS-E9PD3EA CU-E9PD3EA

MODEL			INDOOR	CS-E9PD3EA					
			OUTDOOR	CU-E9PD3EA					
Performance Test Condition			EUROVENT						
Power Supply			Phase, Hz	Single, 50					
			V	220			230		
				Min.	Mid.	Max.	Min.	Mid.	Max.
Cooling	Capacity		kW	0.85	2.50	3.00	0.85	2.50	3.00
			BTU/h	2900	8530	10200	2900	8530	10200
			Kcal/h	730	2150	2580	730	2150	2580
	Running Current		A	-	2.9	-	-	2.8	-
	Input Power		W	240	590	760	240	590	760
	Annual Consumption		kWh	-	295	-	-	295	-
	EER		W/W	3.54	4.24	3.95	3.54	4.24	3.95
			Btu/hW	12.08	14.46	13.42	12.08	14.46	13.42
			Kcal/hW	3.04	3.64	3.39	3.04	3.64	3.39
	ErP	Pdesign	kW	2.5					
		SEER	W/W	5.8					
		Annual Consumption	kWh	151					
		Class		A+					
	Power Factor		%	-	92	-	-	92	-
	Indoor Noise (H / L / QLo)		dB-A	33 / 27 / 24			33 / 27 / 24		
			Power Level dB	49 / - / -			49 / - / -		
	Outdoor Noise (H / L)		dB-A	46 / - / -			46 / - / -		
			Power Level dB	61 / - / -			59 / - / -		
Heating	Capacity		kW	0.85	3.20	4.60	0.85	3.20	4.60
			BTU/h	2900	10900	15700	2900	10900	15700
			Kcal/h	730	2750	3960	730	2750	3960
	Running Current		A	-	4.2	-	-	4.0	-
	Input Power		W	230	860	1.38k	230	860	1.38k
	COP		W/W	3.70	3.72	3.33	3.70	3.72	3.33
			Btu/hW	12.61	12.67	11.38	12.61	12.67	11.38
			Kcal/hW	3.17	3.20	2.87	3.17	3.20	2.87
	ErP	Pdesign	kW	2.6					
		Tbivalent	°C	-10					
		SCOP	W/W	4.2					
		Annual Consumption	kWh	867					
		Class		A+					
	Power Factor		%	-	93	-	-	93	-
	Indoor Noise (H / L / QLo)		dB-A	35 / 28 / 25			35 / 28 / 25		
			Power Level dB	51 / - / -			51 / - / -		
	Outdoor Noise (H / L)		dB-A	47 / - / -			47 / - / -		
			Power Level dB	62 / - / -			62 / - / -		
※3 Low Temp. : Capacity (kW) / I. Power (W) / COP			3.33 / 1.22k / 2.73						
※4 Extr Low Temp. : Capacity (kW) / I. Power (W) / COP			2.60 / 1.25k / 2.08						
Max Current (A) / Max Input Power (W)			7.60 / 1.65k						
Starting Current (A)			4.2						

MODEL				INDOOR	CS-E9PD3EA	
				OUTDOOR	CU-E9PD3EA	
Compressor		Type			Hermetic Motor / Rotary	
		Motor Type			Brushless (4-poles)	
		Output Power			900	
Indoor Fan	Type				Sirocco	
	Material				ABS	
	Motor Type				DC Motor (8-poles)	
	Output Power			W	30	
	Speed	QLo	Cool	rpm	1000	
			Heat	rpm	1040	
		Lo	Cool	rpm	1070	
			Heat	rpm	1100	
		Me	Cool	rpm	1180	
			Heat	rpm	1250	
		Hi	Cool	rpm	1300	
			Heat	rpm	1370	
		SHi	Cool	rpm	1400	
			Heat	rpm	1440	
Outdoor Fan	Type				Propeller Fan	
	Material				PP	
	Motor Type				DC (8-poles)	
	Output Power			W	40	
	Speed	Hi	Cool	rpm	840	
			Heat	rpm	800	
Moisture Removal				L/h (Pt/h)	1.5 (3.2)	
Indoor Airflow		QLo	Cool	m³/min (ft³/min)	3.9 (138)	
			Heat	m³/min (ft³/min)	4.3 (152)	
		Lo	Cool	m³/min (ft³/min)	4.6 (162)	
			Heat	m³/min (ft³/min)	4.9 (173)	
		Me	Cool	m³/min (ft³/min)	5.7 (201)	
			Heat	m³/min (ft³/min)	6.4 (226)	
		Hi	Cool	m³/min (ft³/min)	6.9 (245)	
			Heat	m³/min (ft³/min)	8.1 (285)	
		SHi	Cool	m³/min (ft³/min)	8.1 (285)	
			Heat	m³/min (ft³/min)	8.3 (293)	
Outdoor Airflow		Hi	Cool	m³/min (ft³/min)	31.3 (1105)	
			Heat	m³/min (ft³/min)	29.7 (1050)	
Refrigeration Cycle		Control Device			Expansion Valve	
		Refrigerant Oil		cm³	FV50S (450)	
		Refrigerant Type		g (oz)	R410A, 1.10k (38.8)	
Dimension		Height (I/D / O/D)		mm (inch)	235 (9-9/32) / 622 (24-1/2)	
		Width (I/D / O/D)		mm (inch)	750 (29-17/32) / 824 (32-15/32)	
		Depth (I/D / O/D)		mm (inch)	370 (14-19/32) / 299 (11-25/32)	
Weight		Net (I/D / O/D)		kg (lb)	17 (37) / 36 (79)	

MODEL		INDOOR	CS-E9PD3EA	
		OUTDOOR	CU-E9PD3EA	
Piping	Pipe Diameter (Liquid / Gas)	mm (inch)	6.35 (1/4) / 9.52 (3/8)	
	Standard Length	m (ft)	5.0 (16.4)	
	Length Range (min - max)	m (ft)	3 (9.8) ~ 20 (65.6)	
	I/D & O/D Height Different	m (ft)	15 (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	14	
	Length	mm	255	
Indoor Heat Exchanger	Fin Material		Aluminium (Pre Coat)	
	Fin Type		Louver Fin	
	Row x Stage x FPI		2 x 8 x 20	
	Size (W x H x L)	mm	620 x 230.2 x 44	
Outdoor Heat Exchanger	Fin Material		Aluminium	
	Fin Type		Corrugated Fin	
	Row x Stage x FPI		2 x 28 x 17	
	Size (W x H x L)	mm	36.4 x 588 x 606.6	
Power Supply			Outdoor Power Supply	
Power Supply Cord		A	Nil	
Thermostat			Electronic Control	
Protection Device			Electronic Control	
			Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum °C	32	23
		Minimum °C	16	11
	Heating	Maximum °C	30	-
		Minimum °C	16	-
Outdoor Operation Range	Cooling	Maximum °C	43	26
		Minimum °C	-10	-
	Heating	Maximum °C	24	18
		Minimum °C	-10	-

- 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)
- 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
- Standby power consumption ≤0.7W (when switched OFF by remote control, except under self protection control).
- Specifications are subjected to change without notice for further improvement.

2.2 CS-E12PD3EA CU-E12PD3EA

MODEL			INDOOR	CS-E12PD3EA					
			OUTDOOR	CU-E12PD3EA					
Performance Test Condition			EUROVENT						
Power Supply			Phase, Hz	Single, 50					
			V	220			230		
				Min.	Mid.	Max.	Min.	Mid.	Max.
Cooling	Capacity		kW	0.85	3.40	4.00	0.85	3.40	4.00
			BTU/h	2900	11600	13600	2900	11600	13600
			Kcal/h	730	2920	3440	730	2920	3440
	Running Current		A	-	4.3	-	-	4.1	-
	Input Power		W	240	880	1.16k	240	880	1.16k
	Annual Consumption		kWh	-	440	-	-	440	-
	EER		W/W	3.54	3.86	3.45	3.54	3.86	3.45
			Btu/hW	12.08	13.18	11.72	12.08	13.18	11.72
			Kcal/hW	3.04	3.32	2.97	3.04	3.32	2.97
	ErP	Pdesign	kW	3.4					
		SEER	W/W	5.6					
		Annual Consumption	kWh	213					
		Class		A+					
	Power Factor		%	-	93	-	-	93	-
	Indoor Noise (H / L / QLo)		dB-A	33 / 27 / 24			33 / 27 / 24		
			Power Level dB	49 / - / -			49 / - / -		
	Outdoor Noise (H / L)		dB-A	46 / - / -			46 / - / -		
			Power Level dB	61 / - / -			61 / - / -		
Heating	Capacity		kW	0.85	4.00	5.10	0.85	4.00	5.10
			BTU/h	2900	13600	17400	2900	13600	17400
			Kcal/h	730	3440	4390	730	3440	4390
	Running Current		A	-	5.35	-	-	5.15	-
	Input Power		W	230	1.13k	1.55k	230	1.13k	1.55k
	COP		W/W	3.70	3.54	3.29	3.70	3.54	3.29
			Btu/hW	12.61	12.04	11.23	12.61	12.04	11.23
			Kcal/hW	3.17	3.04	2.83	3.17	3.04	2.83
	ErP	Pdesign	kW	2.9					
		Tbivalent	°C	-10					
		SCOP	W/W	3.8					
		Annual Consumption	kWh	1068					
		Class		A					
	Power Factor		%	-	96	-	-	95	-
	Indoor Noise (H / L / QLo)		dB-A	35 / 28 / 25			35 / 28 / 25		
			Power Level dB	51 / - / -			51 / - / -		
	Outdoor Noise (H / L)		dB-A	47 / - / -			47 / - / -		
			Power Level dB	62 / - / -			62 / - / -		
※3 Low Temp. : Capacity (kW) / I. Power (W) / COP			3.70 / 1.37k / 2.70						
※4 Extr Low Temp. : Capacity (kW) / I. Power (W) / COP			3.00 / 1.27k / 2.36						
Max Current (A) / Max Input Power (W)			8.20 / 1.80k						
Starting Current (A)			5.35						
Compressor		Type	Hermetic Motor / Rotary						
		Motor Type	Brushless (4-poles)						
		Output Power	900						

MODEL				INDOOR	CS-E12PD3EA
				OUTDOOR	CU-E12PD3EA
Indoor Fan	Type				Sirocco
	Material				ABS
	Motor Type				DC Motor (8-poles)
	Output Power			W	30
	Speed	QLo	Cool	rpm	980
			Heat	rpm	1020
		Lo	Cool	rpm	1050
			Heat	rpm	1100
		Me	Cool	rpm	1170
			Heat	rpm	1250
		Hi	Cool	rpm	1300
			Heat	rpm	1400
		SHi	Cool	rpm	1380
			Heat	rpm	1450
Outdoor Fan	Type				Propeller Fan
	Material				PP
	Motor Type				DC (8-poles)
	Output Power			W	40
	Speed	Hi	Cool	rpm	620
			Heat	rpm	560
Moisture Removal			L/h (Pt/h)	2.0 (4.2)	
Indoor Airflow	QLo	Cool	m³/min (ft³/min)	5.6 (198)	
		Heat	m³/min (ft³/min)	6.3 (222)	
	Lo	Cool	m³/min (ft³/min)	6.4 (226)	
		Heat	m³/min (ft³/min)	7.2 (254)	
	Me	Cool	m³/min (ft³/min)	7.6 (268)	
		Heat	m³/min (ft³/min)	8.8 (311)	
	Hi	Cool	m³/min (ft³/min)	9.0 (320)	
		Heat	m³/min (ft³/min)	10.5 (370)	
	SHi	Cool	m³/min (ft³/min)	9.8 (346)	
		Heat	m³/min (ft³/min)	11.0 (388)	
Outdoor Airflow	Hi	Cool	m³/min (ft³/min)	34.2 (1205)	
		Heat	m³/min (ft³/min)	30.6 (1080)	
Refrigeration Cycle	Control Device			Expansion Valve	
	Refrigerant Oil		cm³	FV50S (450)	
	Refrigerant Type		g (oz)	R410A, 1.14k (40.2)	
Dimension	Height (I/D / O/D)		mm (inch)	285 (11-1/4) / 695 (27-3/8)	
	Width (I/D / O/D)		mm (inch)	750 (29-17/32) / 875 (34-15/32)	
	Depth (I/D / O/D)		mm (inch)	370 (14-19/32) / 320 (12-5/8)	
Weight		Net (I/D / O/D)	kg (lb)	18 (40) / 45 (99)	
Piping	Pipe Diameter (Liquid / Gas)			mm (inch)	6.35 (1/4) / 9.52 (3/8)
	Standard Length			m (ft)	5.0 (16.4)
	Length Range (min - max)			m (ft)	3 (9.8) ~ 20 (65.6)
	I/D & O/D Height Different			m (ft)	15 (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	14
		Length		mm	255

MODEL		INDOOR	CS-E12PD3EA	
		OUTDOOR	CU-E12PD3EA	
Indoor Heat Exchanger	Fin Material		Aluminium (Pre Coat)	
	Fin Type		Slit Fin	
	Row x Stage x FPI		3 x 12 x 18	
	Size (W x H x L)	mm	620 x 252 x 38.1	
Outdoor Heat Exchanger	Fin Material		Aluminium	
	Fin Type		Corrugated Fin	
	Row x Stage x FPI		2 x 31 x 17	
	Size (W x H x L)	mm	36.4 x 651 x 640	
Power Supply			Outdoor Power Supply	
Power Supply Cord		A	Nil	
Thermostat			Electronic Control	
Protection Device			Electronic Control	
			Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum °C	32	23
		Minimum °C	16	11
	Heating	Maximum °C	30	-
		Minimum °C	16	-
Outdoor Operation Range	Cooling	Maximum °C	43	26
		Minimum °C	-10	-
	Heating	Maximum °C	24	18
		Minimum °C	-10	-

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 Standby power consumption ≤0.7W (when switched OFF by remote control, except under self protection control).
- 6 Specifications are subjected to change without notice for further improvement.

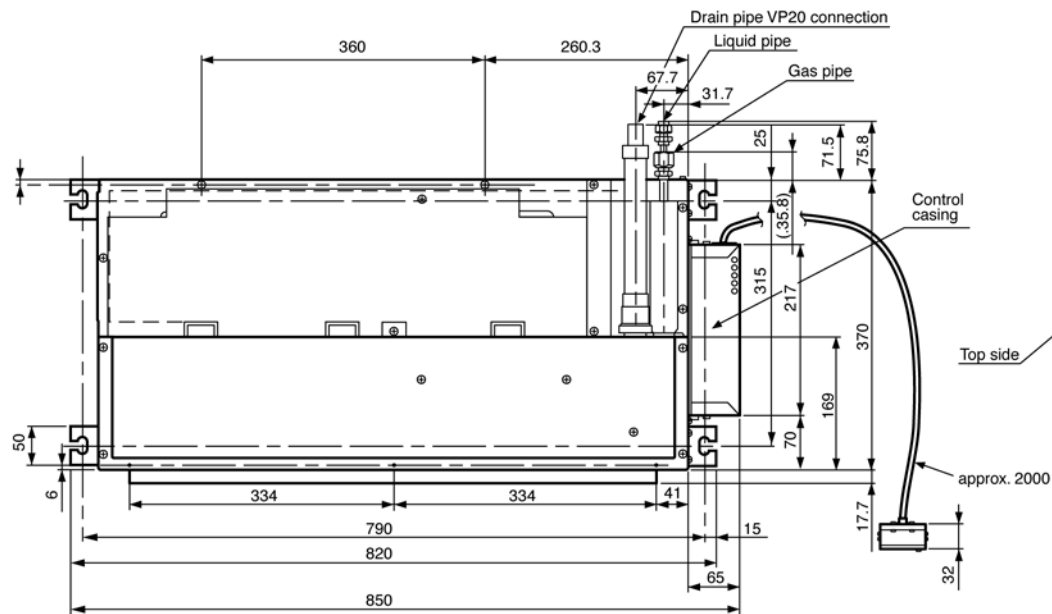
3. Features

- **Inverter Technology**
 - Wider output power range
 - Energy saving
 - Quick Cooling
 - Quick Heating
 - More precise temperature control
- **Environment Protection**
 - Non-ozone depletion substances refrigerant (R410A)
- **Long Installation Piping**
 - Long piping up to 20 meter
- **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

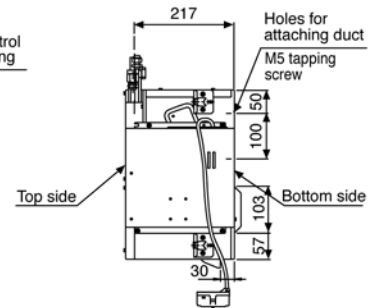
5. Dimensions

5.1 Indoor Unit

<Top View>

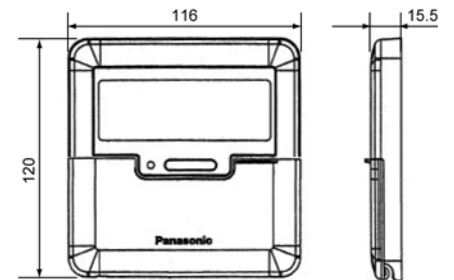


<Side View>

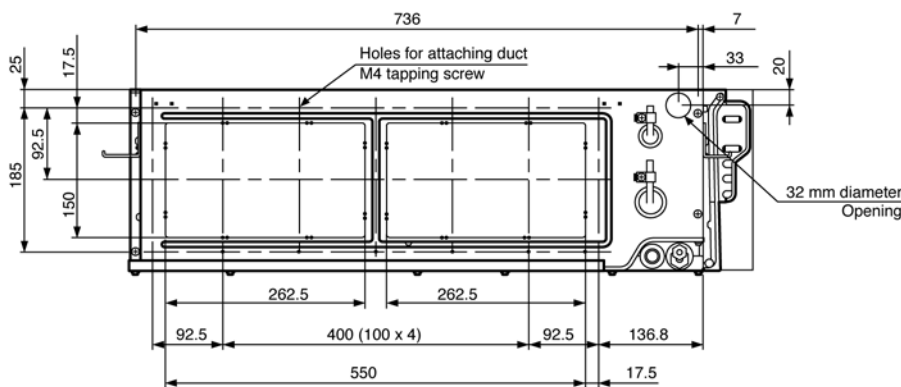


<Remote Control>

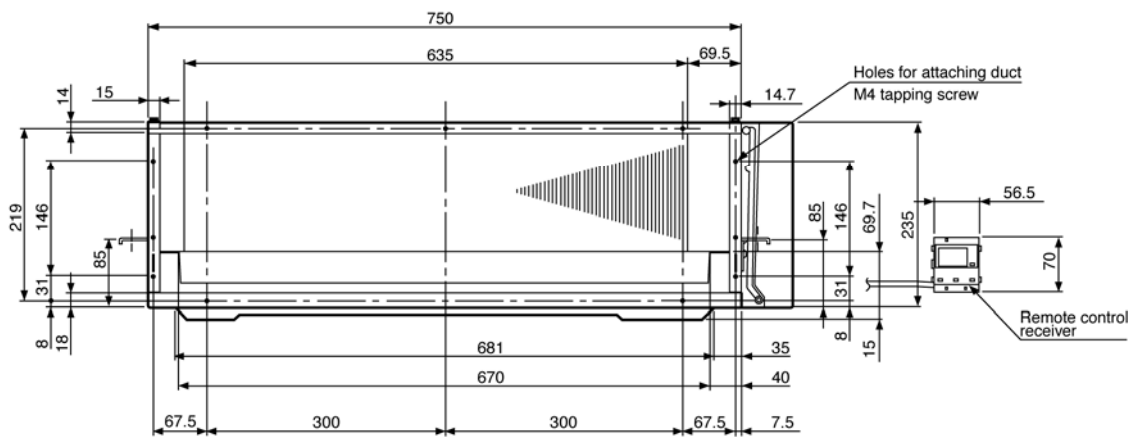
Remote control transmitter



<Back View>



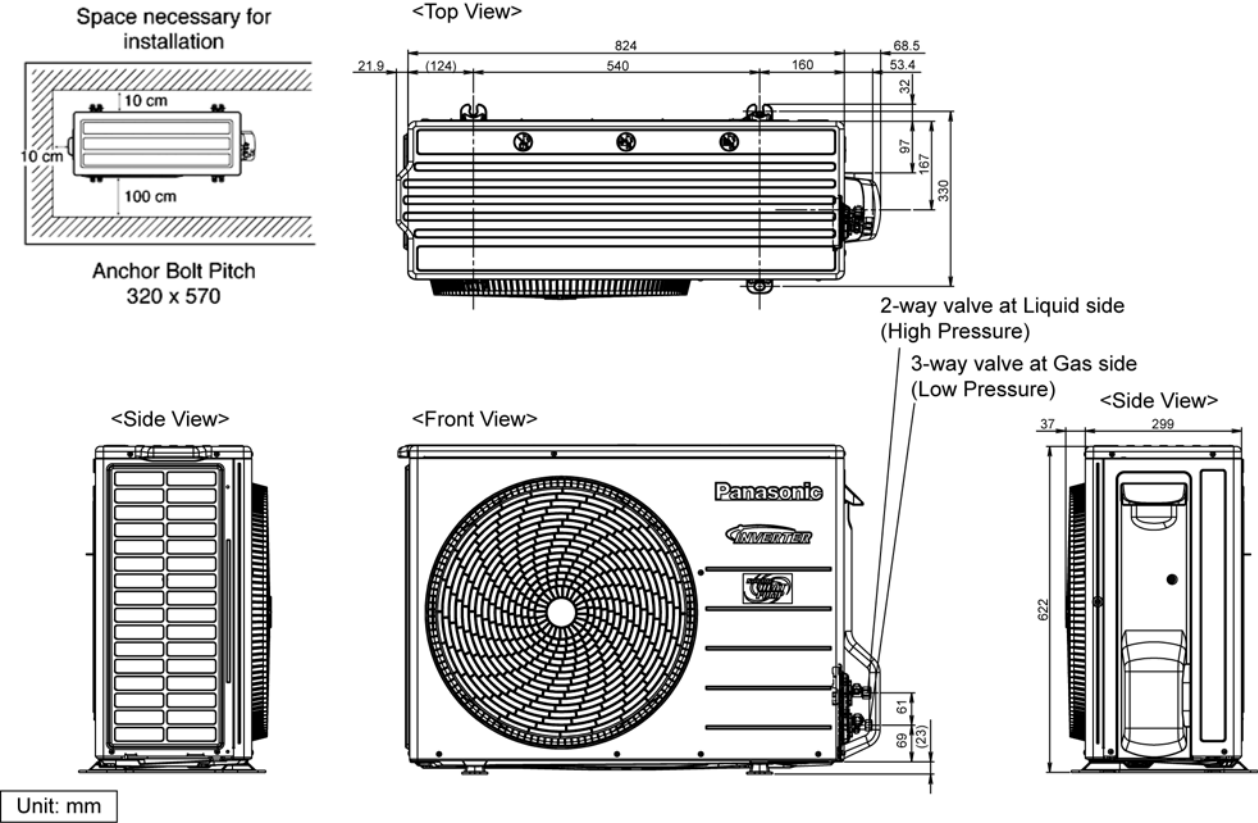
<Front View>



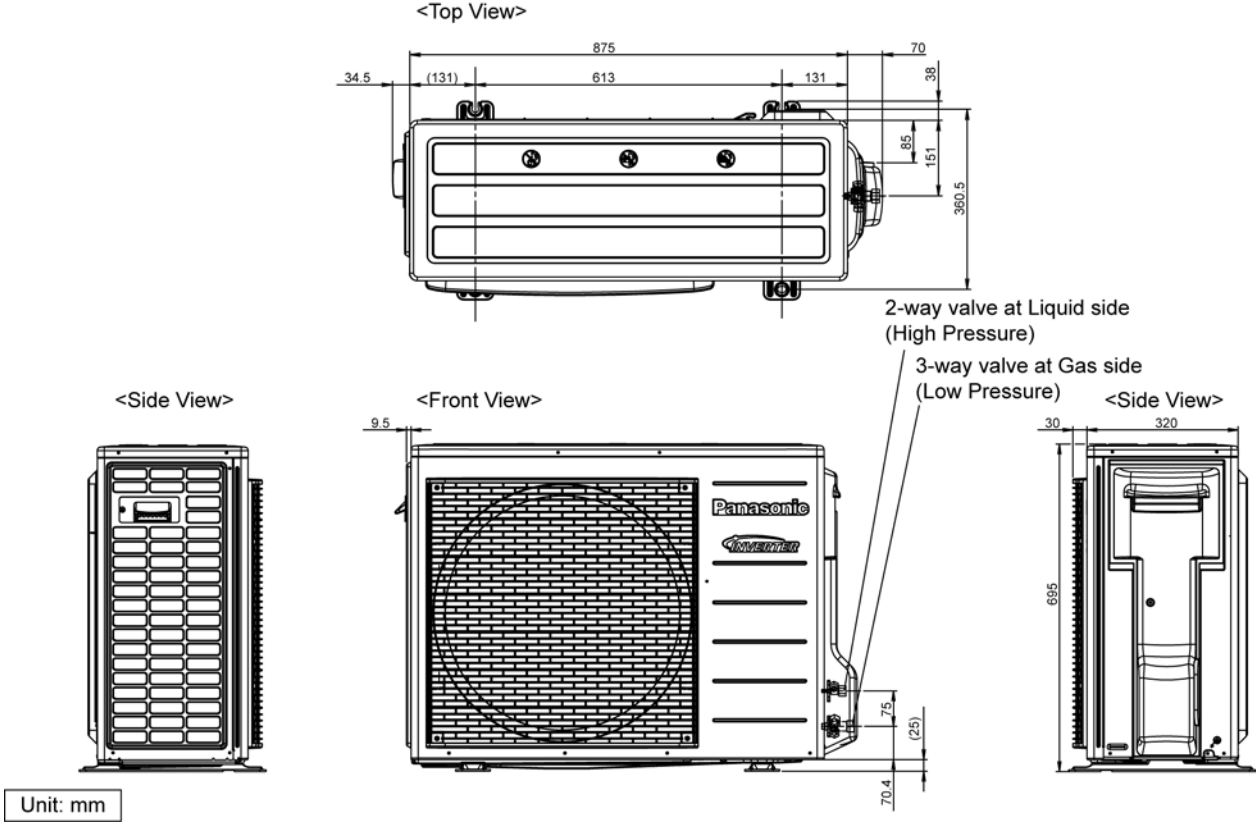
Unit : mm

5.2 Outdoor Unit

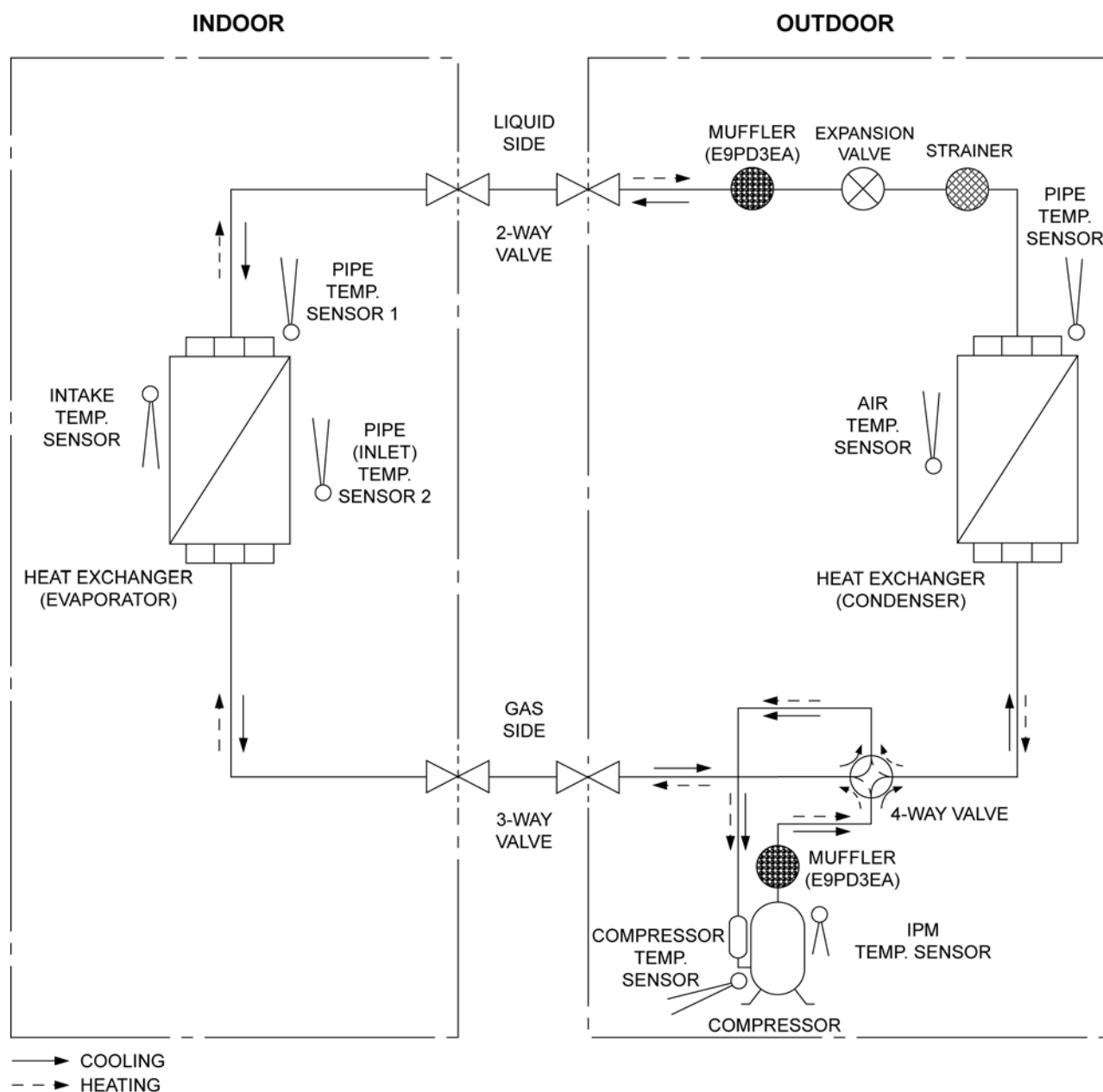
5.2.1 CU-E9PD3EA



5.2.2 CU-E12PD3EA

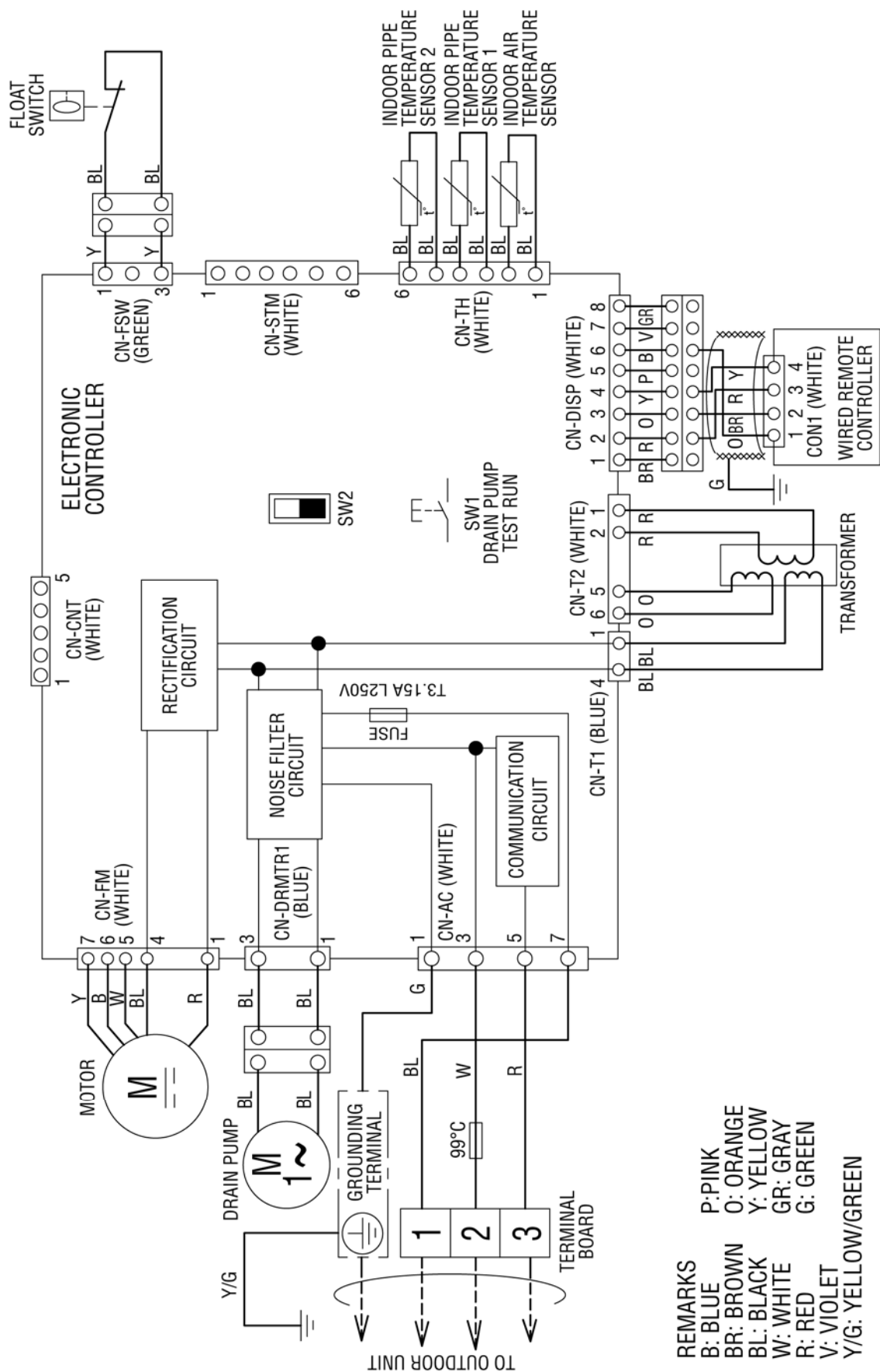


6. Refrigeration Cycle Diagram



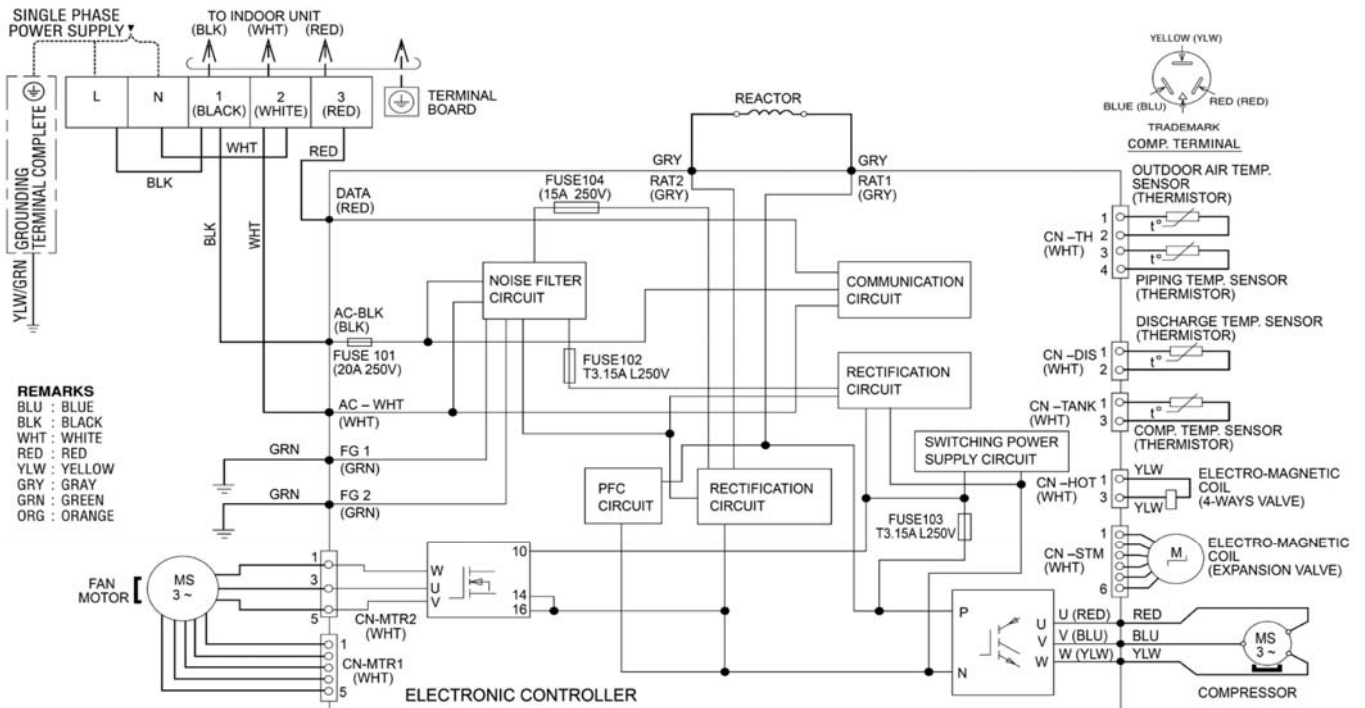
8. Wiring Connection Diagram

8.1 Indoor Unit



8.2 Outdoor Unit

8.2.1 CU-E9PD3EA

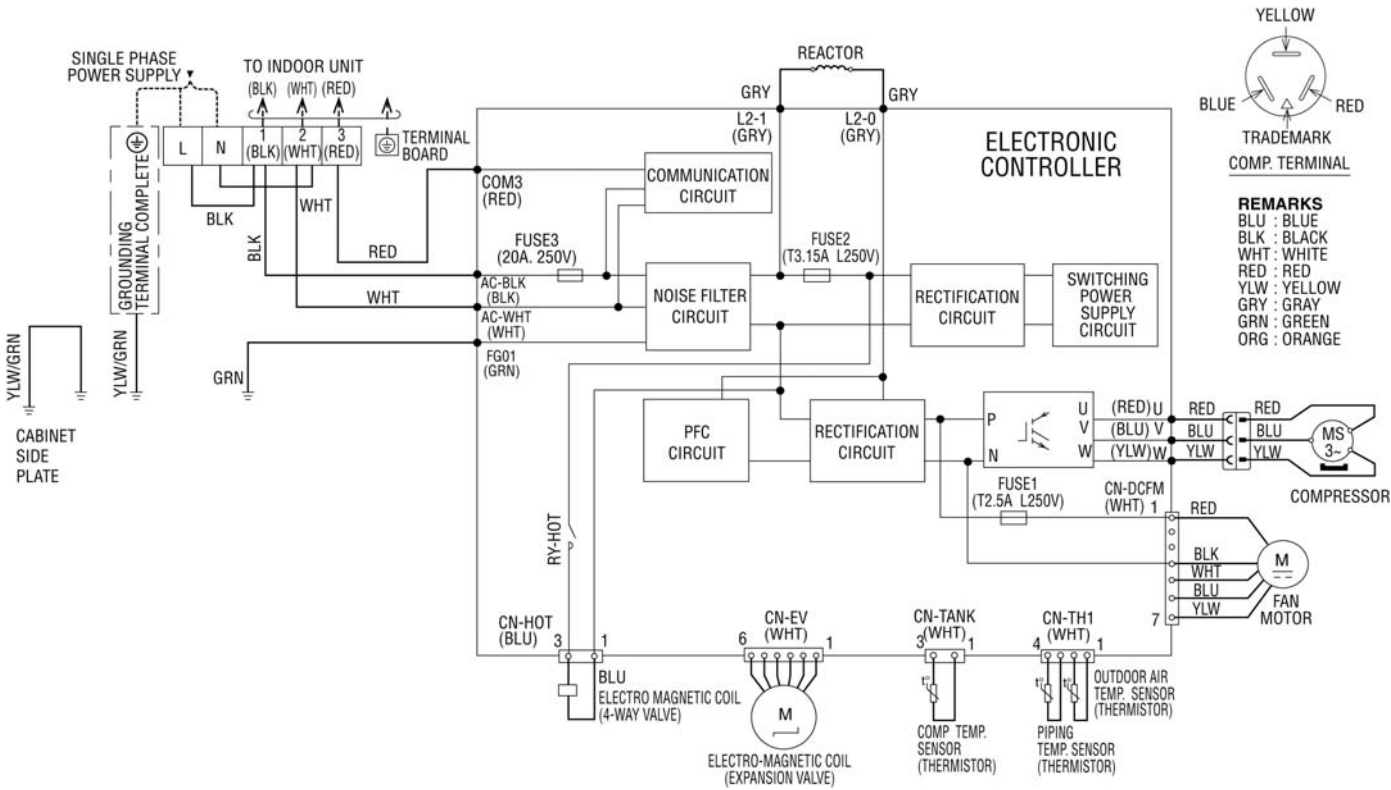


Resistance of Compressor Windings

MODEL	CU-E9PD3EA
CONNECTION	5RD132XBE21
U-V	1.897Ω
U-W	1.907Ω
V-W	1.882Ω

Note: Resistance at 20°C of ambient temperature.

8.2.2 CU-E12PD3EA



Resistance of Compressor Windings

MODEL	CU-E12PD3EA
CONNECTION	5RD132XBA21
U-V	1.897Ω
U-W	1.907Ω
V-W	1.882Ω

Note: Resistance at 20°C of ambient temperature.

17. Technical Data

Technical data provided are based on the air conditioner running under free frequency.

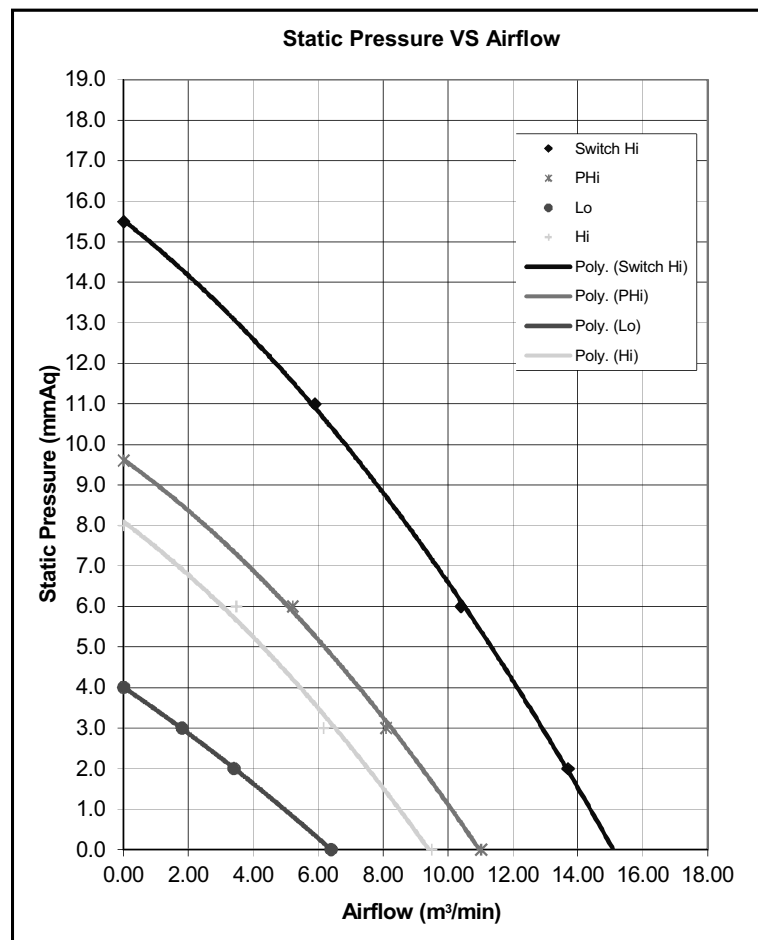
17.1 Fan Performance

17.1.1 CS-E9PD3EA CU-E9PD3EA

Test Report

Tap	Static Pressure (mmAq)	Airflow (m ³ /min)
Lo	4.0	0.00
	3.0	1.80
	2.0	3.40
	0.0	6.40
Hi	8.0	0.00
	6.0	3.48
	3.0	6.16
	0.0	9.50
Phi	9.6	0.00
	6.0	5.22
	3.0	8.10
	0.0	11.02
Switch Hi	15.5	0.00
	11.0	5.90
	6.0	10.40
	2.0	13.70

Fan Performance Curve

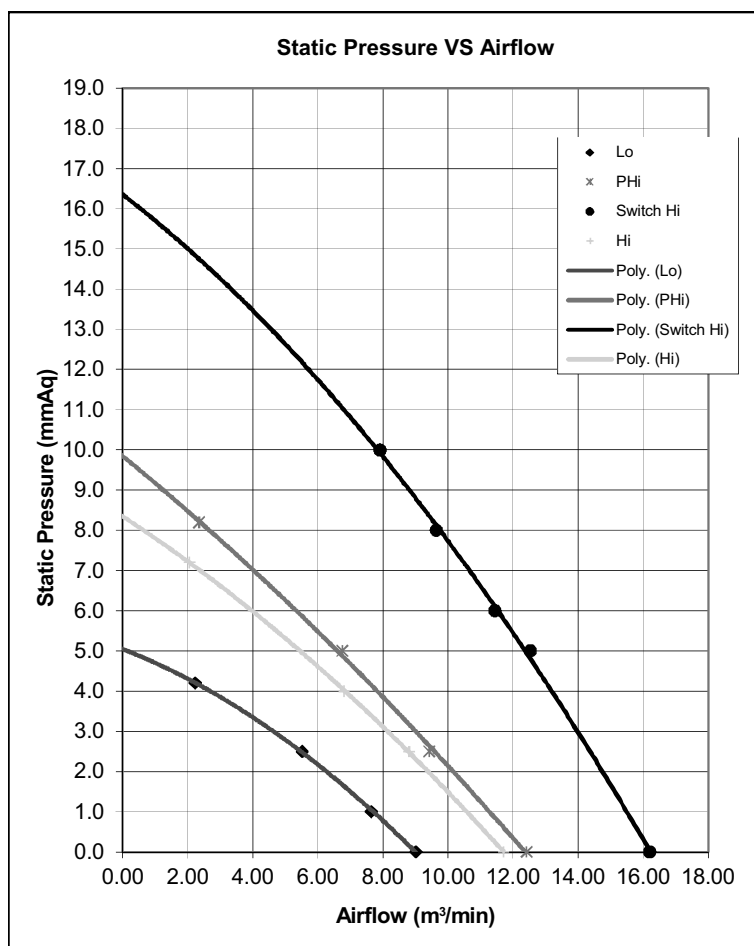


17.1.2 CS-E12PD3EA CU-E12PD3EA

Test Report

Tap	Static Pressure (mmAq)	Airflow (m ³ /min)
Lo	4.2	2.23
	2.5	5.52
	1.0	7.64
	0.0	9.02
Hi	7.2	2.05
	4.0	6.80
	2.5	8.81
	0.0	11.70
Phi	8.2	2.35
	5.0	6.75
	2.5	9.42
	0.0	12.42
Switch Hi	10.0	7.91
	8.0	9.64
	6.0	11.44
	5.0	12.53
	0.0	16.20

Fan Performance Curve



18. Service Data

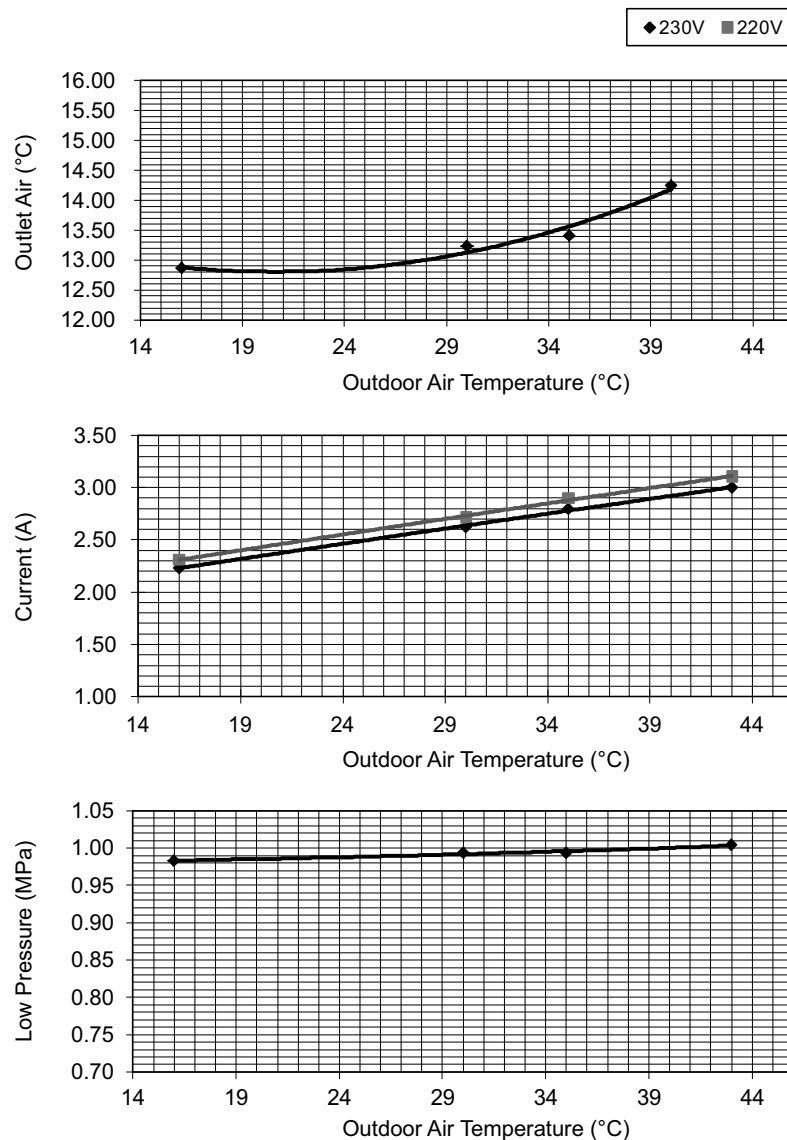
Service data provided are based on the air conditioner running under rated frequency during forced cooling / forced heating mode.

18.1 Cool Mode Outdoor Air Temperature Characteristic

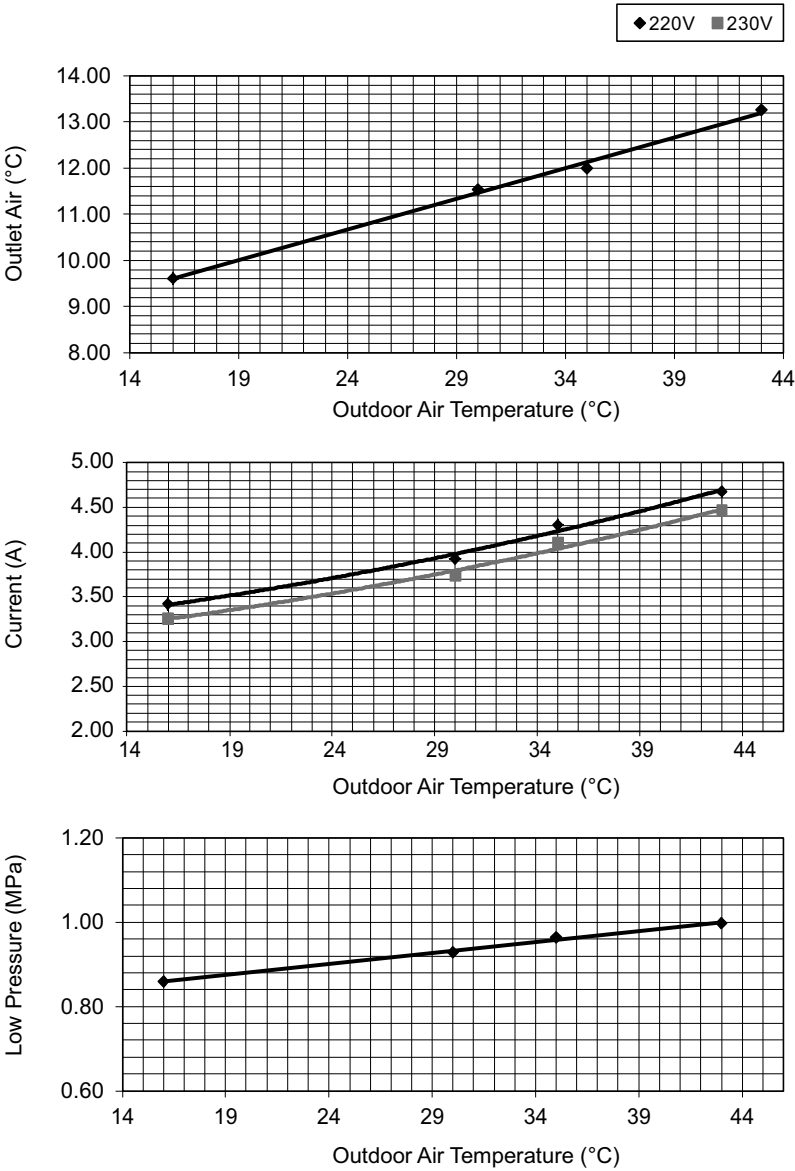
Condition

- Indoor room temperature: 27°C DryBulb/19°C Wet Bulb
- Unit setting: Standard piping length, forced cooling at 16°C, Hi fan
- Compressor frequency: Rated for cooling operation
- Voltage: 220V/230V

18.1.1 CS-E9PD3EA CU-E9PD3EA



18.1.2 CS-E12PD3EA CU-E12PD3EA

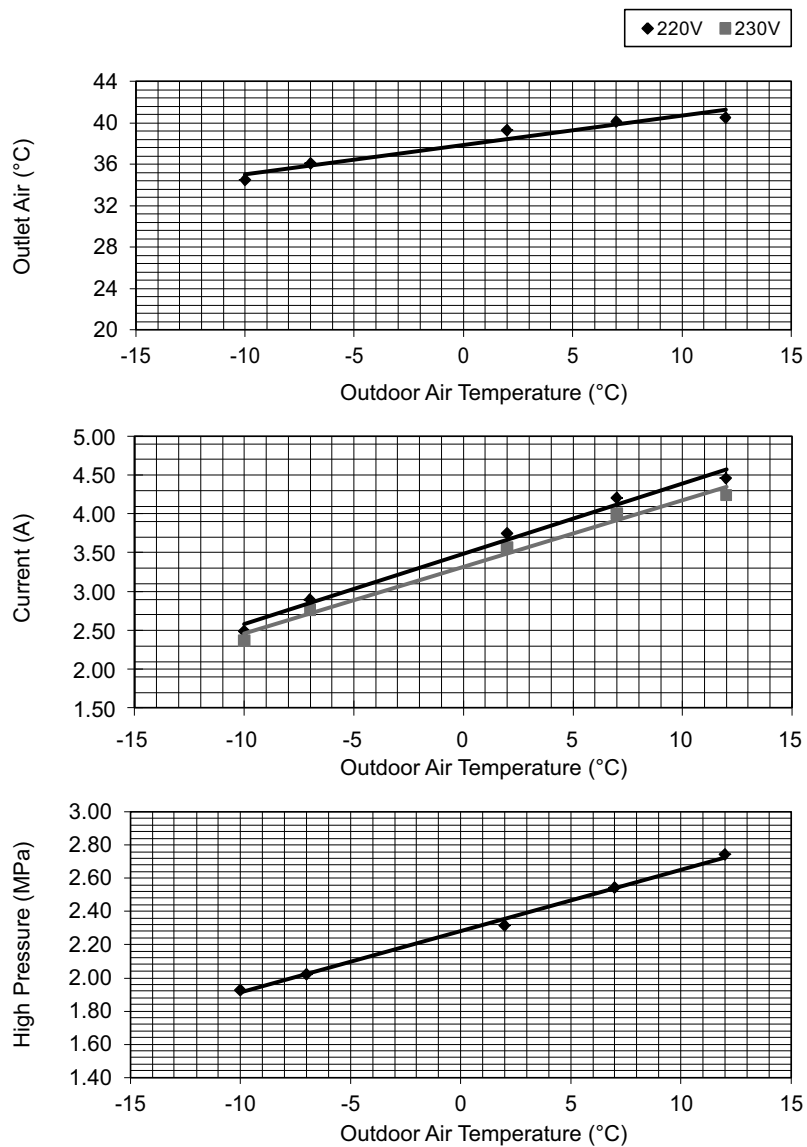


18.2 Heat Mode Outdoor Air Temperature Characteristic

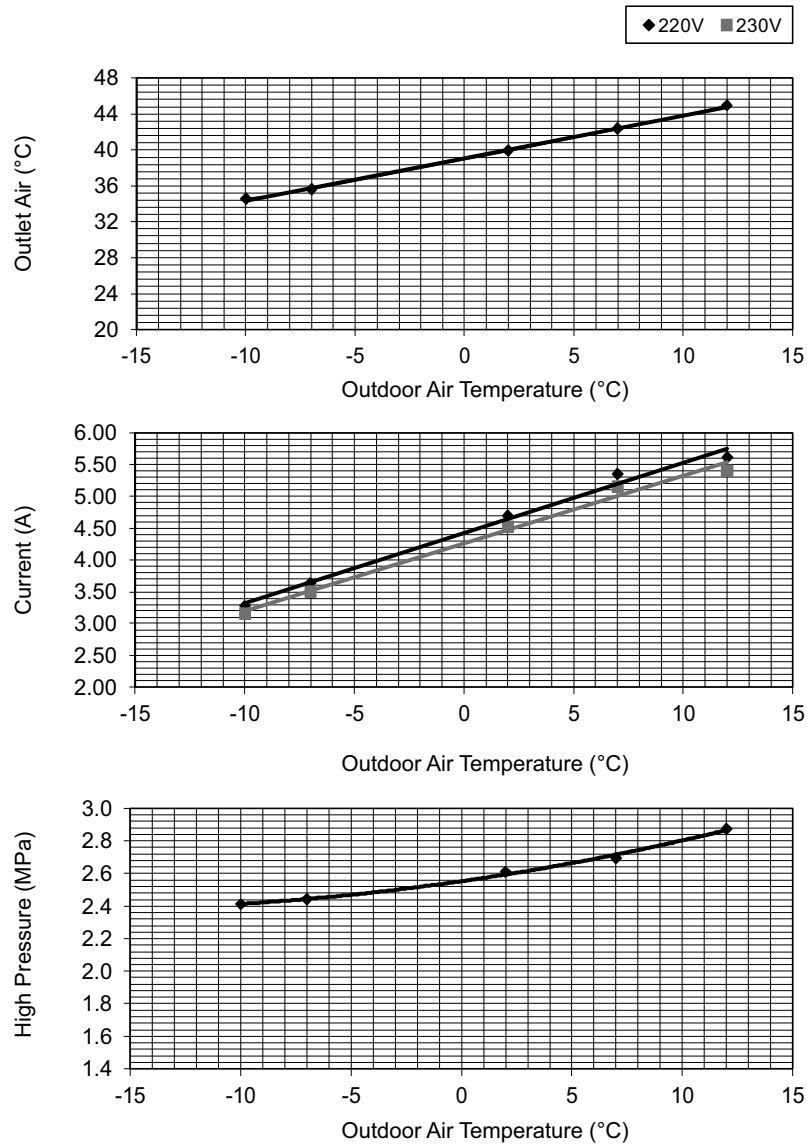
Condition

- Indoor room temperature: 20°C DryBulb/ -°C Wet Bulb
- Unit setting: Standard piping length, forced heating at 30°C, Hi fan
- Compressor frequency: Rated for Heating operation
- Voltage: 220V/230V

18.2.1 CS-E9PD3EA CU-E9PD3EA



18.2.2 CS-E12PD3EA CU-E12PD3EA

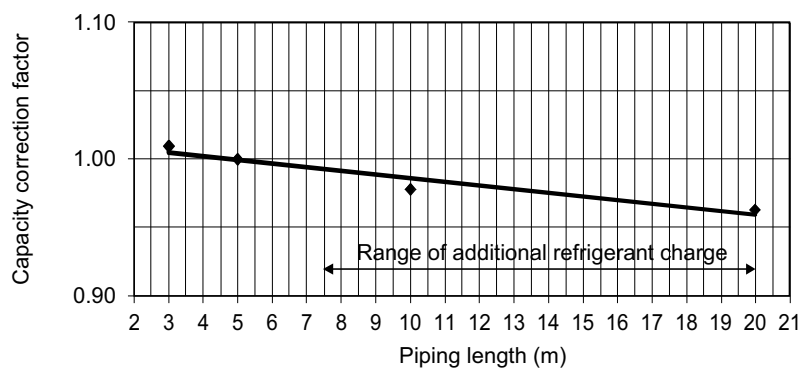


18.3 Piping Length Correction Factor

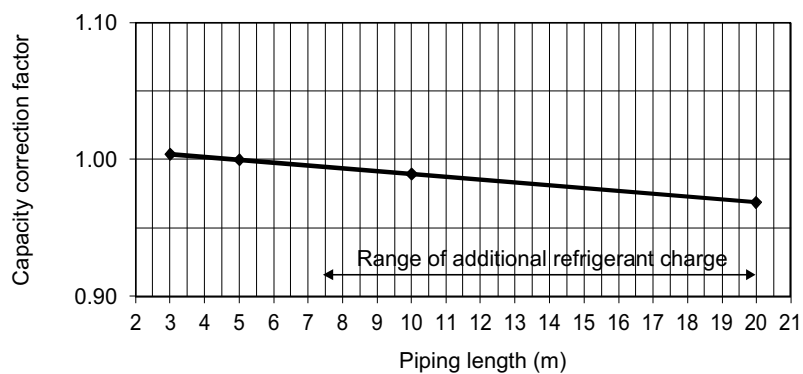
The characteristic of the unit has to be corrected in accordance with the piping length.

18.3.1 CS-E9PD3EA CU-E9PD3EA

18.3.1.1 Cooling Capacity



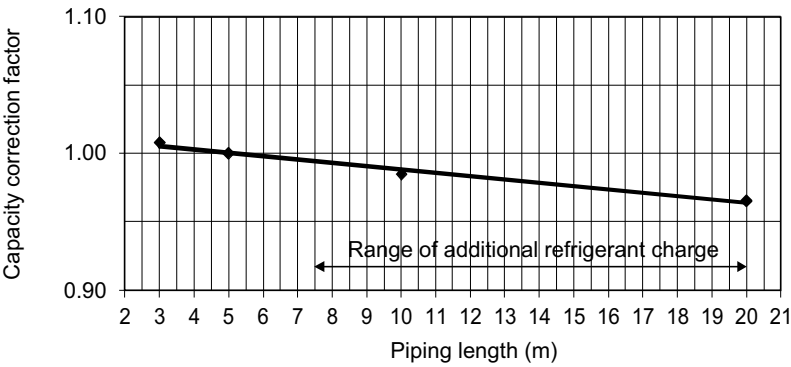
18.3.1.2 Heating Capacity



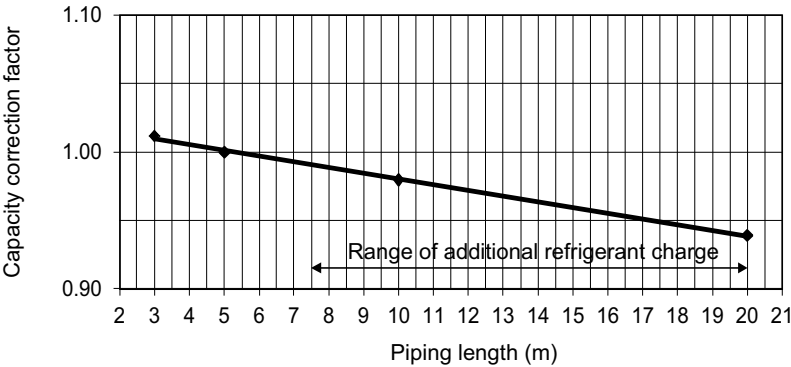
Note: The graphs show the factor after added right amount of additional refrigerant.

18.3.2 CS-E12PD3EA CU-E12PD3EA

18.3.2.1 Cooling Capacity



18.3.2.2 Heating Capacity



Note: The graphs show the factor after added right amount of additional refrigerant.