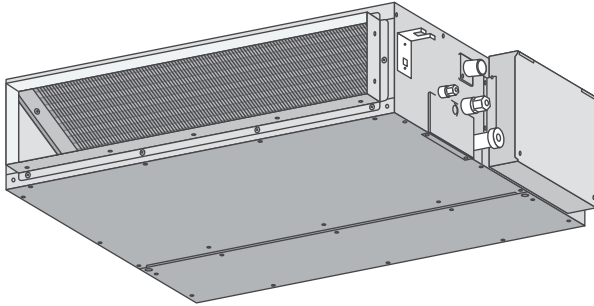


Service Manual

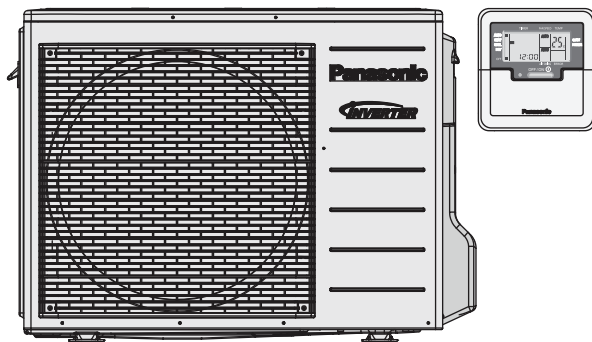
Air Conditioner



Indoor Unit
CS-E18RD3EAW

Outdoor Unit
CU-E18RBEA

Destination
Europe
Turkey



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.

2. Specifications

MODEL			INDOOR	CS-E18RD3EAW						
			OUTDOOR	CU-E18RBEA						
Performance Test Condition			EUROVENT							
Power Supply			Phase, Hz	Single, 50						
			V	220			230			
				Min.	Mid.	Max.	Min.	Mid.	Max.	
Cooling	Capacity		kW	0.90	5.10	5.70	0.90	5.10	5.70	
			BTU/h	3070	17400	19400	3070	17400	19400	
			kcal/h	770	4390	4900	770	4390	4900	
	Running Current		A	-	7.60	-	-	7.30	-	
	Input Power		W	255	1.60k	1.82k	255	1.60k	1.82k	
	Annual Consumption		kWh	-	800	-	-	800	-	
	EER		W/W	3.53	3.19	3.13	3.53	3.19	3.13	
			BTU/hW	12.04	10.88	10.66	12.04	10.88	10.66	
			kcal/hW	3.02	2.74	2.69	3.02	2.74	2.69	
	ErP	Pdesign		kW	5.1					
		SEER		W/W	5.8					
		Annual Consumption		kWh	308					
		Class			A+					
	Power Factor			%	-	96	-	-	95	-
	Indoor Noise (H / L / QLo)			dB-A	41 / 30 / 27			41 / 30 / 27		
				Power Level dB	57 / 46 / 43			57 / 46 / 43		
	Outdoor Noise (H / L / QLo)			dB-A	47 / - / -			47 / - / -		
				Power Level dB	61 / - / -			61 / - / -		
Heating	Capacity		kW	0.90	6.10	7.10	0.90	6.10	7.10	
			BTU/h	3070	20800	24200	3070	20800	24200	
			kcal/h	770	5250	6110	770	5250	6110	
	Running Current		A	-	8.60	-	-	8.30	-	
	Input Power		W	260	1.83k	2.18k	260	1.83k	2.18k	
	COP		W/W	3.46	3.33	3.26	3.46	3.33	3.26	
			BTU/hW	11.81	11.37	11.10	11.81	11.37	11.10	
			kcal/hW	2.96	2.87	2.80	2.96	2.87	2.80	
	ErP	Pdesign		kW	4.0					
		Tbivalent		°C	-10					
		SCOP		W/W	3.9					
		Annual Consumption		kWh	1436					
		Class			A					
	Power Factor			%	-	97	-	-	96	-
	Indoor Noise (H / L / QLo)			dB-A	41 / 32 / 29			41 / 32 / 29		
				Power Level dB	57 / 48 / 45			57 / 48 / 45		
	Outdoor Noise (H / L / QLo)			dB-A	48 / - / -			48 / - / -		
				Power Level dB	62 / - / -			62 / - / -		
※3 Low Temp. : Capacity (kW) / I. Power (W) / COP				5.14 / 1.93k / 2.66						
※4 Extr Low Temp. : Capacity (kW) / I. Power (W) / COP				4.30 / 1.88k / 2.29						
Max Current (A) / Max Input Power (W)				10.2 / 2.18k						
Starting Current (A)				8.60						

MODEL				INDOOR	CS-E18RD3EAW	
				OUTDOOR	CU-E18RBEA	
Compressor		Type			Hermetic Motor / Rotary	
		Motor Type			Brushless (4-poles)	
		Output Power			900	
Indoor Fan	Type				Sirocco	
	Material				GFZ010A / GF20	
	Motor Type				DC Motor (8-poles)	
	Output Power			W	51	
	Speed	QLo	Cool	rpm	920	
			Heat	rpm	920	
		Lo	Cool	rpm	980	
			Heat	rpm	1000	
		Me	Cool	rpm	1230	
			Heat	rpm	1240	
		Hi	Cool	rpm	1480	
			Heat	rpm	1480	
		SHi	Cool	rpm	1530	
			Heat	rpm	1530	
Outdoor Fan	Type				Propeller Fan	
	Material				PP	
	Motor Type				DC Motor (8-poles)	
	Output Power			W	40	
	Speed	Hi	Cool	rpm	640	
			Heat	rpm	640	
Moisture Removal				L/h (Pt/h)	2.8 (5.9)	
Indoor Airflow		QLo	Cool	m³/min (ft³/min)	8.8 (311)	
			Heat	m³/min (ft³/min)	8.8 (311)	
		Lo	Cool	m³/min (ft³/min)	9.4 (332)	
			Heat	m³/min (ft³/min)	9.8 (346)	
		Me	Cool	m³/min (ft³/min)	12.6 (445)	
			Heat	m³/min (ft³/min)	12.6 (445)	
		Hi	Cool	m³/min (ft³/min)	15.3 (540)	
			Heat	m³/min (ft³/min)	15.3 (540)	
SHi	Cool	m³/min (ft³/min)	16.0 (565)			
	Heat	m³/min (ft³/min)	16.0 (565)			
Outdoor Airflow		Hi	Cool	m³/min (ft³/min)	39.2 (1385)	
			Heat	m³/min (ft³/min)	39.2 (1385)	
Refrigeration Cycle		Control Device			Expansion Valve	
		Refrigerant Oil		cm³	FV50S (450)	
		Refrigerant Type		g (oz)	R410A, 1.23k (43.4)	
Dimension		Height (I/D / O/D)		mm (inch)	200 (7-7/8) / 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)	640 (25-7/32) / 320 (12-5/8)	
Weight		Net (I/D / O/D)		kg (lb)	19 (42) / 47 (104)	

MODEL		INDOOR	CS-E18RD3EAW	
		OUTDOOR	CU-E18RBEA	
Piping	Pipe Diameter (Liquid / Gas)	mm (inch)	6.35 (1/4) / 12.70 (1/2)	
	Standard Length	m (ft)	5.0 (16.4)	
	Length Range (min - max)	m (ft)	3 (9.8) ~ 30 (98.4)	
	I/D & O/D Height Different	m (ft)	20 (65.6)	
	Additional Gas Amount	g/m (oz/ft)	20 (0.2)	
	Length for Additional Gas	m (ft)	10 (32.8)	
Drain Hose	Inner Diameter	mm	19.5	
	Length	mm	131	
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	590 x 282 x 38.1	
Outdoor Heat Exchanger	Fin Material		Aluminium (Pre Coat)	
	Fin Type		Corrugated Fin	
	Row x Stage x FPI		2 x 31 x 19	
	Size (W x H x L)	mm	36.4 x 651 x 854.5:824.5	
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.

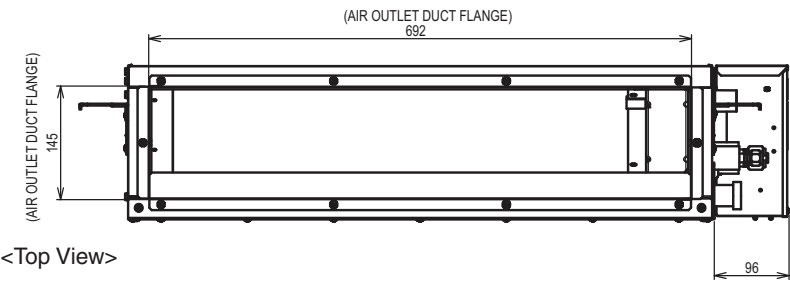
3. Features

- **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 30 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

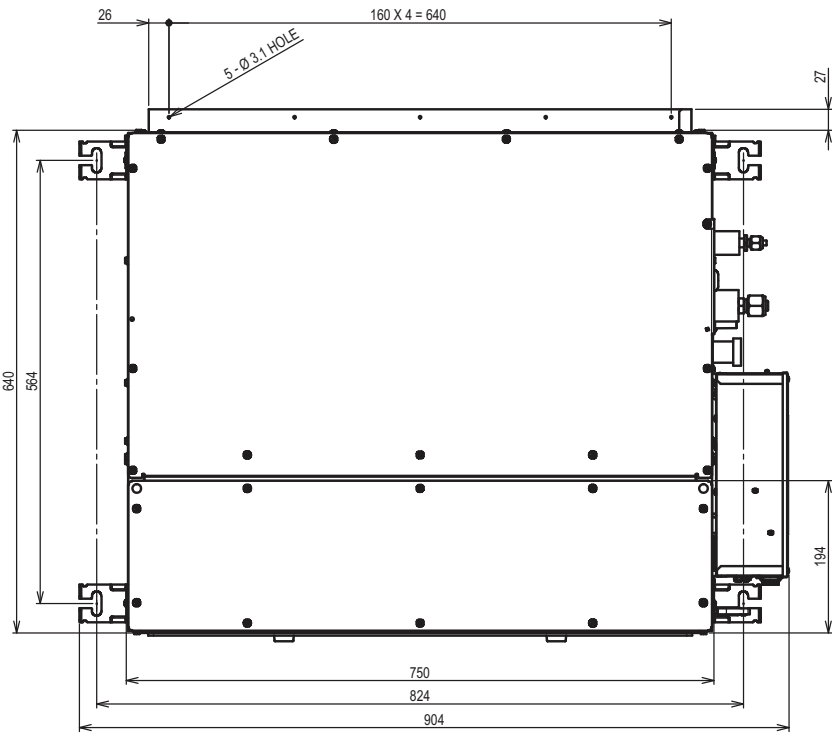
5. Dimensions

5.1 Indoor Unit

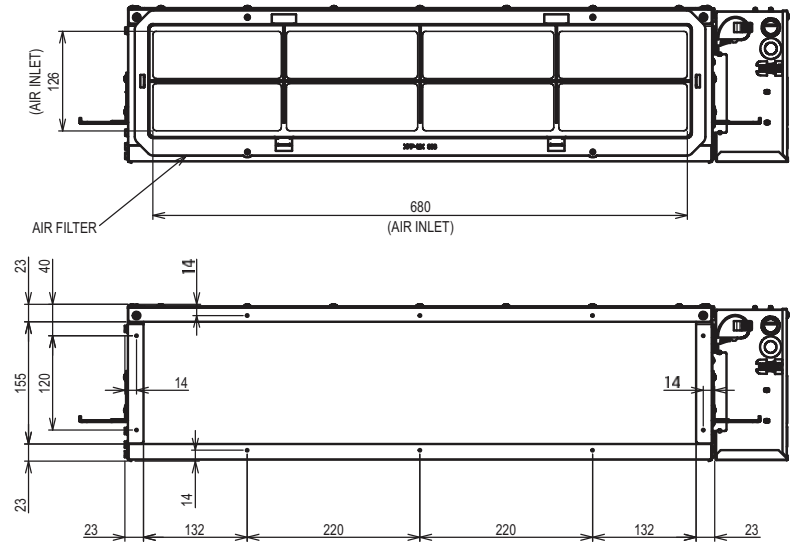
<Front View>



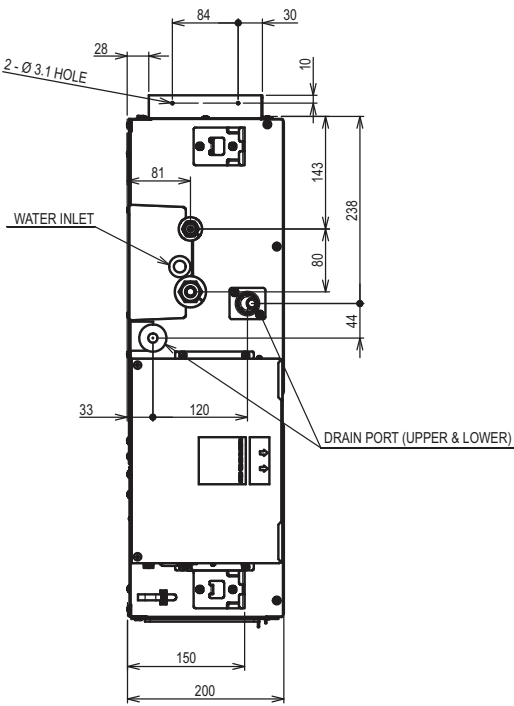
<Top View>



<Back View>

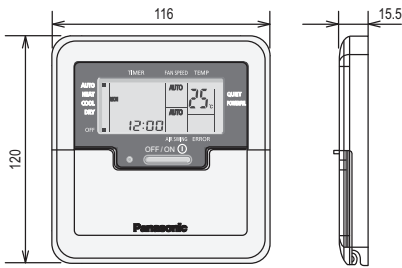


<Side View>



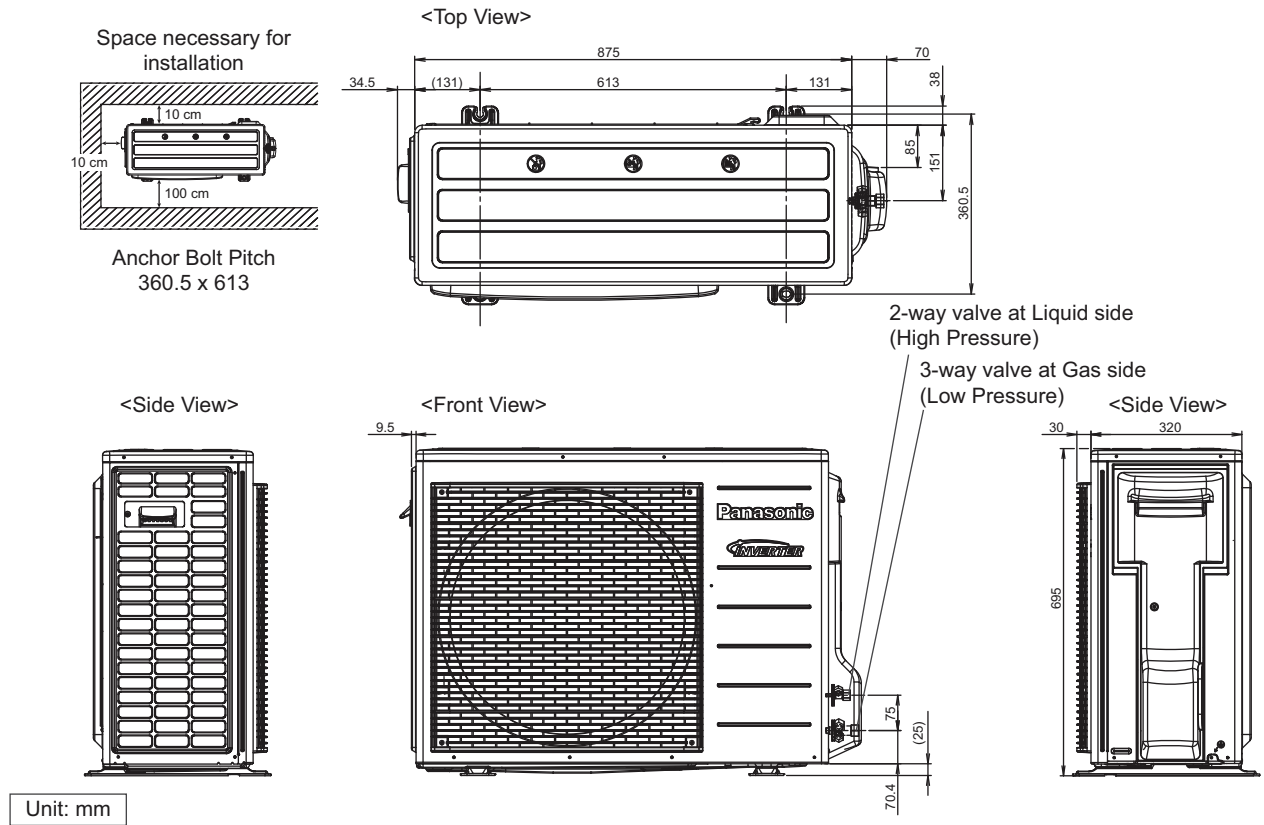
<Remote Control>

Remote control transmitter

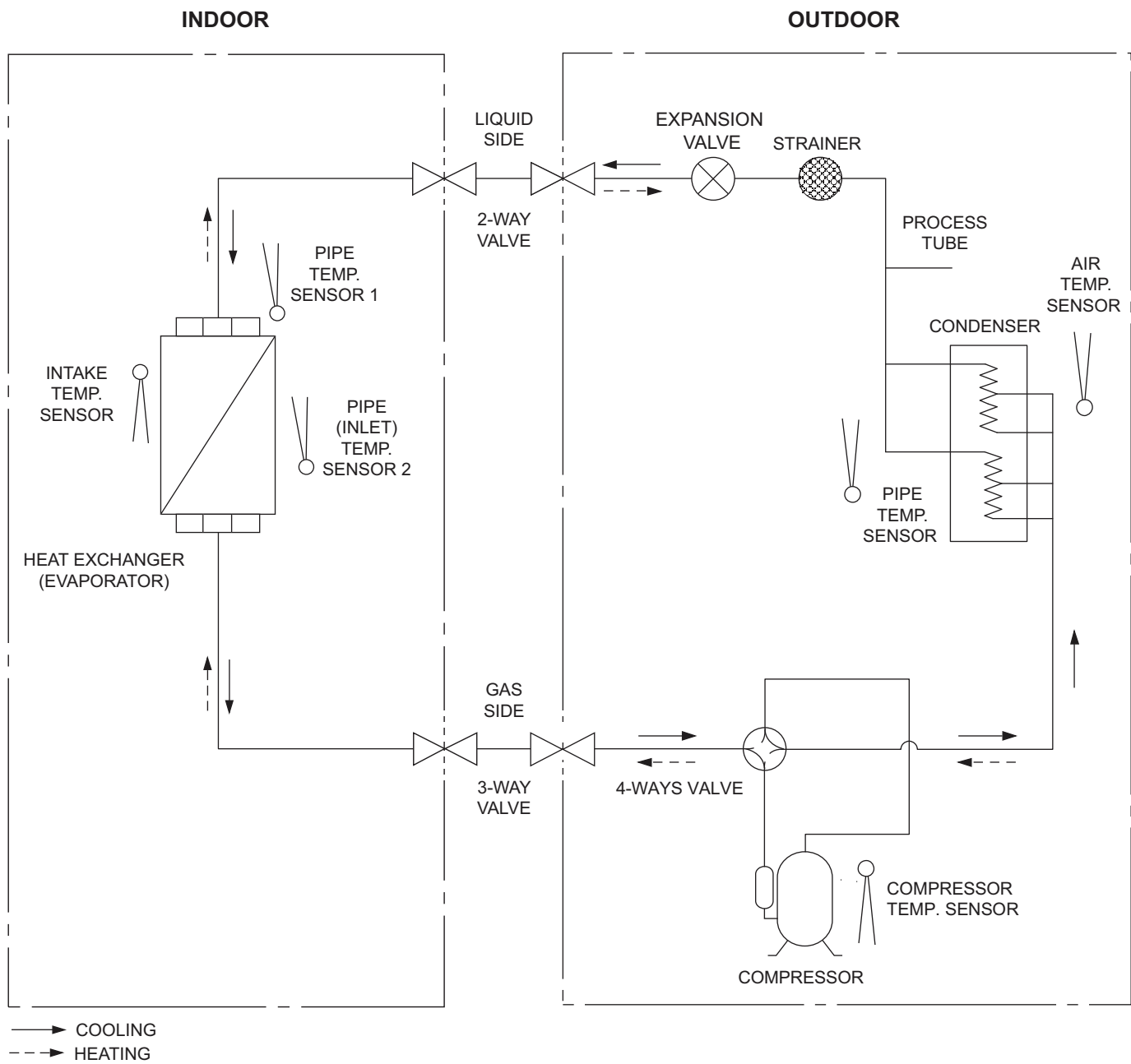


Unit : mm

5.2 Outdoor Unit

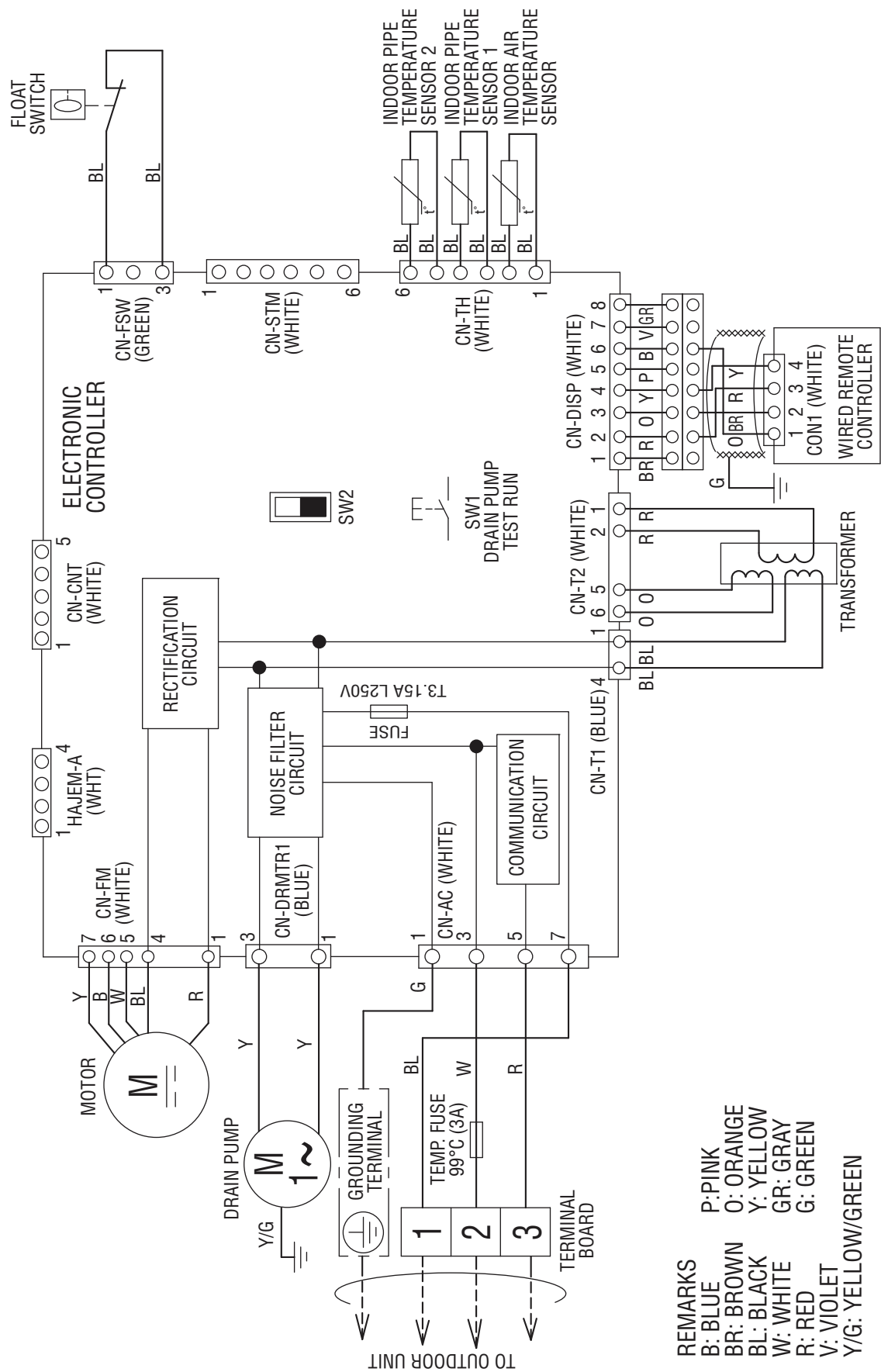


6. Refrigeration Cycle Diagram

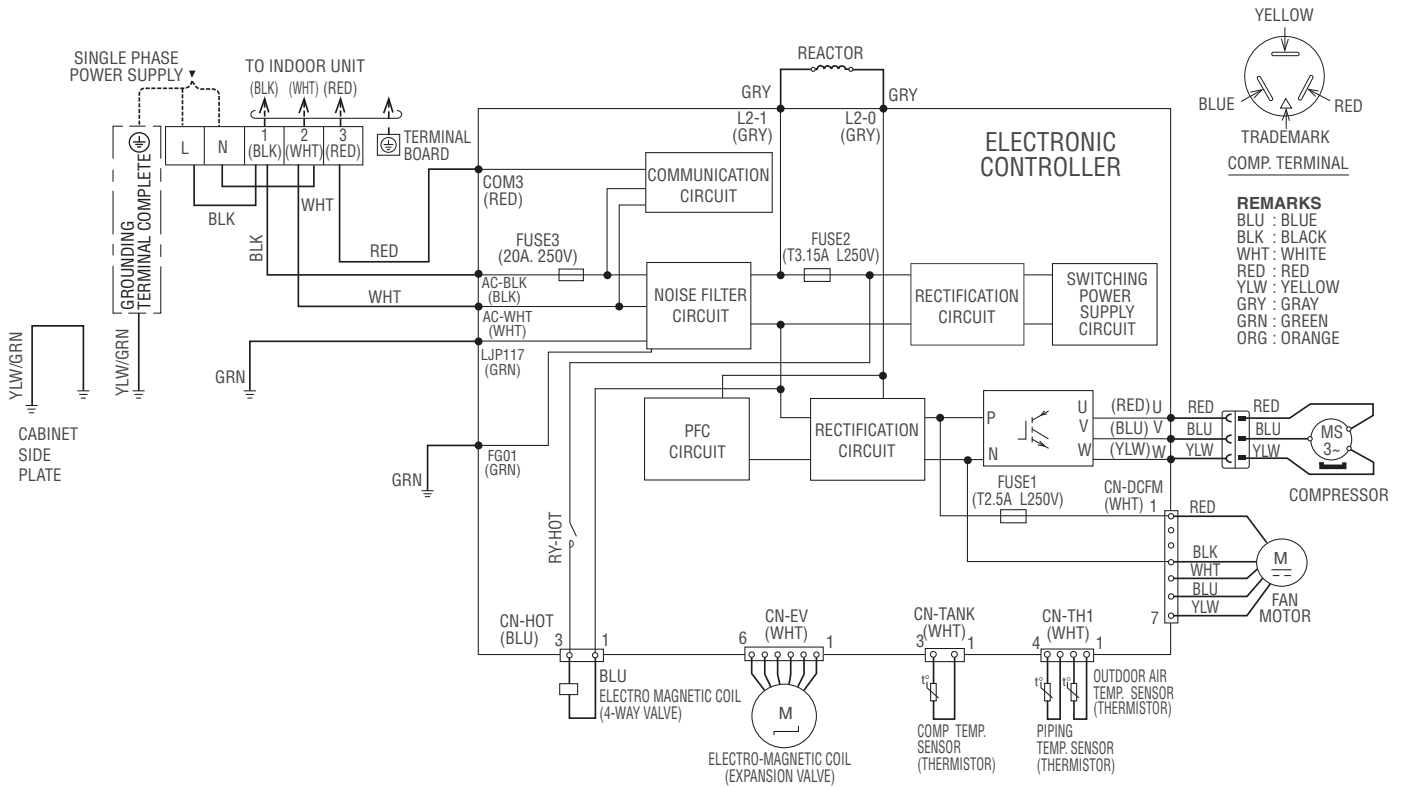


8. Wiring Connection Diagram

8.1 Indoor Unit



8.2 Outdoor Unit



Resistance of Compressor Windings

MODEL	CU-E18RBEA
CONNECTION	5RD132XBA21
U-V	1.897 Ω
U-W	1.907 Ω
V-W	1.882 Ω

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 Cool Mode Performance Data

Unit setting: Standard piping length, Hi Fan, Cool mode at 16°C

Voltage: 220V/230V

Indoor (°C)		Outdoor DB (°C)											
DB	WB	-10			-7			0			5		
		TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
27	19.0	6235	4541	1234	6288	4549	1146	6178	4519	1222	6251	4548	1149
	22.0	6761	3600	1246	6987	3649	1055	6969	3641	991	6892	3593	1144
23	15.7	5059	4346	1100	5242	4211	932	5110	4141	852	5766	4453	1125
	18.4	6297	3591	1051	6107	3551	1227	6051	3529	1277	6011	3506	1245
20	13.3	3908	3571	733	3949	3591	737	4131	3689	648	3844	3493	747
	15.8	5267	3319	1050	5688	3510	926	5882	3603	1085	4385	2850	825

Indoor (°C)		Outdoor DB (°C)								
DB	WB	16			25			35		
		TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
27	19.0	6132	4422	1149	2947	2917	422	5100	4043	1600
	22.0	6790	3563	1138	5125	2964	896	5300	3022	1714
23	15.7	5435	4275	1011	2945	2826	494	4280	3747	1584
	18.4	7082	3999	1417	4594	2372	856	4847	3126	1595
20	13.3	4242	3728	763	2944	2885	566	3582	3384	1592
	15.8	4944	3182	835	4062	2760	816	4412	3031	1589

(Dry bulb value based on 46% humidity)

TC - Total Cooling Capacity (W)

SHC - Sensible Heat Capacity (W)

IP - Input Power (W)

17.2 Heat Mode Performance Data

Unit setting: Standard piping length, Hi Fan, Heat mode at 30°C

Voltage: 220V/230V

Indoor (°C)	Outdoor WB (°C)									
DB	-10		-7		2		7		12	
	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP
24	3753	1900	4252	1900	4919	1960	5691	1824	6162	1822
20	4000	1887	4300	1880	5140	1930	6100	1830	6714	1833
16	4267	1869	3869	1662	5169	1888	6563	1834	7170	1829

TC - Total Heating Capacity (W)

IP - Input Power (W)

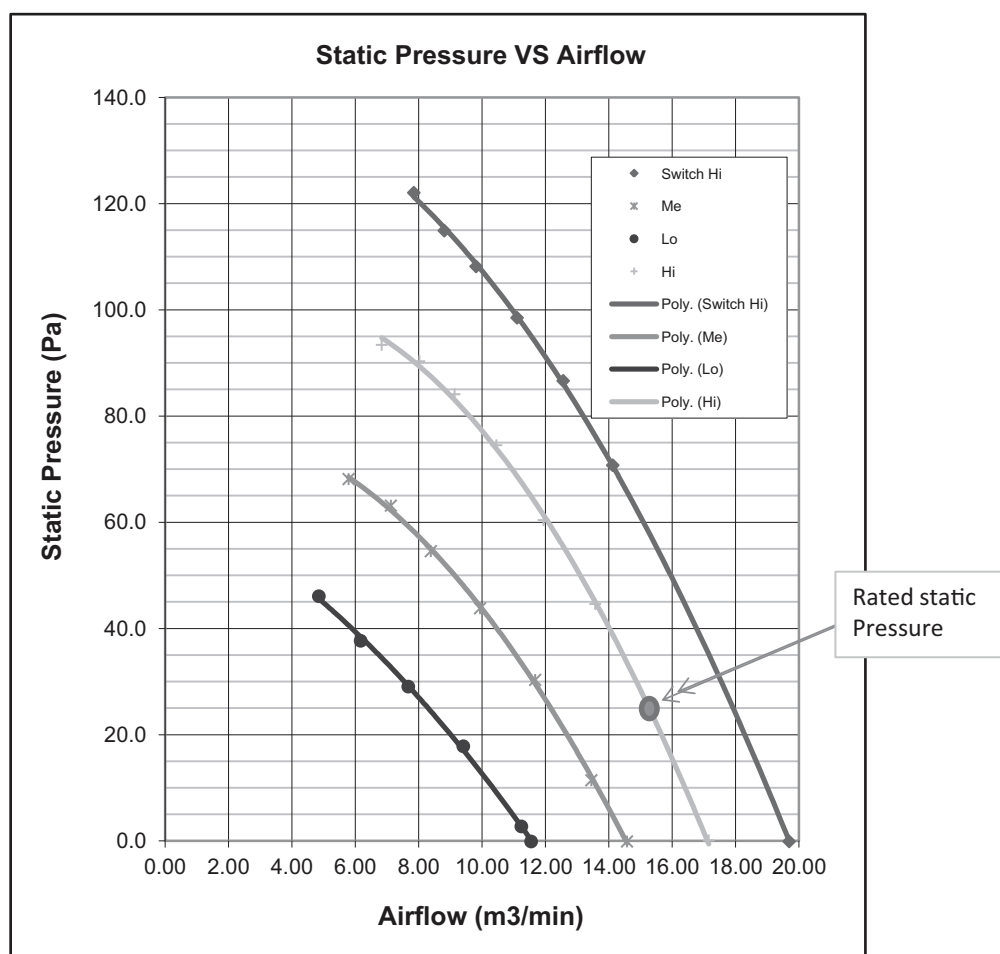
17.3 Fan Performance

Test Report

Tap	Static Pressure (mmAq)	Airflow (m ³ /min)
Lo	-0.1	11.55
	2.7	11.24
	17.8	9.41
	29.0	7.67
	37.7	6.17
	46.1	4.85
Hi	0.1	17.15
	24.4	15.27
	44.6	13.57
	60.4	11.94
	74.5	10.45
	84.1	9.13
	90.3	8.02
	93.4	6.83

Tap	Static Pressure (mmAq)	Airflow (m ³ /min)
Me	-0.1	14.57
	11.4	13.45
	30.3	11.67
	43.8	9.93
	54.5	8.38
	63.1	7.12
	68.1	5.79
Switch Hi	-0.1	19.69
	70.7	14.12
	86.6	12.56
	98.5	11.10
	108.2	9.81
	114.9	8.81
	122.0	7.84

Fan Performance Curve



	RPM	Static Pressure	Airflow
Hi Fan (Rated)	1480	25 Pa	15.3
SHi Fan (Hi Static P selected)	1650	57 Pa	15.3
Me Fan (Rated)	1230	21 Pa	12.56
Lo Fan (Rated)	980	17 Pa	9.42

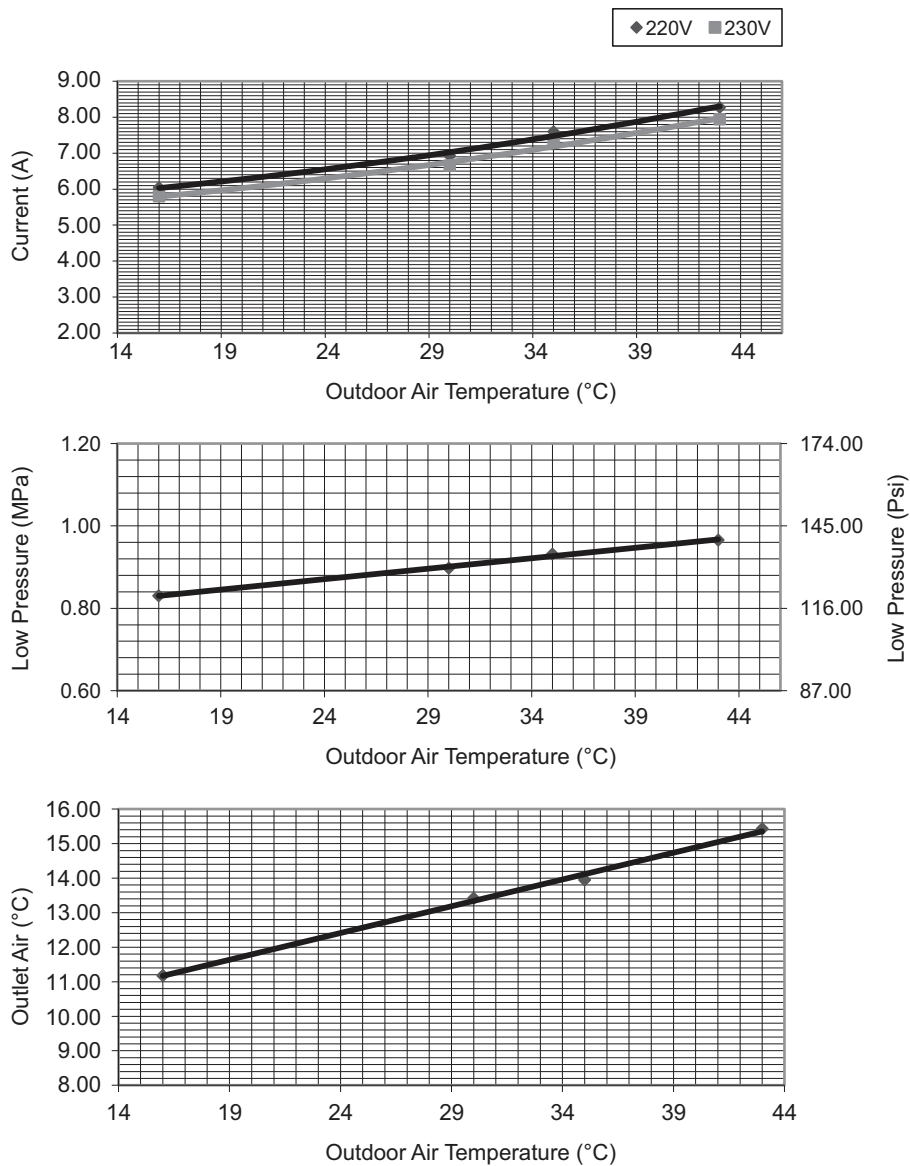
18. Service Data

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

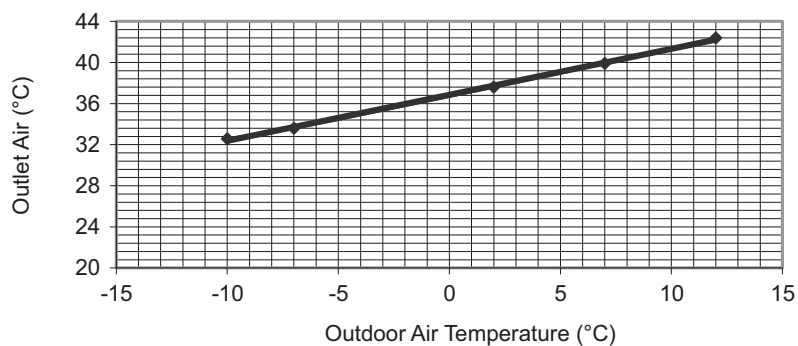
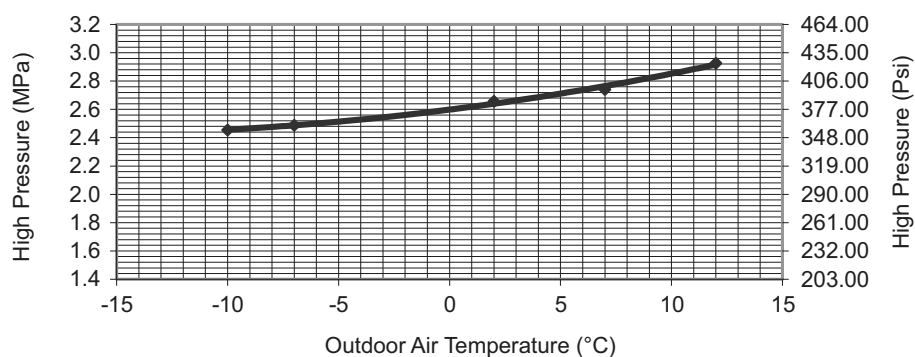
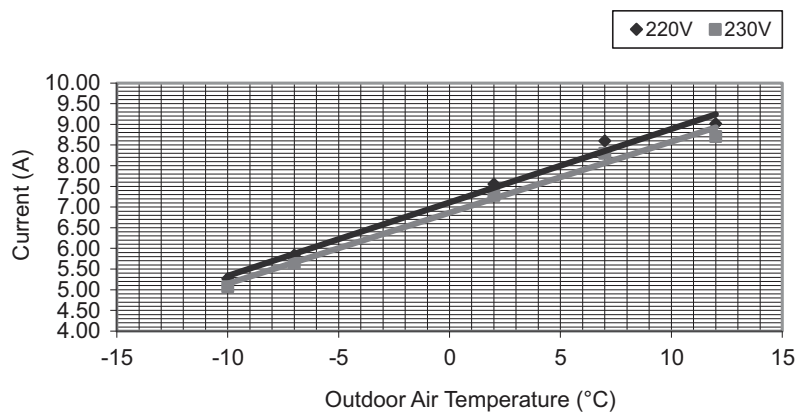
- Indoor room temperature: 27°C DryBulb/19°C Wet Bulb
- Unit setting: Standard piping length, forced cooling at 16°C, Hi fan
- Compressor frequency: Rated for cooling operation
- Voltage: 220V/230V



18.2 Heat Mode Outdoor Air Temperature Characteristic

Condition

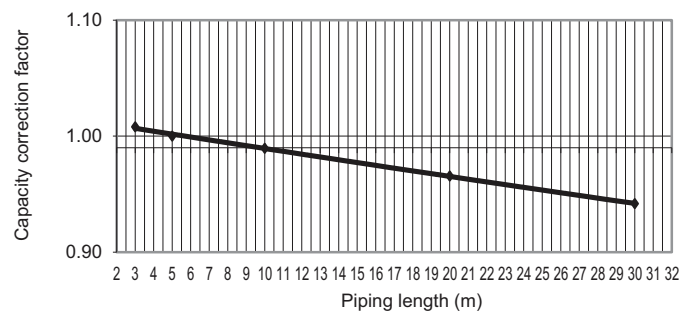
- Indoor room temperature: 20°C DryBulb/ -°C Wet Bulb
- Unit setting: Standard piping length, forced heating at 30°C, Hi fan
- Compressor frequency: Rated for Heating operation
- Voltage: 220V/230V



18.3 Piping Length Correction Factor

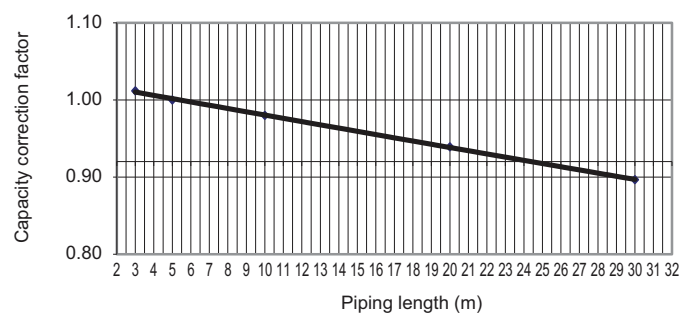
The characteristic of the unit has to be corrected in accordance with the piping length.

18.3.1 Cooling Capacity



3	1.0080
5	1.0000
10	0.9895
20	0.9656
30	0.9418

18.3.2 Heating Capacity



3	1.0118
5	1.0000
10	0.9800
20	0.9392
30	0.8966

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