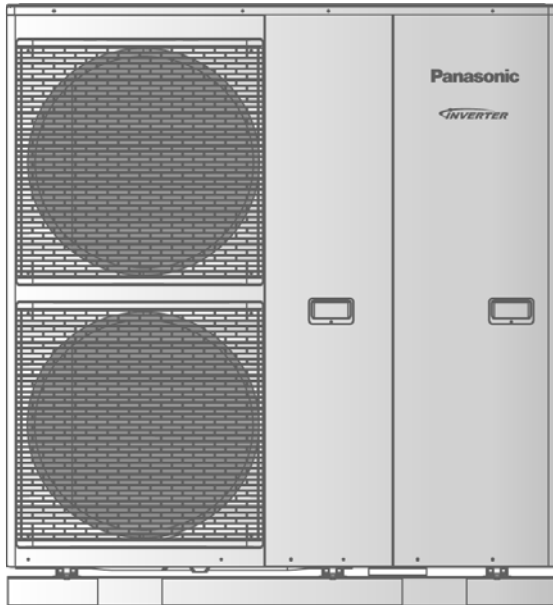


Service Manual

(Mono Bloc) Air-to-Water Heatpump System



Mono Bloc Unit

WH-MHF12G9E8

**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.

PRECAUTION OF LOW TEMPERATURE

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

2.2 WH-MHF12G9E8

Item		Unit	Refrigerant System	
Performance Test Condition			EN14511	
Heating Capacity	Condition (Ambient/Water)		A7W35	A2W35
	kW		12.00	12.00
	BTU/h		41000	41000
	kcal/h		10320	10320
COP	W/W		4.46	3.26
	kcal/hW		3.84	2.80
Air Flow		m ³ /min (ft ³ /min)	80.0 (2830)	
Refrigeration Control Device			Expansion Valve	
Refrigeration Oil		cm ³	FV50S (1600)	
Refrigerant (R407C)		kg (oz)	2.22 (78.4)	
Compressor	Type		Hermetic Motor / Rotary	
	Motor Type		Brushless (4-poles)	
	Rated Output	kW	3.40	
Fan	Type		Propeller Fan	
	Material		PP	
	Motor Type		DC (8-poles)	
	Input Power	W	—	
	Output Power	W	60	
	Fan Speed	rpm	510 (Top Fan) 550 (Bottom Fan)	
Heat Exchanger	Fin material		Aluminium (Pre Coat)	
	Fin Type		Corrugated Fin	
	Row × Stage × FPI		2 × 51 × 18	
	Size (W × H × L)	mm	903.7 × 1295.4 × 38.1	

Item		Unit	Mono Bloc Unit	
Dimension	Height	mm (inch)	1410 (55-1/2)	
	Width	mm (inch)	1283 (50-1/2)	
	Depth	mm (inch)	320 (12-19/32)	
Net Weight		kg (lbs)	162 (357)	
Noise Level		dB-A	50	
		Power Level dB	67	
Power Source (Phase, Voltage, Cycle)		ø	Three	
		V	400	
		Hz	50	
Input Power		kW	2.69	3.68
Maximum Input Power For Mono Bloc Unit		kW	7.07	
Power Supply 1: Phase (ø) / Max. Current (A) / Max. Input Power (W)			Three / 10.8 / 7.07k	
Power Supply 2: Phase (ø) / Max. Current (A) / Max. Input Power (W)			Three / 13.0 / 9.00k	
Power Supply 3: Phase (ø) / Max. Current (A) / Max. Input Power (W)			- / - / -	
Starting Current		A	4.1	
Running Current		A	4.1	5.6
Maximum Current For Mono Bloc Unit		A	10.8	
Power Factor		%	95	95

Item		Unit	Mono Bloc Unit
Power factor means total figure of compressor and outdoor fan motor.			
Power Cord	Number of core		-
	Length	m (ft)	-
Thermostat			Electronic Control
Protection Device			Electronic Control

Item		Unit	Water System
Performance Test Condition			EN14511
Operation Range	Outdoor Ambient	°C	-20 ~ 35
	Water Outlet	°C	25 ~ 65
Internal Pressure Differential		kPa	44.7
Water Pipe Diameter	Inlet	mm (inch)	30 (1-3/16)
	Outlet	mm (inch)	30 (1-3/16)
Water Drain Hose Inner Diameter		mm (inch)	15.00 (19/32)
Pump	Motor Type		DC Motor
	No. of Speed		7 (Software Selection)
	Input Power	W	72
Hot Water Coil	Type		Brazed Plate
	No. of Plates		80
	Size (W x H x L)	mm	130 × 93 × 325
	Water Flow Rate	l/min (m³/h)	34.4 (2.1)
Pressure Relief Valve Water Circuit		kPa	Open: 300, Close: 265 and below
Flow Switch			Magnetic Lead Switch
Protection Device		A	Residual Current Circuit Breaker (25)
Expansion Vessel	Volume	l	10
	MWP	bar	3
Capacity of Integrated Electric Heater		kW	9.00

Note:

- Heating capacities are based on outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb) with controlled water inlet temperature of 30°C and water outlet temperature of 35°C.
- Specification are subjected to change without prior notice for further improvement.

3. Features

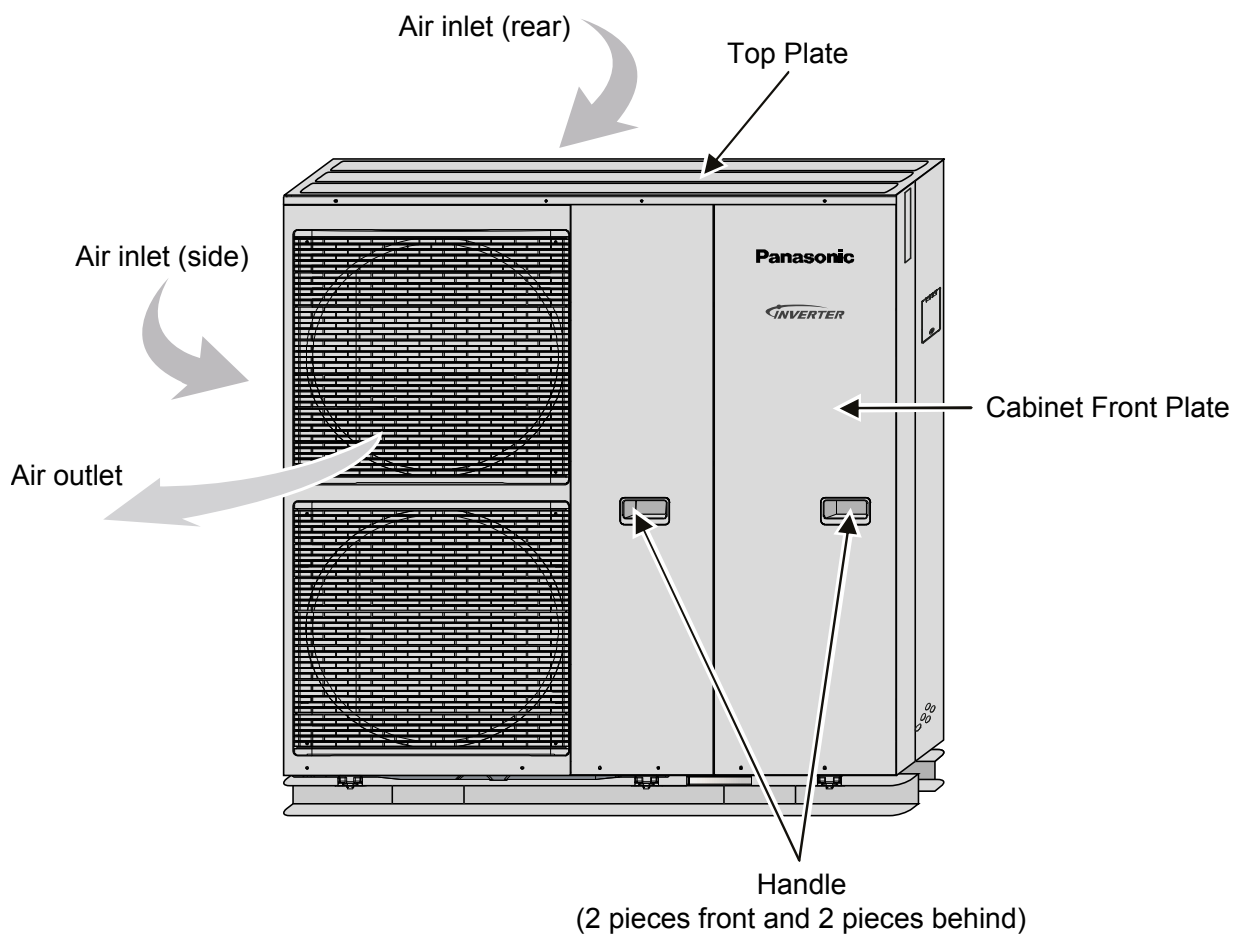
- **Inverter Technology**
 - Energy saving
- **High Efficiency**
- **Compact Design**
- **Environment Protection**
 - Non-ozone depletion substances refrigerant (R407C)
- **Easy to use remote control**
- **Weekly Timer setting**
- **Quality Improvement**
 - Random auto restart after power failure for safety restart operation
 - Gas leakage protection
 - Prevent compressor reverse cycle
 - Inner protector to protect compressor
- **Serviceability Improvement**
 - Breakdown Self Diagnosis function
 - System Status Check Buttons for servicing purpose
 - System Service Mode Button for servicing purpose
 - Front maintenance design for mono bloc unit
- **Operation Condition**

		Water outlet temperature (°C)	Ambient temperature (°C)
HEATING	Maximum	65	35
	Minimum	25	-20

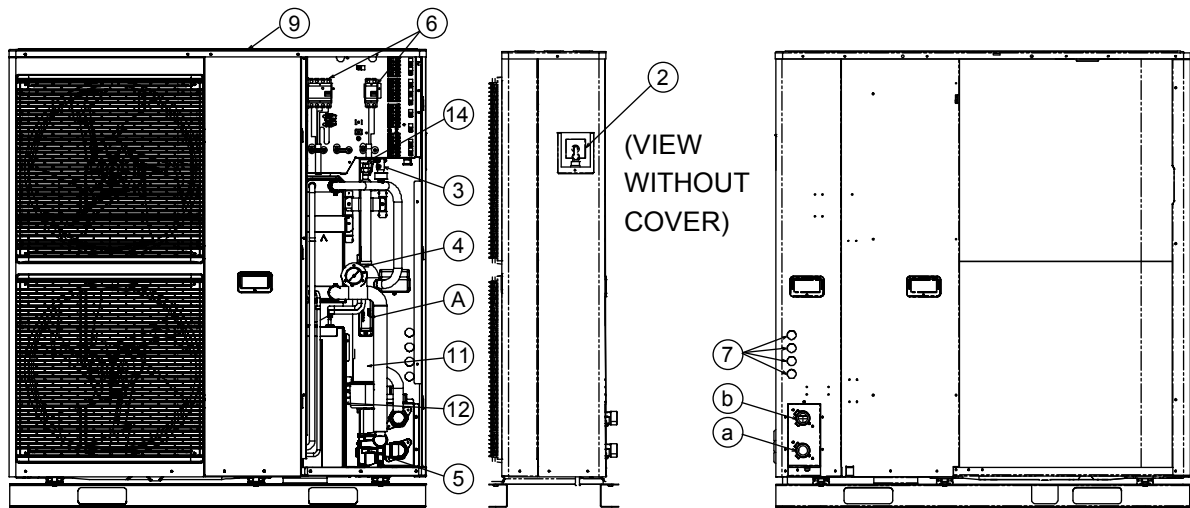
NOTICE : When the outdoor temperature is out of the above temperature range, the heating capacity will drop significantly and mono bloc unit might stop for protection control.

4. Location of Controls and Components

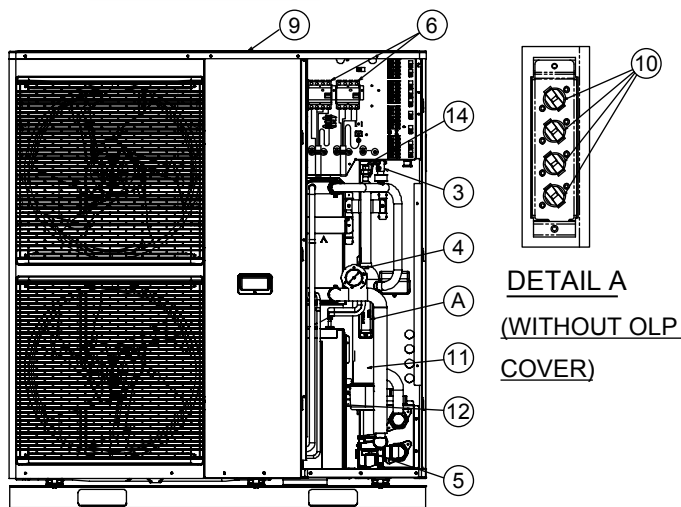
4.1 Mono Bloc Unit



4.1.1 Main Components

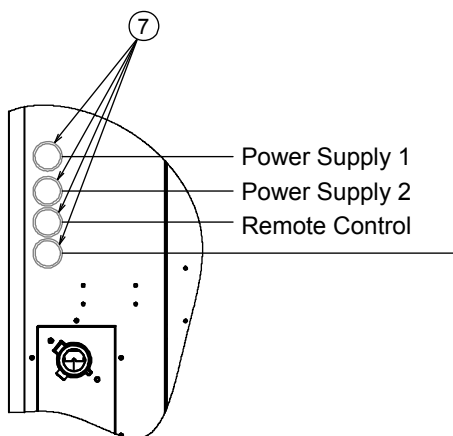


For 9kW models



For 12kW models

View without cabinet top plate



Optional cord / cable :-

- 3-way Valve cable (3 × min 0.5mm²)
- Booster Heater cord (3 × min 1.5mm²)
- Room Thermostat cable (4 or 3 × min 0.5mm²)
- Tank OLP cable (2 × min 0.5mm²)
- Tank Sensor cable (2 × min 0.3mm²)
- External Controller cable (2 × min 0.5mm²)
- Solar Three-way Valve cable (3 × min 0.5mm²)
- Solar Pump Station cable (2 × min 0.5mm²)

Type designation
60245 IEC
57 or heavier
cord / cable

Component name

- ① PCB
- ② Pressure relief valve
- ③ Flow switch
- ④ Pressure gauge
- ⑤ Water pump
- ⑥ RCCB
- ⑦ Bushing
- ⑧ Cabinet front plate

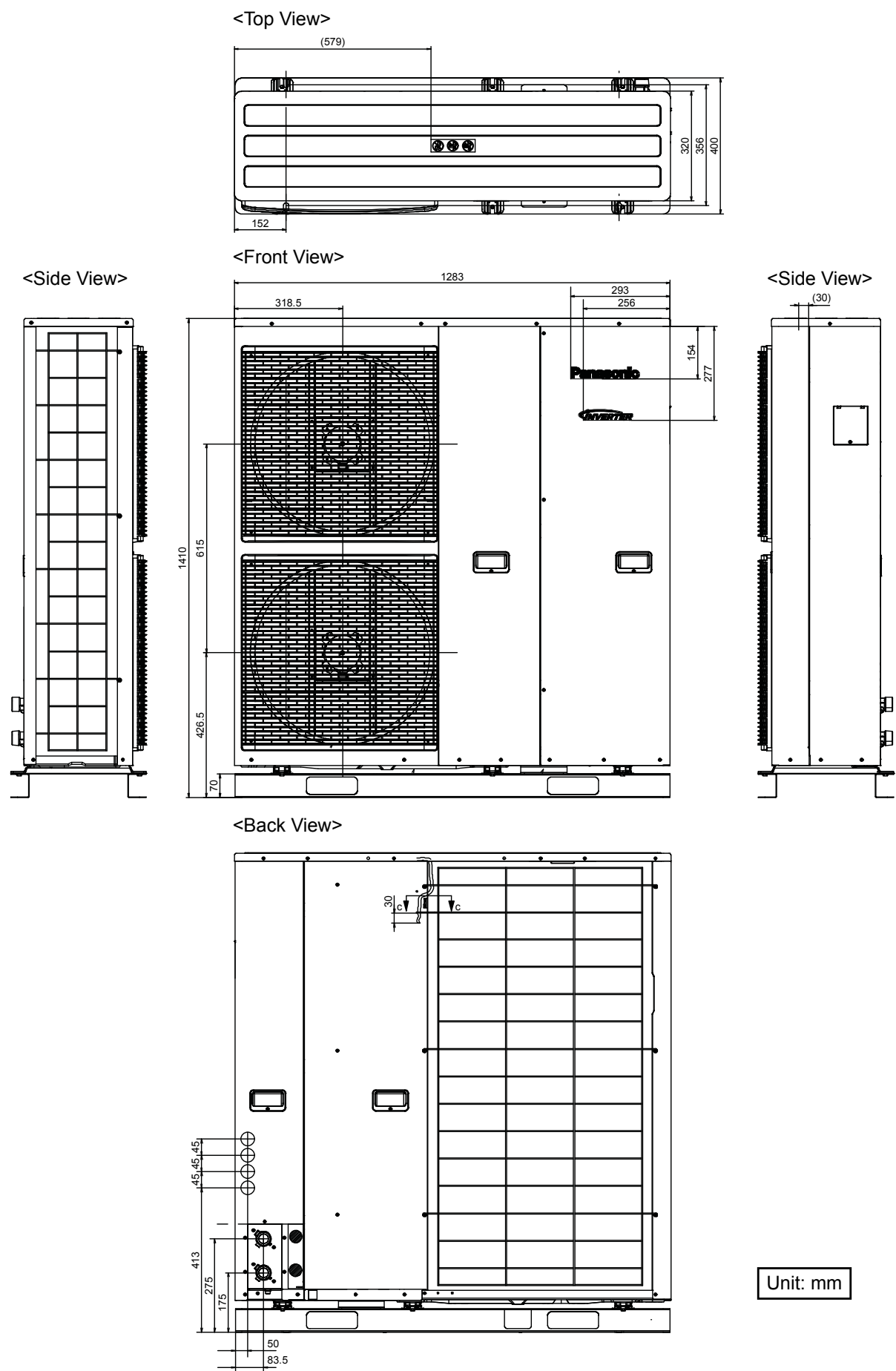
- ⑨ Cabinet top plate
- ⑩ Overload protector
- ⑪ Heater assembly
- ⑫ Expansion vessel
- ⑬ Cover
- ⑭ Air purge valve

Connector name

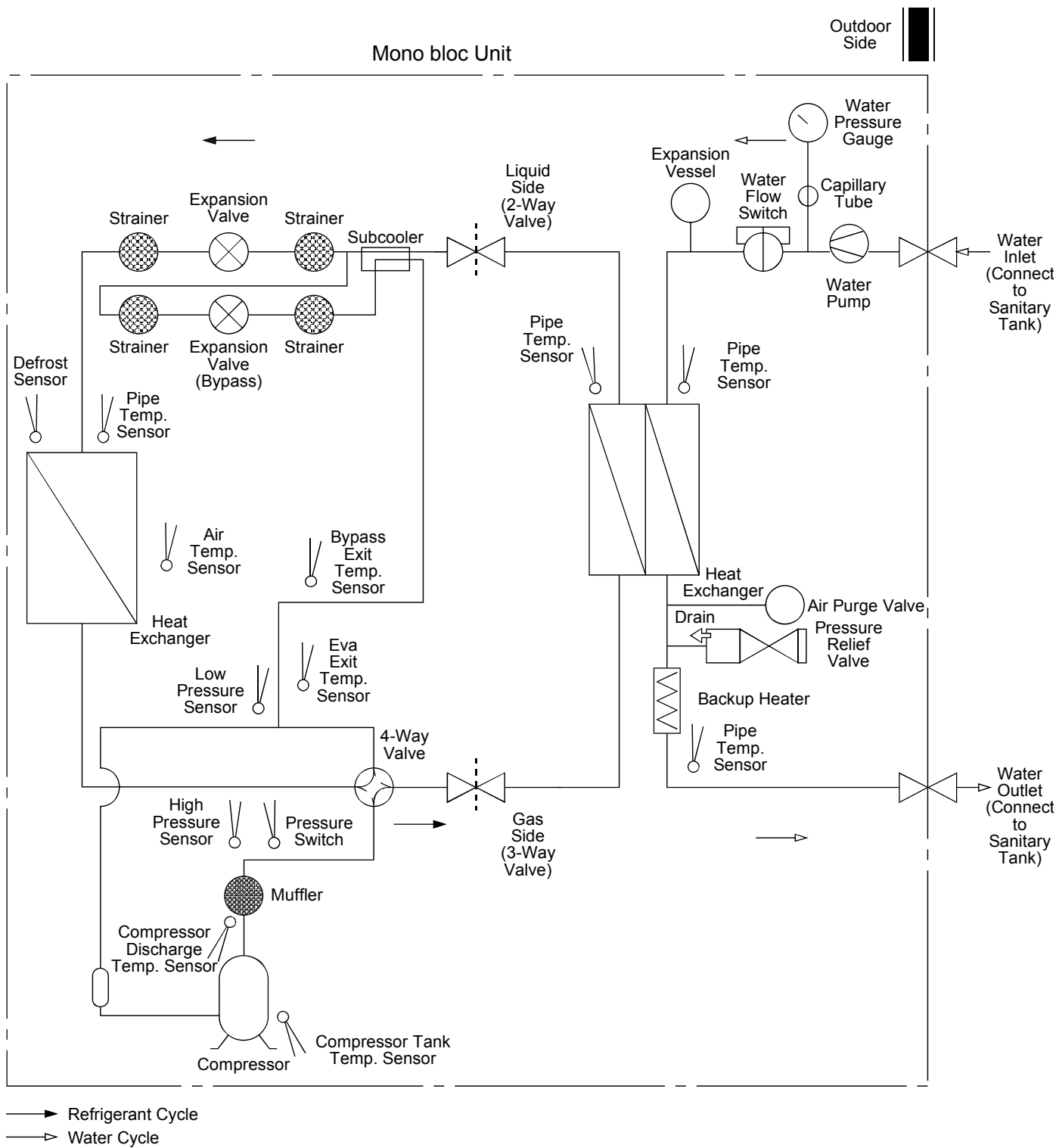
- ① Water inlet
- ② Water outlet

5. Dimensions

5.1 Mono Bloc Unit

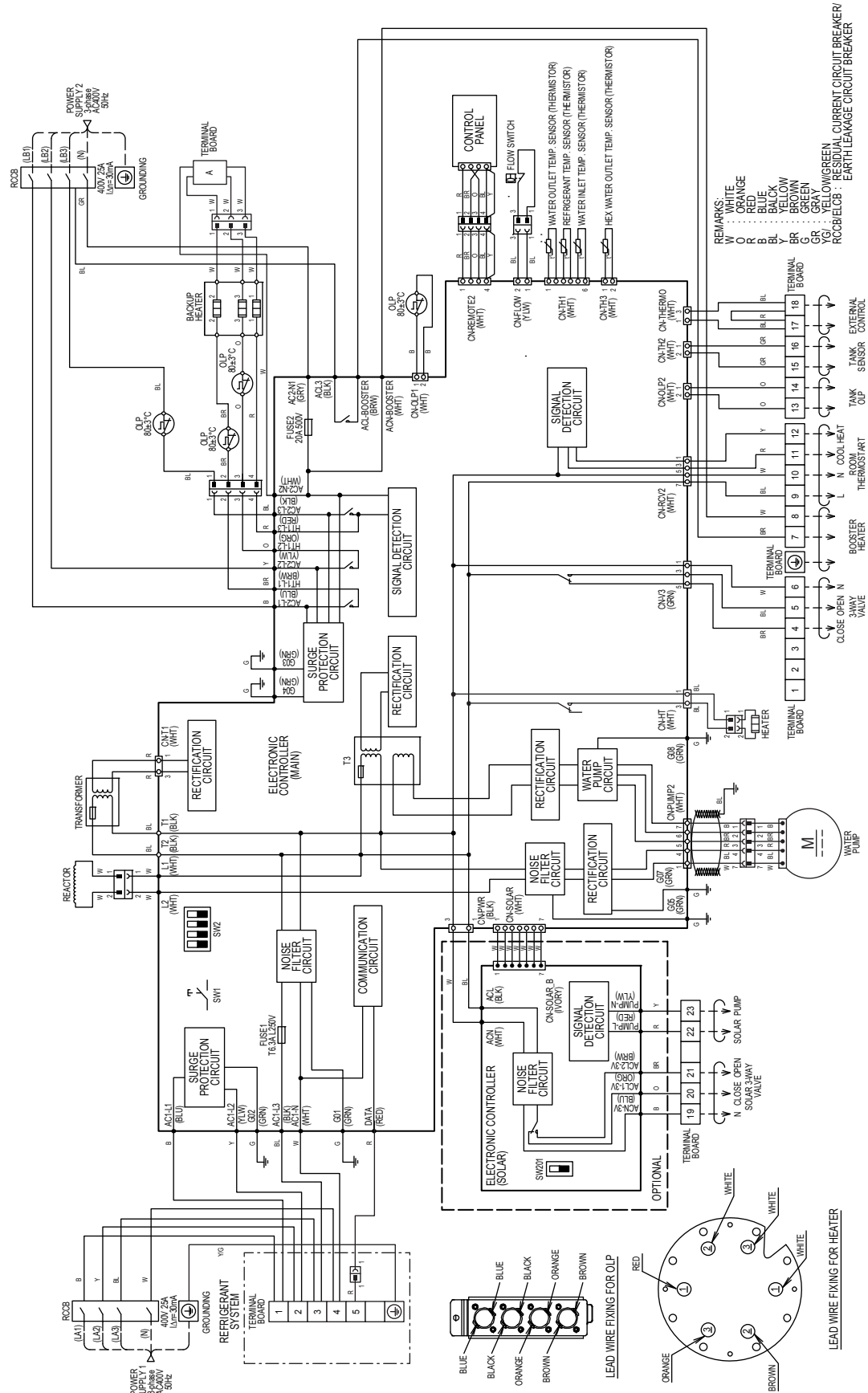


6. Refrigeration and Water Cycle Diagram

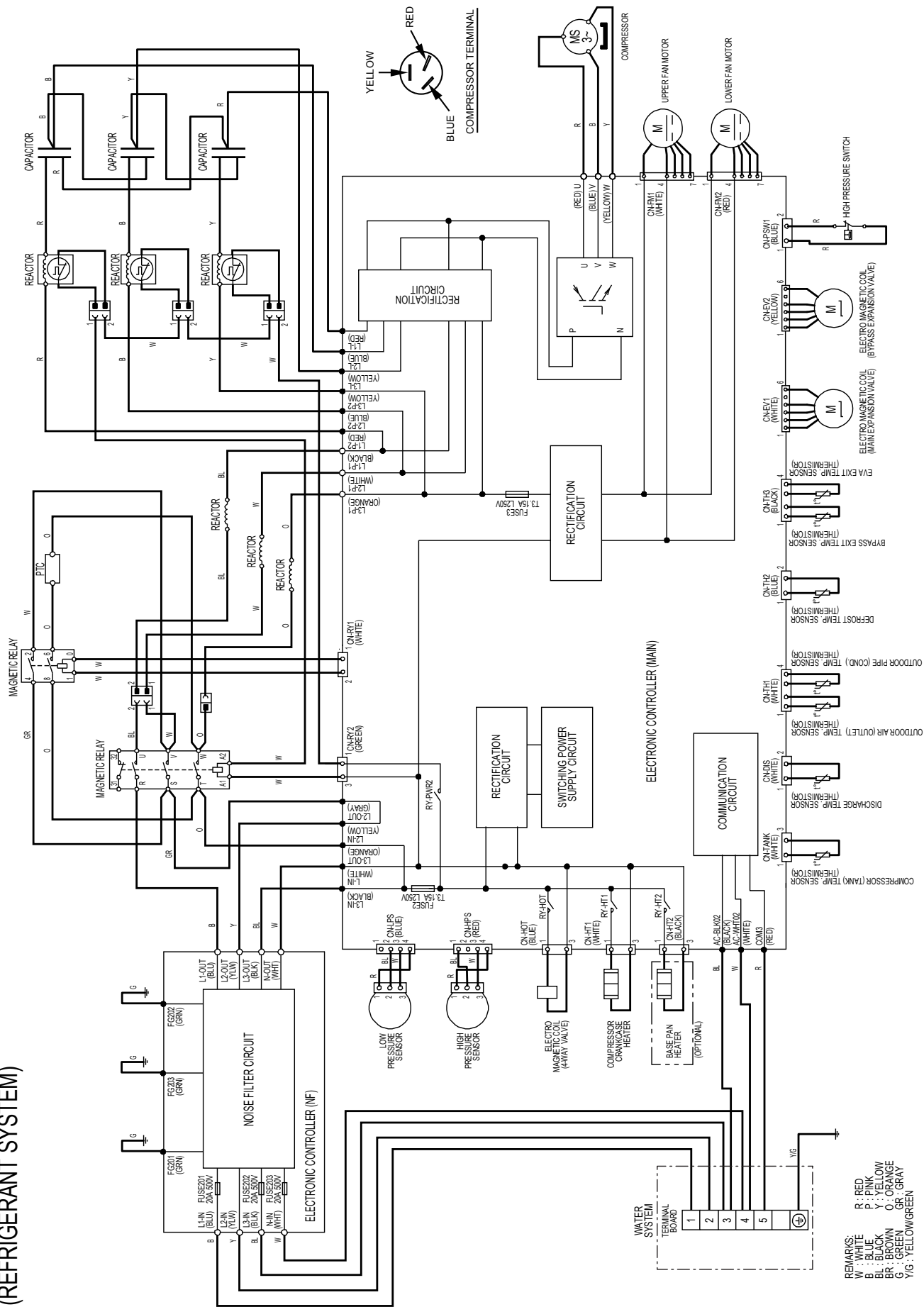


8.2 WH-MHF12G9E8

(WATER SYSTEM)



(REFRIGERANT SYSTEM)



REMARKS:
 R : RED
 W : WHITE
 B : BLUE
 BL : BLACK
 BR : BROWN
 G : GREEN
 YG : YELLOW-GREEN
 P : PINK
 Y : YELLOW
 O : ORANGE
 GR : GRAY

How To Adjust Water Flow Rate

Before adjust the water flow rate, make sure that the total water volume in the installation is 50 litres minimum for heating side. The default setting is SPEED 4 (Only for WH-MHF09G3E8) and SPEED

5 for WH-MHF12G9E8. Please ensure the minimum flow rate is not less than 13 l/min and not more than 50 l/min.

The available external static pressure (kPa) in function of the water flow rate (l/min) is shown in the P-Q graph.

Depend on the hydraulic system pressure loss and type, the water flow rate can be adjusted by remote control.

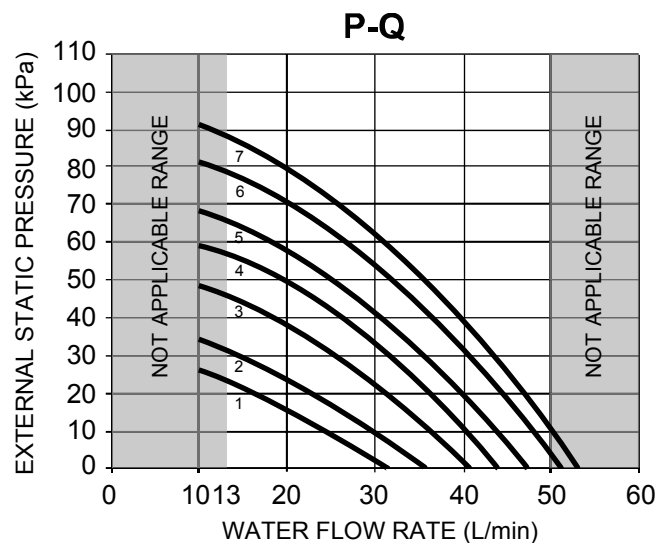
- 1 When the Air-to-Water Heatpump is in stop operation, press SERVICE button for 5 seconds.
- 2 Press ▲/▼ button to select menu S02 (PUMP SPEED ADJUST MODE) and press SET button to confirm the menu.
- 3 Press SELECT button then press ▲/▼ button to change pump speed and press SET button to confirm the pump speed.
- 4 Press OFF/ON button to exit PUMP SPEED ADJUST MODE.

During PUMP SPEED ADJUST MODE, we can select AIR PURGE function by pressing FORCE button.

In AIR PURGE function, the pump will operate ON and OFF for 10 minutes to purge the air in the hydraulic system.

Press again the FORCE button to exit AIR PURGE function. PUMP SPEED ADJUST

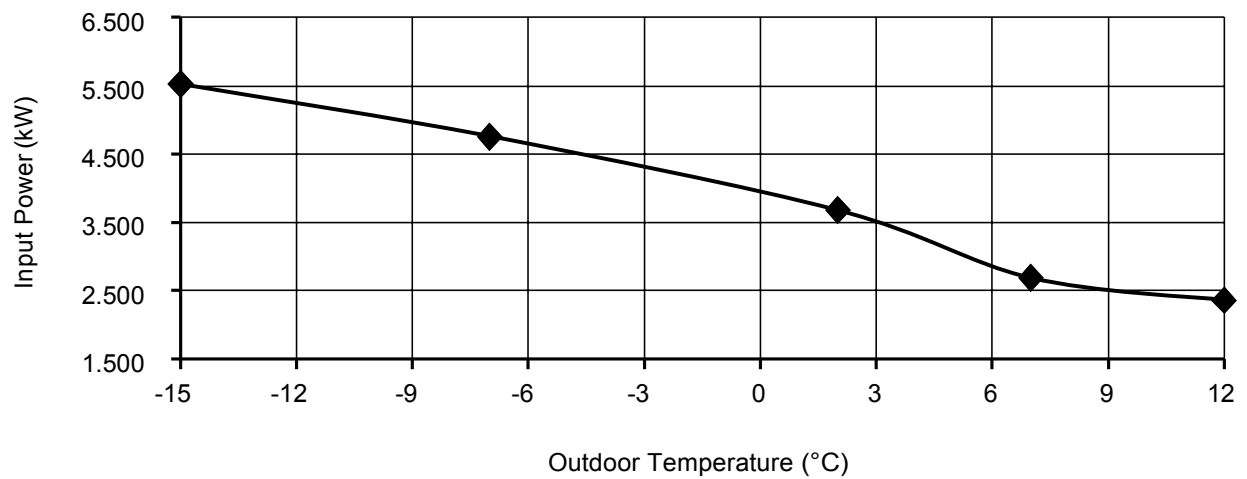
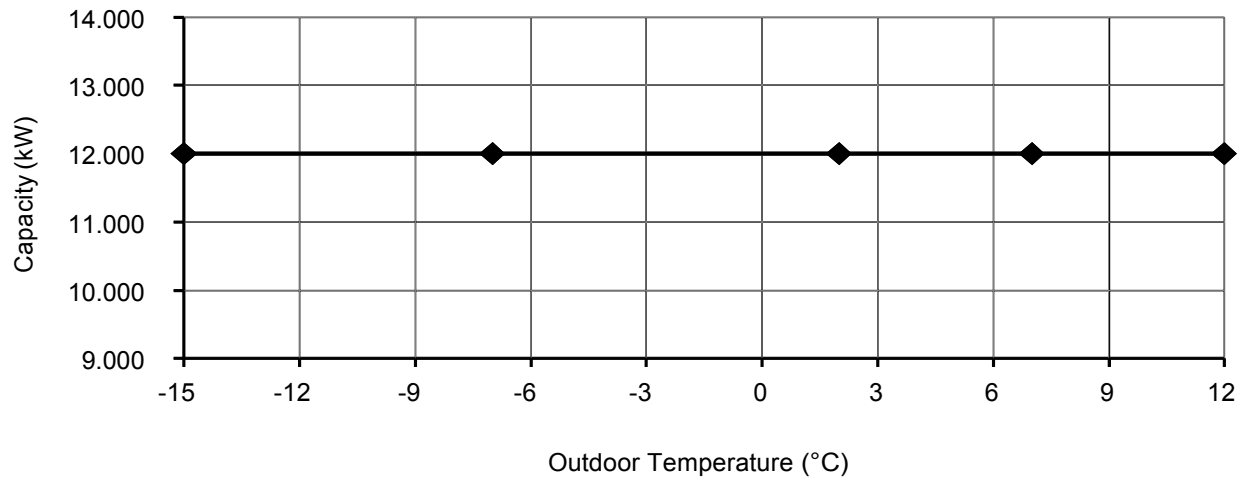
MODE will stop operation.



18.1.2 WH-MHF12G9E8

Heating Characteristics at Different Outdoor Air Temperature

- Condition
 - o Outdoor air temperature : 7°C (DBT), 6°C (WBT)
 - o Indoor water inlet temperature : 30°C
 - o Indoor water outlet temperature : 35°C



18.2 Heating Capacity Table

18.2.2 WH-MHF12G9E8

Water Out (°C)	30		35		40		45		50		55	
Outdoor Air (°C)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)
-15	12000	5160	12000	5530	11000	5510	10800	5490	9700	5520	8000	5610
-7	12000	4430	12000	4760	11500	4910	11200	5060	10100	5060	9600	5430
2	12000	3420	12000	3680	11500	3860	11300	4140	10800	4660	10300	5130
7	12000	2520	12000	2690	12000	3060	12000	3440	12000	4100	12000	4970
12	12000	2030	12000	2360	12000	2690	12000	3020	12000	3610	12000	4370