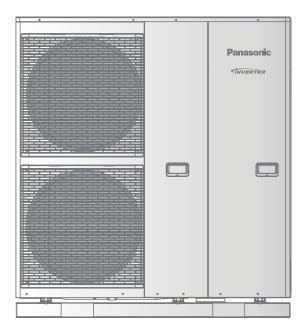
Service Manual

(Mono bloc) Air-to-Water Heatpump System



Mono bloc Unit

WH-MXC12G9E8

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.



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1. Safety Precautions

- Read the following "SAFETY PRECAUTIONS" carefully before installation of (Mono bloc) Air-to-Water Heatpump system (hereafter referred to as "Mono bloc unit").
- Electrical works and water installation works must be done by licensed electrician and licensed water system installer respectively. Be sure to use the correct rating and main circuit for the model to be 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 due to ignorance or negligence of the
 instructions 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 only.

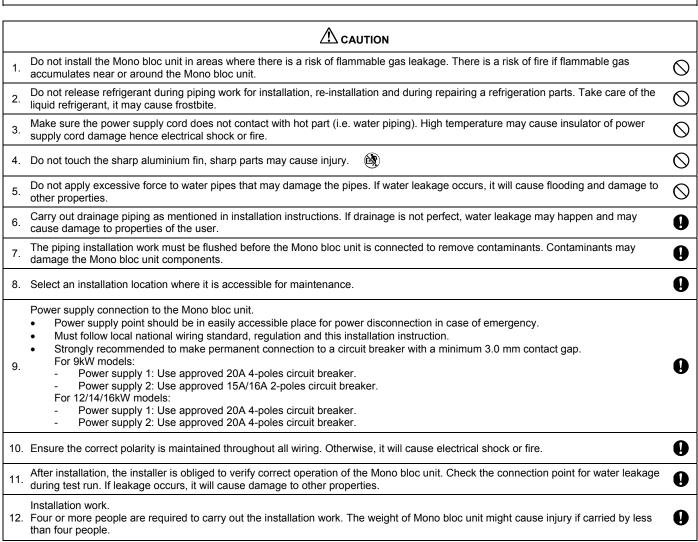
• The items to be followed are classified by the symbols:

\Diamond	This symbol denotes item that is PROHIBITED from doing.
0 0	Symbol with dark background denotes item that must be carried out.

- Carry out test run to confirm that no abnormality occurs after the installation. 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.
- If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information.

	⚠ WARNING	
1.	Do not install Mono bloc unit near handrail of veranda. When installing Mono bloc unit at veranda of high rise building, child may climb up to Mono bloc unit and cross over the handrail and causing accident.	0
2.	Do not use unspecified cord, modified cord, join 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.	\Diamond
3.	Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.	0
4.	Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.	0
5.	Do not sit or step on the unit, you may fall down accidentally.	0
6.	Keep plastic bag (packaging material) away from small children, it may cause suffocation.	\Diamond
7.	Do not use pipe wrench to install refrigerant pipe. It might deform the piping and cause the unit to malfunction.	0
8.	Do not purchase unauthorized electrical parts for installation, service, maintenance and etc They might cause electrical shock or fire.	\Diamond
9.	This unit is a multi supply appliances. All circuits must be disconnected before accessing to the unit terminals.	\Diamond
10.	Do not modify the wiring of Mono bloc unit for installation of other components (i.e. heater, etc.). Overloaded wiring or wire connection points may cause electrical shock or fire.	\Diamond
11.	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.	0
12.	For electrical work, follow the local national wiring standard, regulation and this 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.	0
13.	For water circuit installation work, follow to relevant European and national regulations (including EN61770) and local plumbing and building regulation codes.	0
14.	Must engage an authorized dealer or specialist for installation. If installation is defective, it will cause water leakage, electrical shock or fire.	0
15.	Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.	0
16.	Only use the supplied or specified installation parts. Else, it may causes Mono bloc unit vibrate, fall, water leakage, electrical shock or fire.	0
17.	Install at a flat, strong and firm location which is able to withstand the Mono bloc unit's weight. If the location is slanting, or strength is not enough the set will fall and cause injury.	0

	⚠ WARNING	
18.	This equipment is strongly recommended to be installed with Residual Current Device (RCD) on-site according to the respective national wiring rules or country-specific safety measures in terms of residual current.	0
19.	The unit is only for use in a closed water system. Utilization in an open water system may lead to excessive corrosion of the water piping and risk of incubating bacteria colonies, particularly Legionella, in water.	0
20.	If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information.	0
21.	Select a location where in case of water leakage, the leakage will not cause damage to other properties.	0
22.	When installing electrical equipment at wooden building of metal lath or wire lath, in accordance with electrical facility standard, no electrical contact between equipment and building is allowed. Insulator must be installed in between.	0
23.	This installation may be subjected to building regulation approval applicable to respective country that may require to notify the local authority before installation.	0
24.	Any work carried out on the Mono bloc unit after removing the front panel which is secured by screws, must be carried out under the supervision of authorized dealer and licensed installation contractor.	0
25.	This unit must be properly earthed, the electrical earth must not be connected to a gas pipe, water pipe, the earth of a lightening rod or a telephone. Otherwise there is a danger of electrical shock in the event of an insulation breakdown or electrical earth fault in the Mono bloc unit.	•



2.2 WH-MXC12G9E8

Item		Unit	Refrigera	int System	
Performance Test Condition	on		EN1	4511	
Cooling Condition (Ambier	nt/Water)		A35W7	-	
Cooling Capacity		kW	10.00	-	
		BTU/h	34100	-	
		kcal/h	8600	-	
EER		W/W	2.81	-	
		kcal/hW	2.42	-	
Heating Condition (Ambie	nt/Water)		A7W35 A2W35		
Heating Capacity		kW	12.00	12.00	
		BTU/h	41000	41000	
		kcal/h	10320	10320	
COP		W/W	4.74	3.44	
		kcal/hW	4.08	2.96	
Air Flow		m³/min (ft³/min)	Cooling: 93.3 (3290) Heating: 80.0 (2830)		
Refrigeration Control Devi	ce		Expansion Valve		
Refrigeration Oil		cm ³	FV50S (1200)		
Refrigerant (R410A)		kg (oz)	2.30 (81.2)		
Compressor	Туре		Hermetic M	otor (Rotary)	
	Motor Type		Brushles	s (4-poles)	
	Rated Output	kW	4	.30	
Fan	Туре		Prope	ller Fan	
	Material		F	PP	
	Motor Type		DC (8	-poles)	
	Input Power	W		-	
	Output Power	W	60		
	Fan Speed	rpm	Cooling: 600 (Top Fan) 640 (Bottom Fa Heating: 510 (Top Fan) 550 (Bottom Fa		
Heat Exchanger	Fin material		Aluminium	(Pre Coat)	
	Fin Type		Corrug	ated Fin	
	Row × Stage × FPI		2 × 5	1 × 18	
	Size (W × H × L)	mm	903.7 × 12	295.4 × 38.1	

	Item	Unit	Mono b	loc Unit	
Dimension	Height	mm (inch)	1410 (55-1/2)	
	Width	mm (inch)	1283 (50-1/2)	
	Depth	mm (inch)	320 (12	2-19/32)	
Net Weight	·	kg (lbs)	155	(342)	
Noise Level		dB-A	Cooling: 50 Heating: 50	Cooling: - Heating: -	
		Power Level dB	Cooling: 68 Heating: 67	Cooling: - Heating: -	
Power Source (Phase, \	/oltage, Cycle)	Ø	Three		
		V	4	00	
		Hz	5	50	
Input Power		kW	Cooling: 3.56 Heating: 2.53	Cooling: - Heating: 3.49	
Maximum Input Power F	For Mono bloc Unit	kW	7.91		
Power Supply 1: Phase	(ø) / Max. Current (A) / Max. Input Pov	wer (W)	Three / 11.9 / 7.91k		
Power Supply 2: Phase	(ø) / Max. Current (A) / Max. Input Pov	wer (W)	Three / 13.0 / 9.00k		
Power Supply 3: Phase	(ø) / Max. Current (A) / Max. Input Pov	wer (W)	-/-/-		

	Item	Unit	Mono b	loc Unit	
Starting Current		А	5	.3	
Running Current		А	Cooling: 5.3 Heating: 3.8	Cooling: - Heating: 5.2	
Maximum Current For Mo	ono bloc Unit	Α	11.9		
Power Factor		%	Cooling: 97 Heating: 96	Cooling: - Heating: 97	
Power factor means total	figure of compressor and outdoor fan mot	or.			
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	Cooling: 16 ~ 43 Heating: -20 ~ 35	
	Water Outlet	°C	Cooling: 5 ~ 20 Heating: 25 ~ 55	
Internal Pressure Differential	I	kPa	Cooling: 28.5 Heating: 40.3	
Water Pipe Diameter	Inlet	mm (inch)	30 (1-3/16)	
	Outlet	mm (inch)	30 (1-3/16)	
Water Drain Hose Inner Diar	neter	mm (inch)	15.00 (19/32)	
Pump	Motor Type		DC Motor	
	No. of Speed		7 (software selection)	
	Input Power	W	67	
Hot Water Coil	Туре		Brazed Plate	
	No. of Plates		36	
	Size (H × W × L)	mm	65 × 120 × 276	
	Water Flow Rate	l/min (m³/h)	Cooling: 28.7 (1.7) Heating: 34.4 (2.1)	
Pressure Relief Valve Water	Circuit	kPa	Open: 300, Close: 265 and below	
Flow Switch			Magnetic Lead Switch	
Protection Device		А	Residual Current Circuit Breaker (25)	
Expansion Vessel	Volume	1	10	
	MWP	bar	3	
Capacity of Integrated Elect	ric Heater	kW	9.00	

- Note:
 1. Cooling capacities are based on outdoor air temperature of 35°C Dry Bulb with controlled water inlet temperature of 12°C and water outlet
- temperature of 7°C.

 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.

 Specifications are subjected to change without prior notice for further improvement.

3. Features

- Inverter Technology
 - o Energy saving
- High Efficiency
- Compact Design
- Environment Protection
 - o Non-ozone depletion substances refrigerant (R410A)
- Easy to use remote control
- Weekly Timer setting
- Quality Improvement
 - o Random auto restart after power failure for safety restart operation
 - o Gas leakage protection
 - o Prevent compressor reverse cycle
 - o 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
- o Front maintenance design for Mono bloc unit

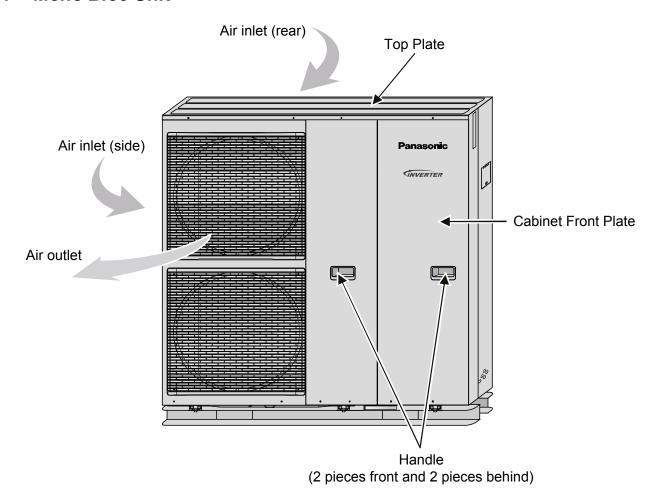
• Operation Condition

		Water outlet temperature (°C)	Ambient temperature (°C)
COOLING	Maximum	20	43
COOLING	Minimum	5	16
LIFATING	Maximum	55	35
HEATING	Minimum	25	-20

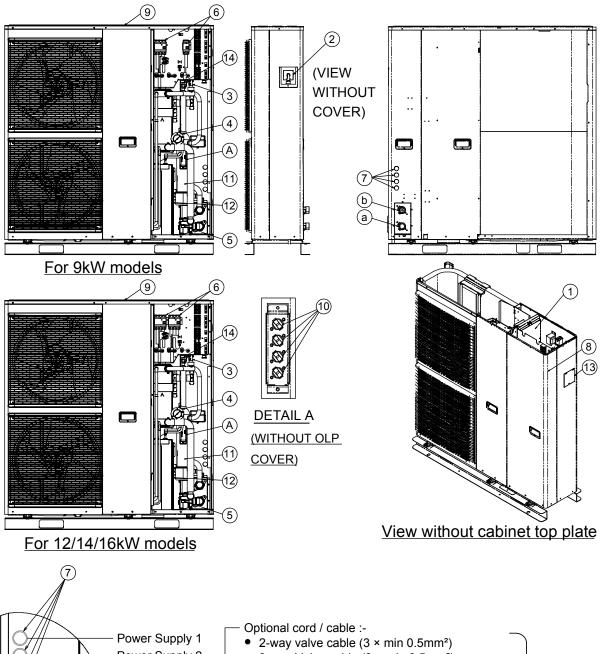
NOTICE: When the outdoor temperature is out of the above temperature range, the heating capacity will drop significantly and Mono bloc unit might stop for protection control.

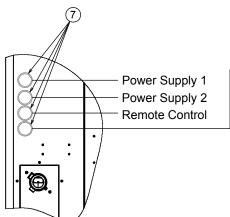
4. Location of Controls and Components

4.1 Mono Bloc Unit



4.1.1 Main Components





- 3-way Valve cable (3 × min 0.5mm²)
- Booster Heater cord (3 × min 1.5mm²)
- Room Themostat 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

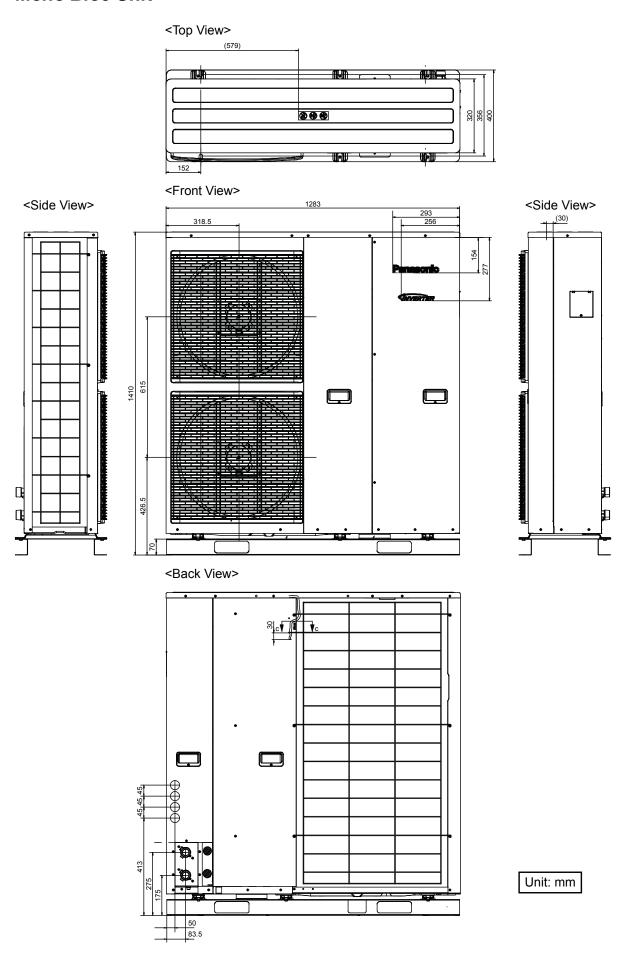
- 10 Overload protector
- 11 Heater assembly
- 12 Expansion vessel
- 13 Cover
- 4 Air purge valve

Connector name

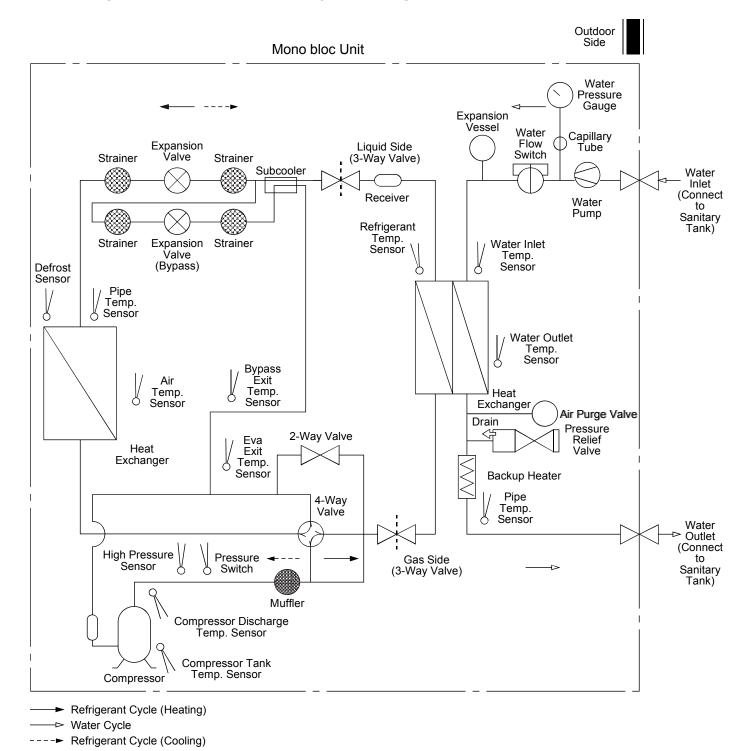
- (a) Water inlet
- **b** Water outlet

5. Dimensions

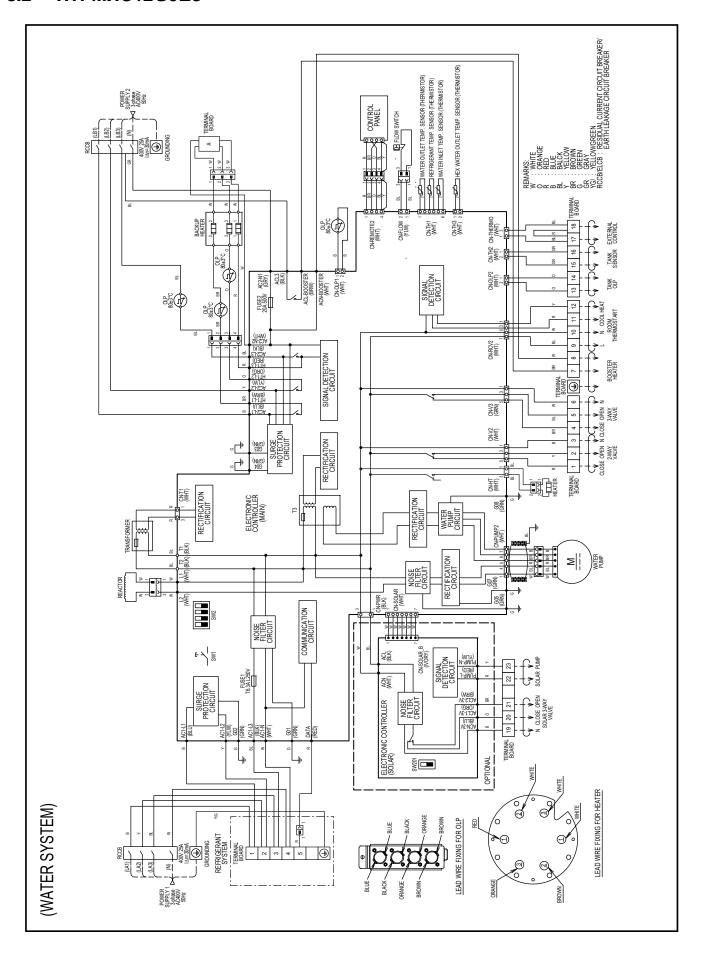
5.1 Mono Bloc Unit



6. Refrigeration And Water Cycle Diagram

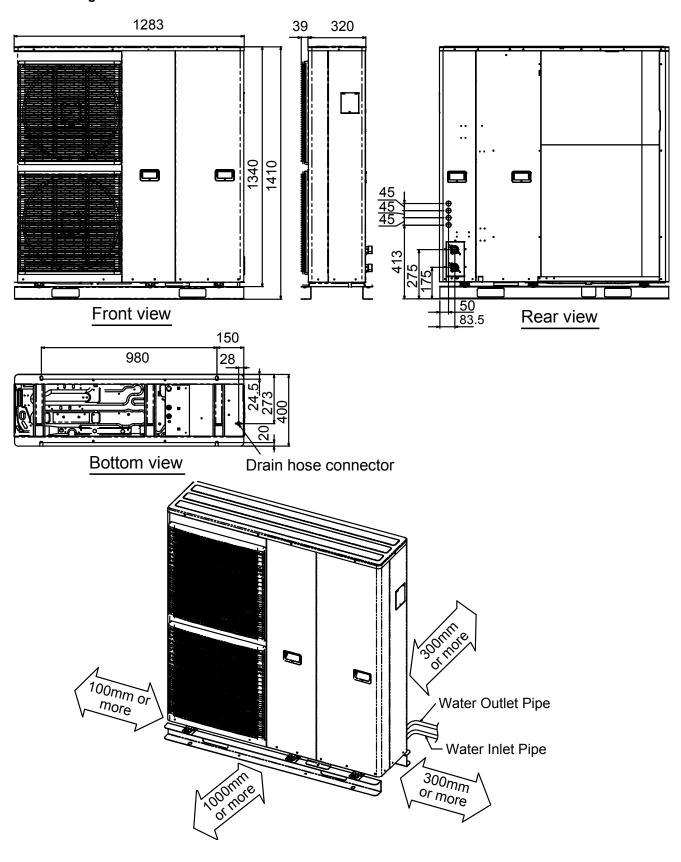


8.2 WH-MXC12G9E8

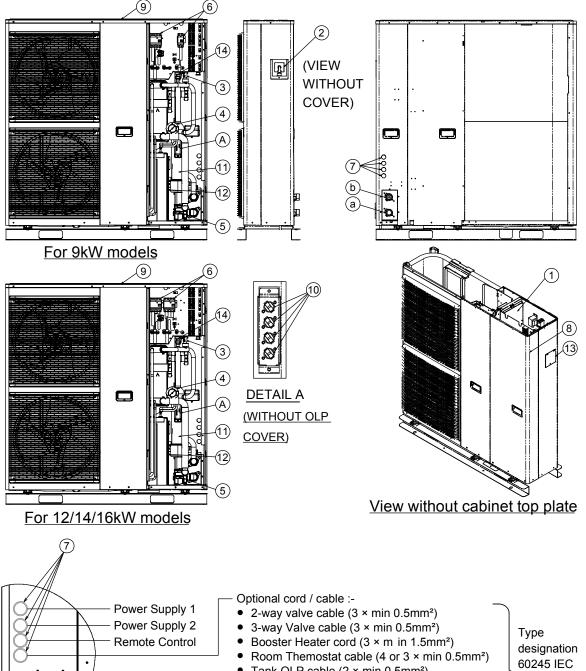


11. Installation Instruction Mono Bloc Unit

Dimension Diagram



Main Components



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

- 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)

Connector name

- Water inlet
- (b) Water outlet

12 Expansion vessel

9 Cabinet top plate

11) Heater assembly

10 Overload protector

(13) Cover

4 Air purge valve

It is advisable to avoid more than 2 blockage directions. For better ventilation & multiple-outdoor installation, please consult authorized dealer/specialist.

57 or heav

cord / cable

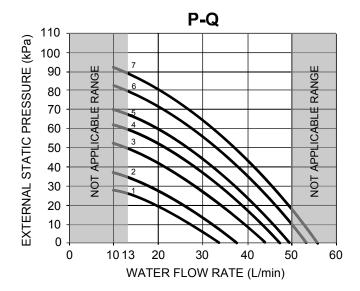
How To Adjust Water Flow Rate

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 3 (Only for WH-MXC09G3E8) and SPEED

4 for WH-MXC12G9E8. 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.

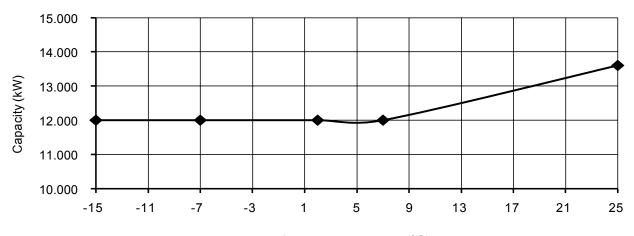
During PUMP SPEED ADJUST MODE, we can select AIR PURGE function by pressing FORCE button. In AIR PURGE function, the pump will operate ON and OFF for 10 minutes to purge the air in the hydraulic system. Press again the FORCE button to exit AIR PURGE function. PUMP SPEED ADJUST MODE will stop operation.

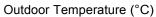


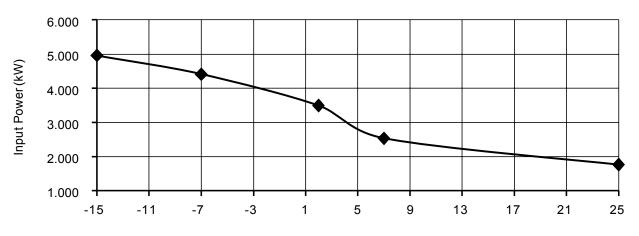
18.1.2 WH-MXC12G9E8

Heating Characteristics at Different Outdoor Air Temperature

- Condition
 - o Indoor water inlet temperature: 30°C
 - o Indoor water outlet temperature: 35°C



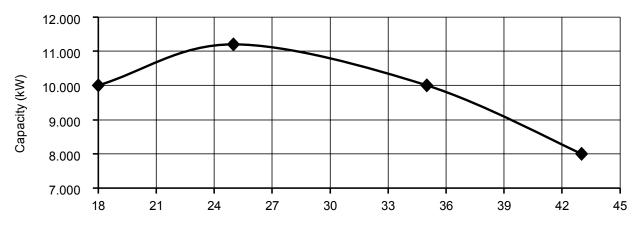




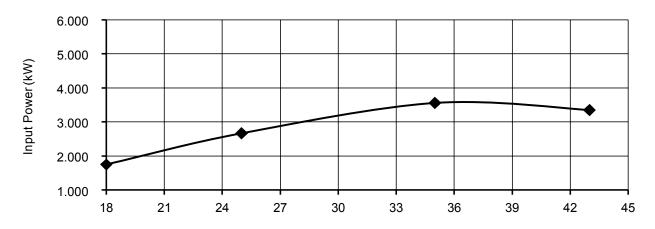
Outdoor Temperature (°C)

Cooling Characteristics at Different Outdoor Air Temperature

- Condition
 - Indoor water inlet temperature: 12°C
 - Indoor water outlet temperature: 7°C



Outdoor Temperature (°C)

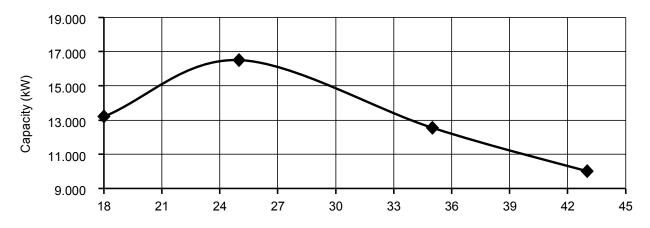


Outdoor Temperature (°C)

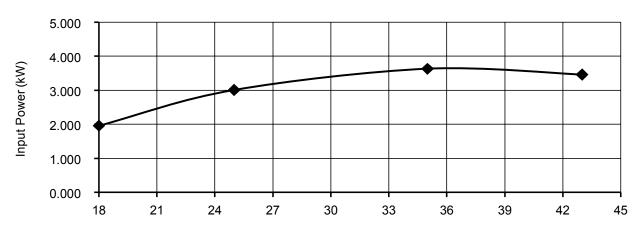
Cooling Characteristics at Different Outdoor Air Temperature

Condition

Indoor water inlet temperature: 19°C
 Indoor water outlet temperature: 14°C



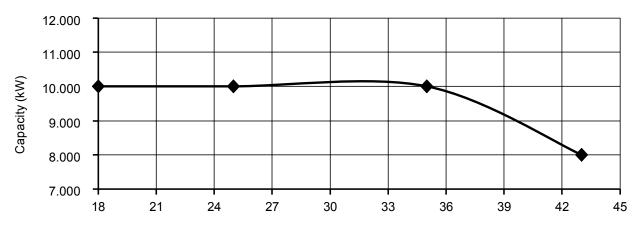


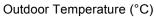


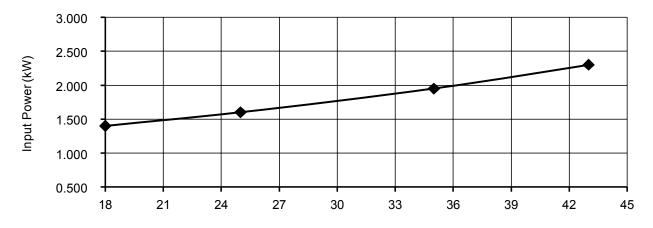
Outdoor Temperature (°C)

Cooling Characteristics at Different Outdoor Air Temperature

- Condition
 - $\circ \quad \text{Indoor water inlet temperature: 23°C}$
 - o Indoor water outlet temperature: 18°C







Outdoor Temperature (°C)

18.2 Heating Capacity Table

18.2.2 WH-MXC12G9E8

Water Out (°C)		3	5	4	0	4	5	5	0	5	5	
Outdoor Air (°C)	Capacity (W)	Input Power (W)										
-15	12000	4750	12000	4960	12000	5410	11000	5380	10800	5820	10500	6260
-7	12000	3850	12000	4410	12000	4980	12000	5540	12000	5900	12000	6260
2	12000	3190	12000	3490	12000	3870	12000	4250	12000	4860	12000	5470
7	12000	2180	12000	2530	12000	2960	12000	3390	12000	3780	12000	4160
25	13600	1550	13600	1760	13400	2100	13200	2430	12600	2660	12000	2890

18.3 Cooling Capacity Table

18.3.2 WH-MXC12G9E8

Water In (°C)		r In (°C) 12		19		23			
Water Out (°C)		7		14		14		1	8
1	°C	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)		
Ambient	18	10.00	1.75	13.20	1.96	10.00	1.40		
	25	11.20	2.67	16.50	3.01	10.00	1.60		
OD	35	10.00	3.56	12.55	3.63	10.00	1.95		
	43	8.00	3.35	10.00	3.46	8.00	2.30		