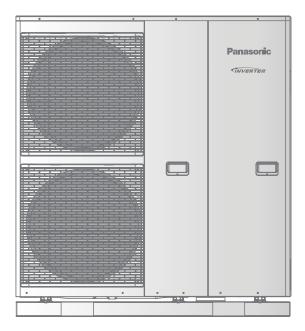
Service Manual

(Mono bloc) Air-to-Water Heatpump System



Mono bloc Unit WH-MXC16G9E8

> 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	Symbol with white background 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.	•

	⚠ CAUTION	
1.	Do not install the Mono bloc unit in areas where there is a risk of flammable gas leakage. There is a risk of fire if flammable gas accumulates near or around the Mono bloc unit.	\Diamond
2.	Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.	\Diamond
3.	Make sure the power supply cord does not contact with hot part (i.e. water piping). High temperature may cause insulator of power supply cord damage hence electrical shock or fire.	\Diamond
4.	Do not touch the sharp aluminium fin, sharp parts may cause injury.	\Diamond
5.	Do not apply excessive force to water pipes that may damage the pipes. If water leakage occurs, it will cause flooding and damage to other properties.	\Diamond
6.	Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water leakage may happen and may cause damage to properties of the user.	0
7.	The piping installation work must be flushed before the Mono bloc unit is connected to remove contaminants. Contaminants may damage the Mono bloc unit components.	0
8.	Select an installation location where it is accessible for maintenance.	0
9.	Power supply connection to the Mono bloc unit. Power supply point should be in easily accessible place for power disconnection in case of emergency. Must follow local national wiring standard, regulation and this installation instruction. Strongly recommended to make permanent connection to a circuit breaker with a minimum 3.0 mm contact gap. Power supply 1: Use approved 20A 4-poles circuit breaker. Power supply 2: Use approved 20A 4-poles circuit breaker.	0
10.	Ensure the correct polarity is maintained throughout all wiring. Otherwise, it will cause electrical shock or fire.	0
11.	After installation, the installer is obliged to verify correct operation of the Mono bloc unit. Check the connection point for water leakage during test run. If leakage occurs, it will cause damage to other properties.	0
12.	Installation work. Four or more people are required to carry out the installation work. The weight of Mono bloc unit might cause injury if carried by less than four people.	0

2. Specifications

Ite	em	Unit	Refrigerar	nt System	
Performance Test Condition			EN14511		
Cooling Condition (Ambient/Water)	Cooling Condition (Ambient/Water)			-	
Cooling Capacity		kW	12.20	-	
		BTU/h	41600	-	
		kcal/h	10490	-	
EER		W/W	2.56	-	
		kcal/hW	2.20	-	
Heating Condition (Ambient/Water)			A7W35	A2W35	
Heating Capacity		kW	16.00	16.00	
		BTU/h	54600	54600	
		kcal/h	13760	13760	
COP		W/W	4.28	3.10	
		kcal/hW	3.68	2.67	
Air Flow		m³/min (ft³/min)	Cooling: 109.4 (3860) Heating: 76.0 (2680)		
Refrigeration Control Device			Expansion Valve		
Refrigeration Oil		cm ³	FV50S (1600)		
Refrigerant (R410A)		kg (oz)	2.35 (82.9)		
Compressor	Туре		Hermetic Motor (Rotary)		
	Motor Type		Brushless	(4-poles)	
	Rated Output	kW	4.76		
Fan	Туре		Propell	er Fan	
	Material		PP		
	Motor Type		DC (8-	poles)	
	Input Power	W	-		
Output Power		W	6	-	
Fan Speed		rpm	Cooling: 680 (Top Fan) 720 (Bottom Fan) Heating: 580 (Top Fan) 620 (Bottom Fan)		
Heat Exchanger	Fin material		Aluminium	(Pre Coat)	
	Fin Type		Corruga	ated Fin	
	Row × Stage × FPI		2 × 51	× 19	
	Size (W × H × L)	mm	898.8 × 1295.4 × 44		

	Item	Unit	Mono bloc Unit	
Dimension Height Width		mm (inch)	1410 (55-1/2)	
		mm (inch)	1283 (50-1/2)
	Depth	mm (inch)		2-19/32)
Net Weight		kg (lbs)	168 (370)	
Noise Level	Noise Level		Cooling: 54 Cooling: Heating: 53 Heating:	
		Power Level dB	Cooling: 74 Cooling: - Heating: 70 Heating: -	
Power Source (Phase, Voltage, Cycle)		Ø	Three	
		V	400	
		Hz	50	

lt	em	Unit	Mono b	loc Unit	
Input Power		kW	Cooling: 4.76 Heating: 3.74	Cooling: - Heating: 5.16	
Maximum Input Power For Mono bl	loc Unit	kW	10	.27	
Power Supply 1: Phase (ø) / Max.	Current (A) / Max. Input Power (W)		Three / 15	.5 / 10.27k	
Power Supply 2: Phase (ø) / Max.	Current (A) / Max. Input Power (W)		Single / 1	3.0 / 9.00k	
Power Supply 3: Phase (ø) / Max.	Current (A) / Max. Input Power (W)		-1	- / -	
Starting Current		Α	7	.2	
Running Current		А	Cooling: 7.2 Heating: 5.7	Cooling: - Heating: 7.8	
Maximum Current For Mono bloc U	Jnit	Α	15	5.5	
Power Factor		%	Cooling: 96 Heating: 95	Cooling: - Heating: 96	
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	Cooling: 16 ~ 43 Heating: -20 ~ 35
	Water Outlet	°C	Cooling: 5 ~ 20 Heating: 25 ~ 55
Internal Pressure Differential	<u> </u>	kPa	Cooling: 40.0 Heating: 64.0
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	109
Hot Water Coil	Туре		Brazed Plate
	No. of Plates		52
	Size (H × W × L)	mm	93 × 120 × 376
	Water Flow Rate	l/min (m³/h)	Cooling: 35.0 (2.1) Heating: 45.9 (2.8)
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	I	10
	MWP	bar	3
Capacity of Integrated Elect	ric Heater	kW	9.00

Note:

- 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.

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

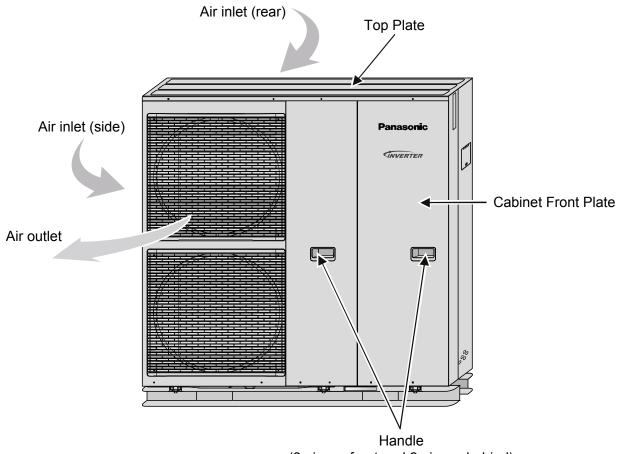
• Operation Condition

		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.

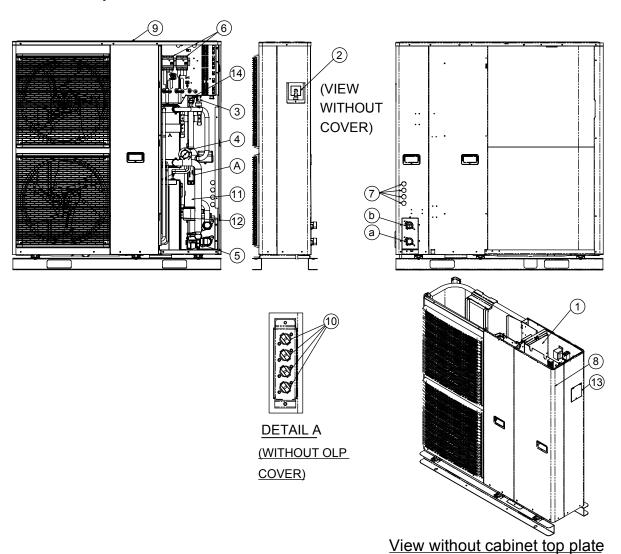
4. Location of Controls and Components

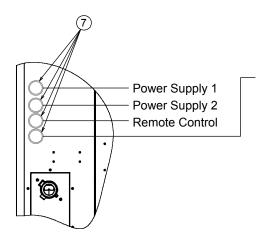
4.1 Mono Bloc Unit



(2 pieces front and 2 pieces behind)

4.1.1 Main Components





Optional cord / cable :-

- 2-way valve cable (3 × min 0.5mm²)
- 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

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

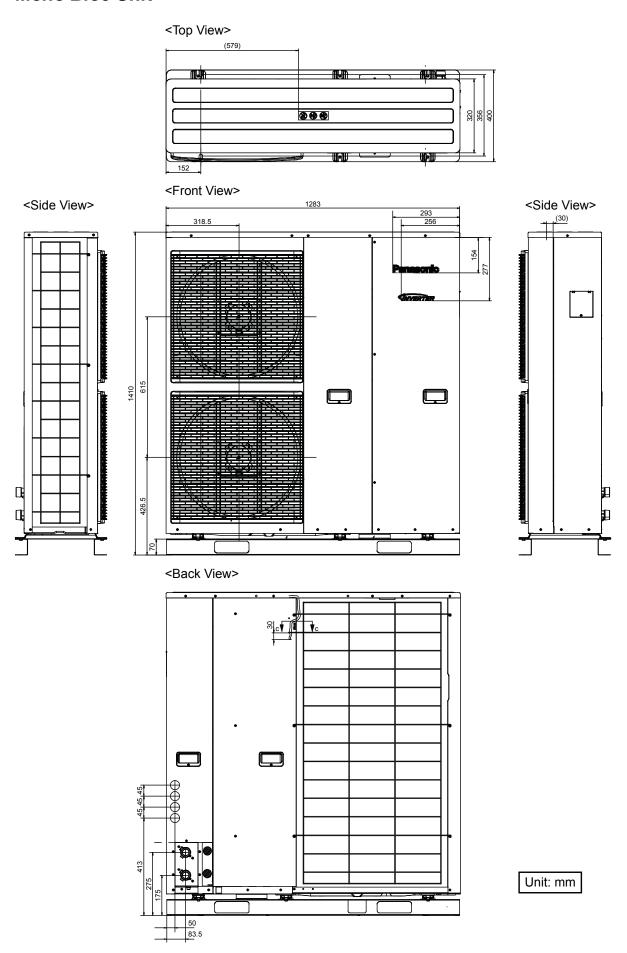
Connector name

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

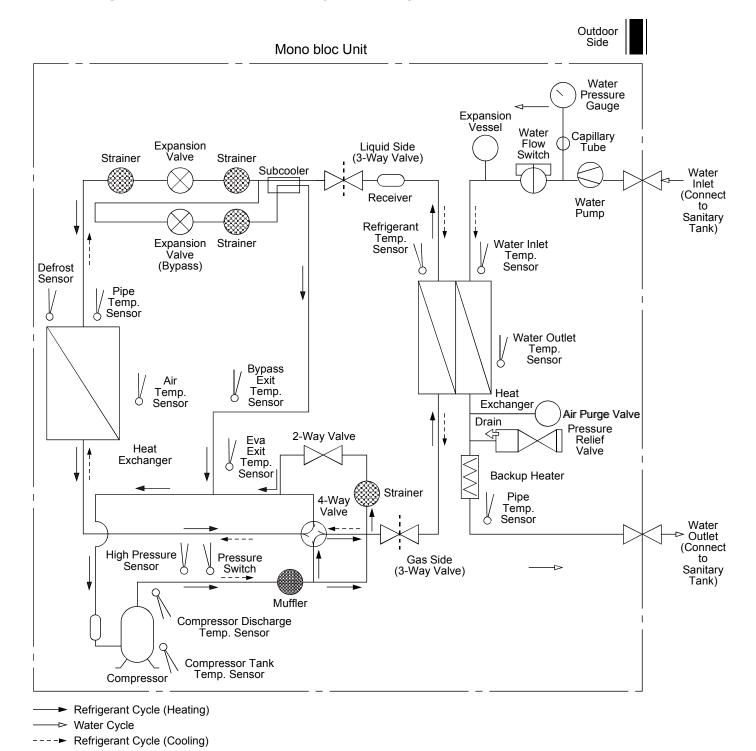
It is advisable to avoid more than 2 blockage directions. For better ventilation & multiple-outdoor installation, please consult authorized dealer/specialist.

5. Dimensions

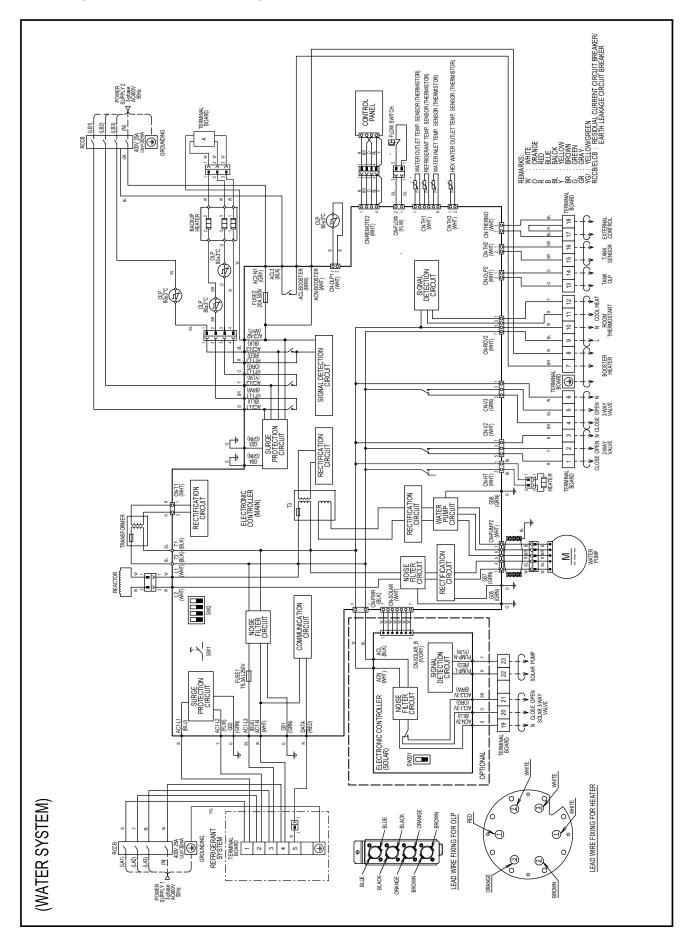
5.1 Mono Bloc Unit

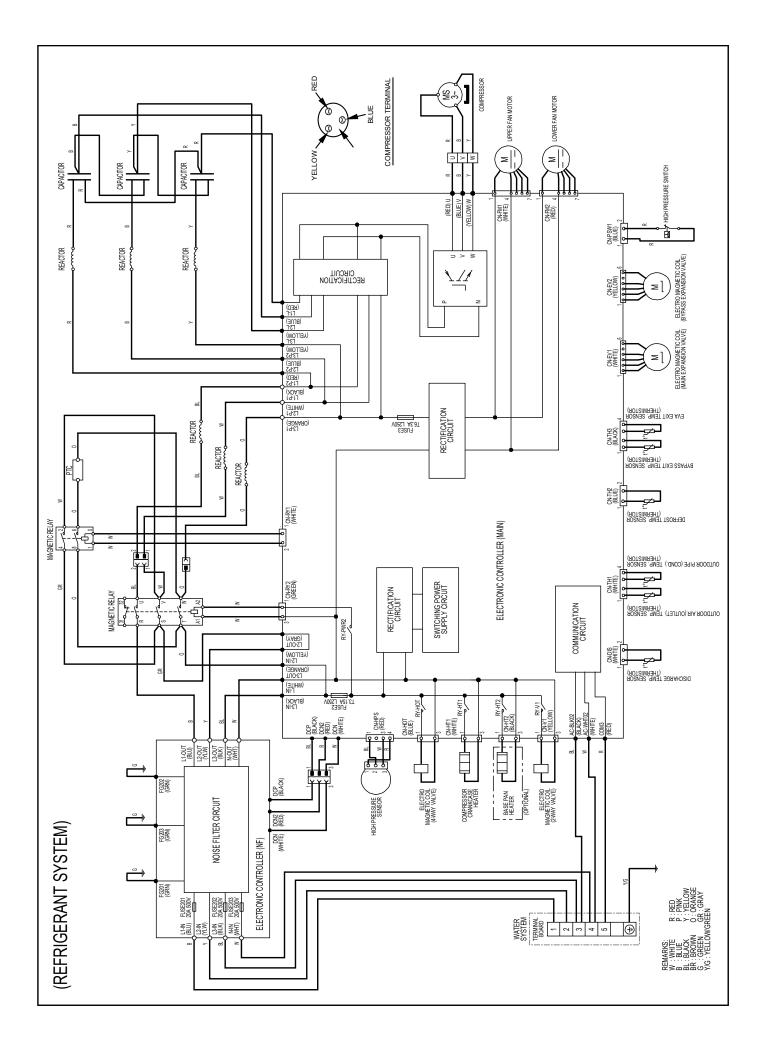


6. Refrigeration And Water Cycle Diagram



8. Wiring Connection Diagram





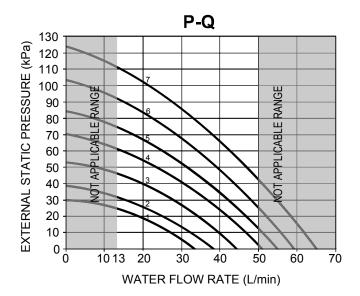
How To Adjust Water Flow Rate

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 6 for WH-MXC16G9E8. 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 (I/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. Technical Data

18.1 Operation Characteristics

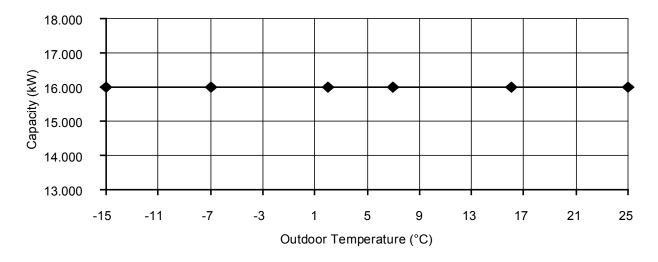
Heating Characteristics at Different Outdoor Air Temperature

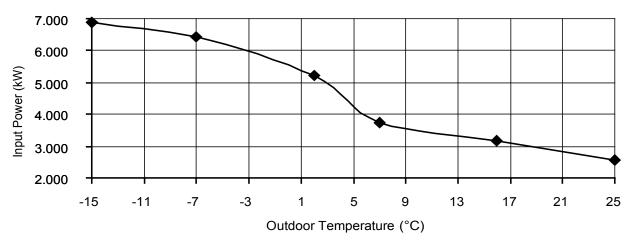
Condition

Outdoor air temperature : 7°C (DBT), 6°C (WBT)

Indoor water inlet temperature : 30°C Indoor water outlet temperature : 35°C

Piping length: 7 m





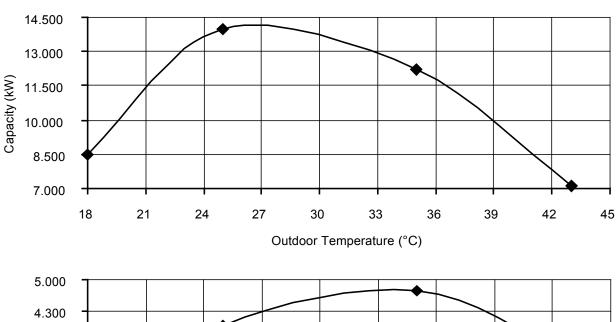
Cooling Characteristics at Different Outdoor Air Temperature

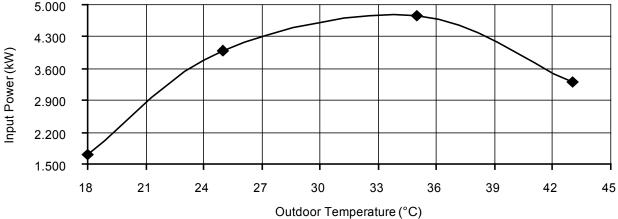
Condition

Outdoor air temperature : 35°C (DBT), -°C (WBT)

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

Piping length: 7 m





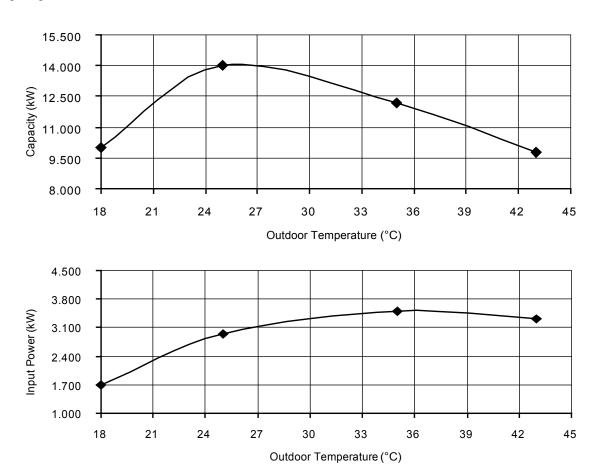
Cooling Characteristics at Different Outdoor Air Temperature

Condition

Outdoor air temperature : 35°C (DBT), -°C (WBT)

Indoor water inlet temperature : 12°C Indoor water outlet temperature : 18°C

Piping length: 7 m



18.2 Heating Capacity Table

Water Out (°C)	3	0	3	5	4	0	4	5	5	0	5	5
Outdoor Air (°C)	Capacity (W)	Input Power (W)										
-15	16000	6300	16000	6890	16000	7450	16000	8100	16000	8480	15200	8960
-7	16000	5850	16000	6420	16000	7000	16000	7570	16000	8100	16000	8620
2	16000	4670	16000	5210	16000	5740	16000	6310	16000	6900	16000	7500
7	16000	3350	16000	3740	16000	4300	16000	4800	16000	5430	16000	5910
16	16000	2590	16000	3180	16000	3710	16000	4270	16000	4860	16000	5220
25	16000	2020	16000	2580	16000	2910	16000	3360	16000	3740	16000	4000

18.3 Cooling Capacity Table

Water Out (°C)	7	7	1	8
Outdoor Air (°C)	Capacity (W) Input Power (W)		Capacity (W)	Input Power (W)
18	8500	1700	10000	1700
25	14000	4000	14000	2940
35	12200	4760	12200	3500
43	7100	3310	9800	3310