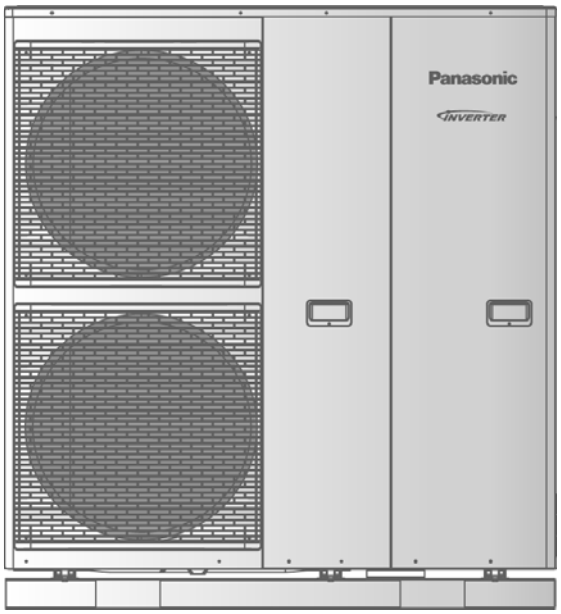
Order No. PAPAMY1503092CE

# Service Manual

## (Mono Bloc) Air-to-Water Heatpump System




## Mono Bloc Unit
## WH-MHF09G3E8

## 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.

Panasonic®

# 2. Specifications

## *2.1 WH-MHF09G3E8*

| Item | | Unit | Refrigerant System | |
|---|---|---|---|---|
| Performance Test Condition | | | EN14511 | |
| Heating Capacity | | Condition (Ambient/Water) | A7W35 | A2W35 |
| | | kW | 9.00 | 9.00 |
| | | BTU/h | 30700 | 30700 |
| | | kcal/h | 7740 | 7740 |
| COP | | W/W | 4.64 | 3.45 |
| | | kcal/hW | 3.99 | 2.97 |
| Air Flow | | $m^3$/min ($ft^3$/min) | 76.8 (2710) | |
| 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 | 490 (Top Fan) 530 (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 | 49 | |
| | | Power Level dB | 66 | |
| Power Source (Phase, Voltage, Cycle) | | ø | Three | |
| | | V | 400 | |
| | | Hz | 50 | |
| Input Power | | kW | 1.94 | 2.61 |
| Maximum Input Power For Mono Bloc Unit | | kW | 6.67 | |
| Power Supply 1: Phase (ø) / Max. Current (A) / Max. Input Power (W) | | | Three / 14.5 / 9.67k | |
| Power Supply 2: Phase (ø) / Max. Current (A) / Max. Input Power (W) | | | Single / 13.0 / 3.00k | |
| Power Supply 3: Phase (ø) / Max. Current (A) / Max. Input Power (W) | | | - / - / - | |
| Starting Current | | A | 3.0 | |
| Running Current | | A | 3.0 | 4.0 |
| Maximum Current For Mono Bloc Unit | | A | 10.2 | |
| Power Factor | | % | 94 | 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 | 26.5 |
| 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 | 58 |
| 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 ($m^3$/h) | 25.8 (1.5) |
| 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 | 3.00 |

**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

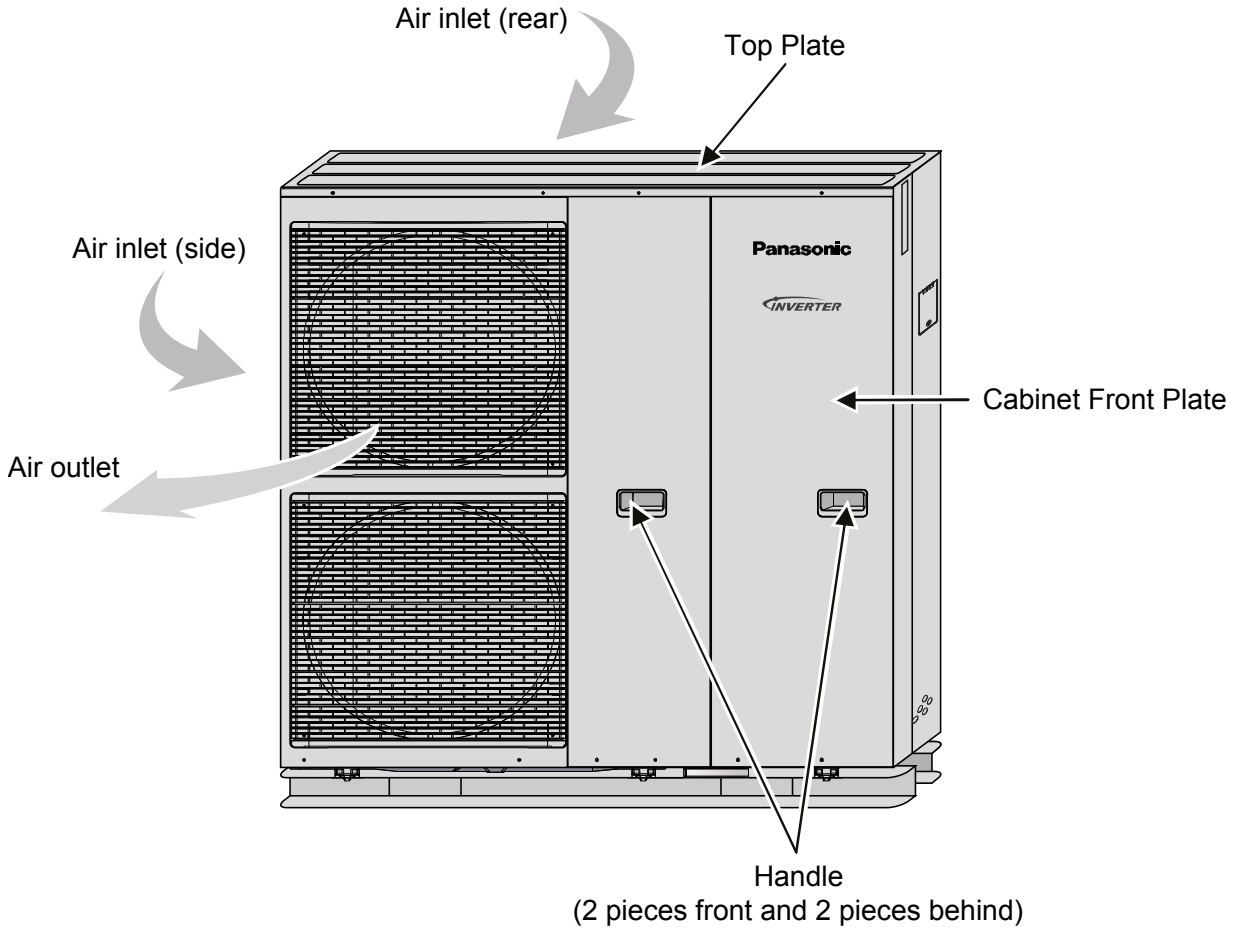
- **Inverter Technology**
  - Energy saving
- **High Efficiency**
- **Compact Design**
- **Environment Protection**
  - Non-ozone depletion substances refrigerant (R407C)
- **Easy to use remote control**
- **Weekly Timer setting**
- **Quality Improvement**
  - Random auto restart after power failure 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 |

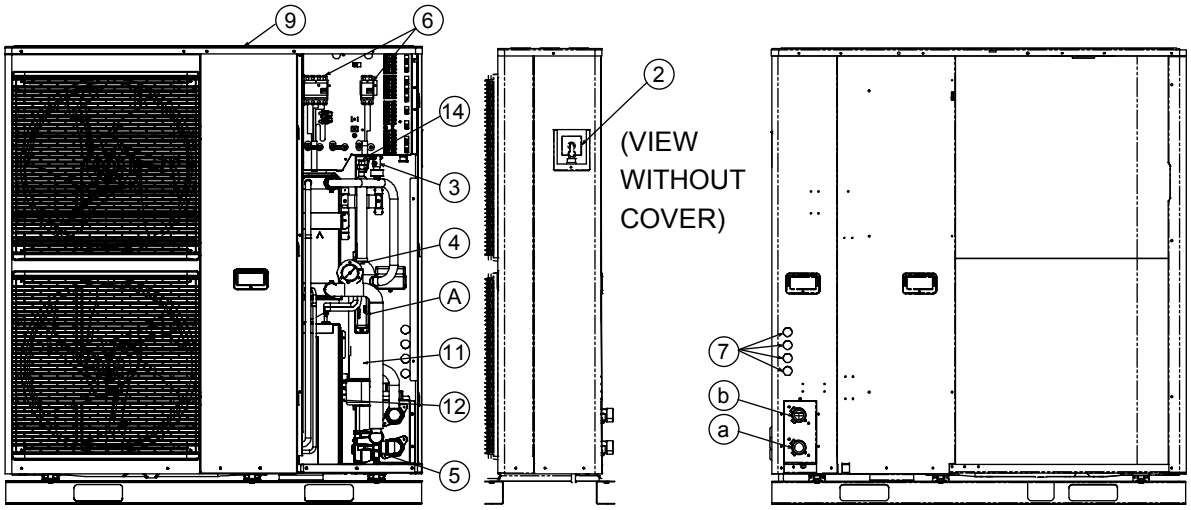
NOTICE : When the outdoor temperature is out of the above temperature range, the heating capacity will drop significantly and mono bloc unit might stop for protection control.

# 4. Location of Controls and Components

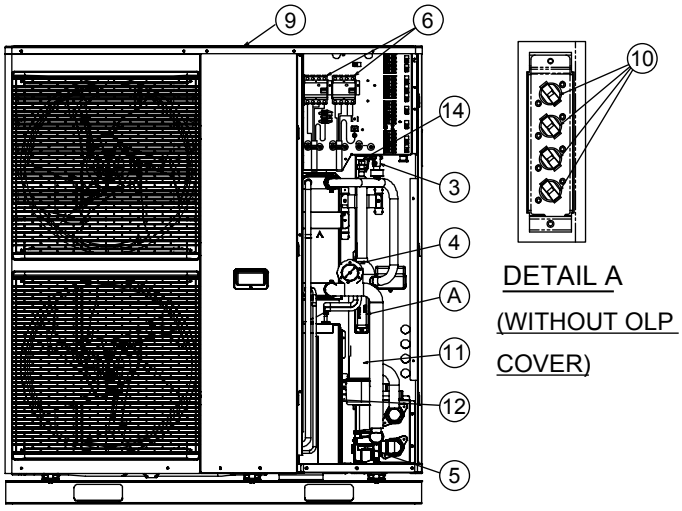
## *4.1 Mono Bloc Unit*



### 4.1.1 Main Components

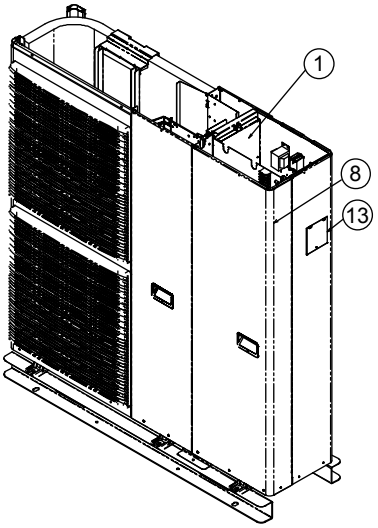



For 9kW models

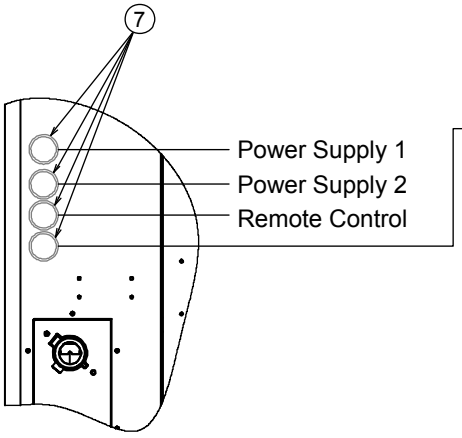



DETAIL A
(WITHOUT OLP COVER)

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 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)

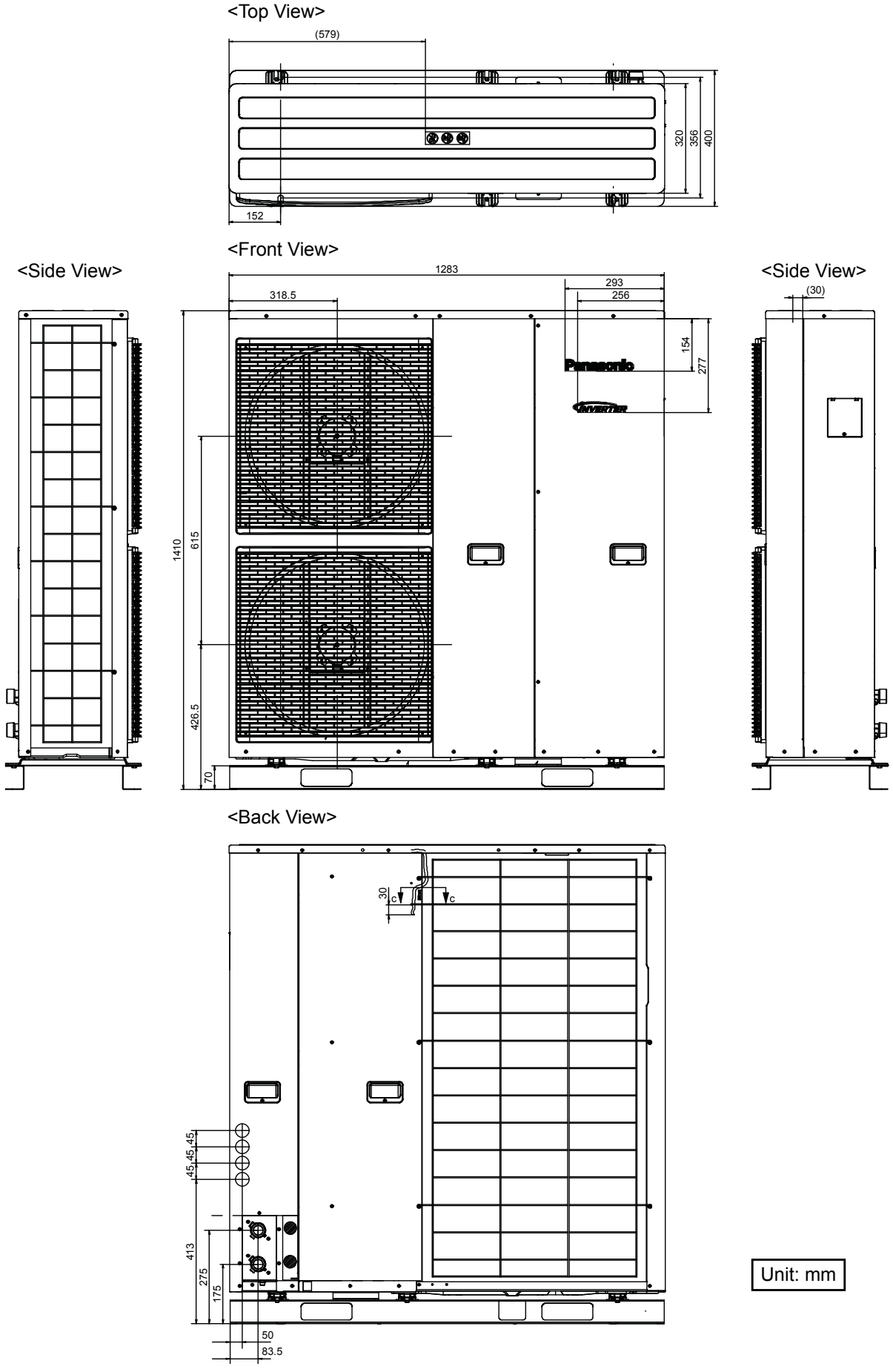
Type designation 60245 IEC 57 or heavier cord / cable

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
⑫ Expansion vessel
⑬ Cover
⑭ Air purge valve

Connector name
ⓐ Water inlet
ⓑ Water outlet

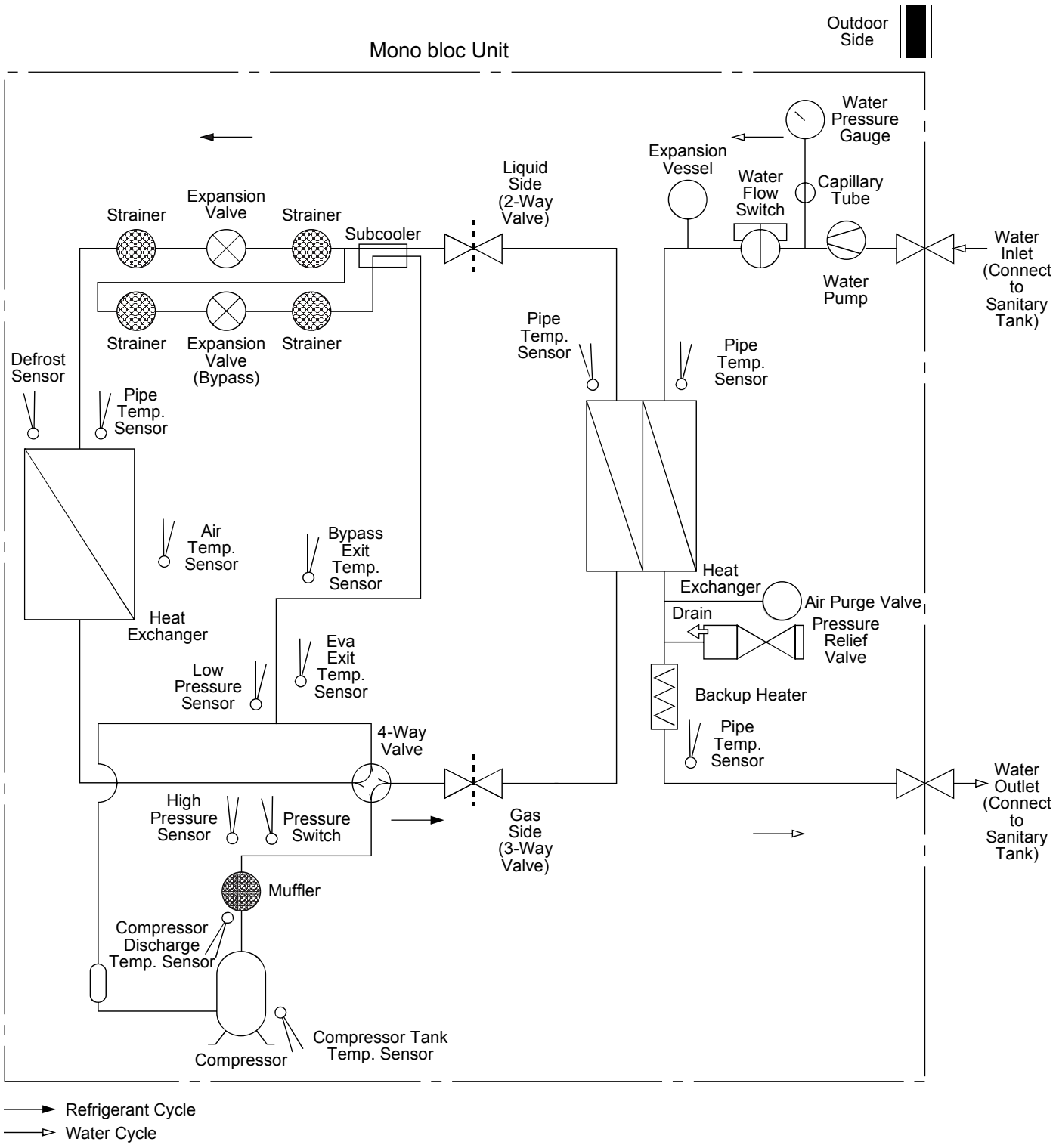
# 5. Dimensions

## *5.1 Mono Bloc Unit*



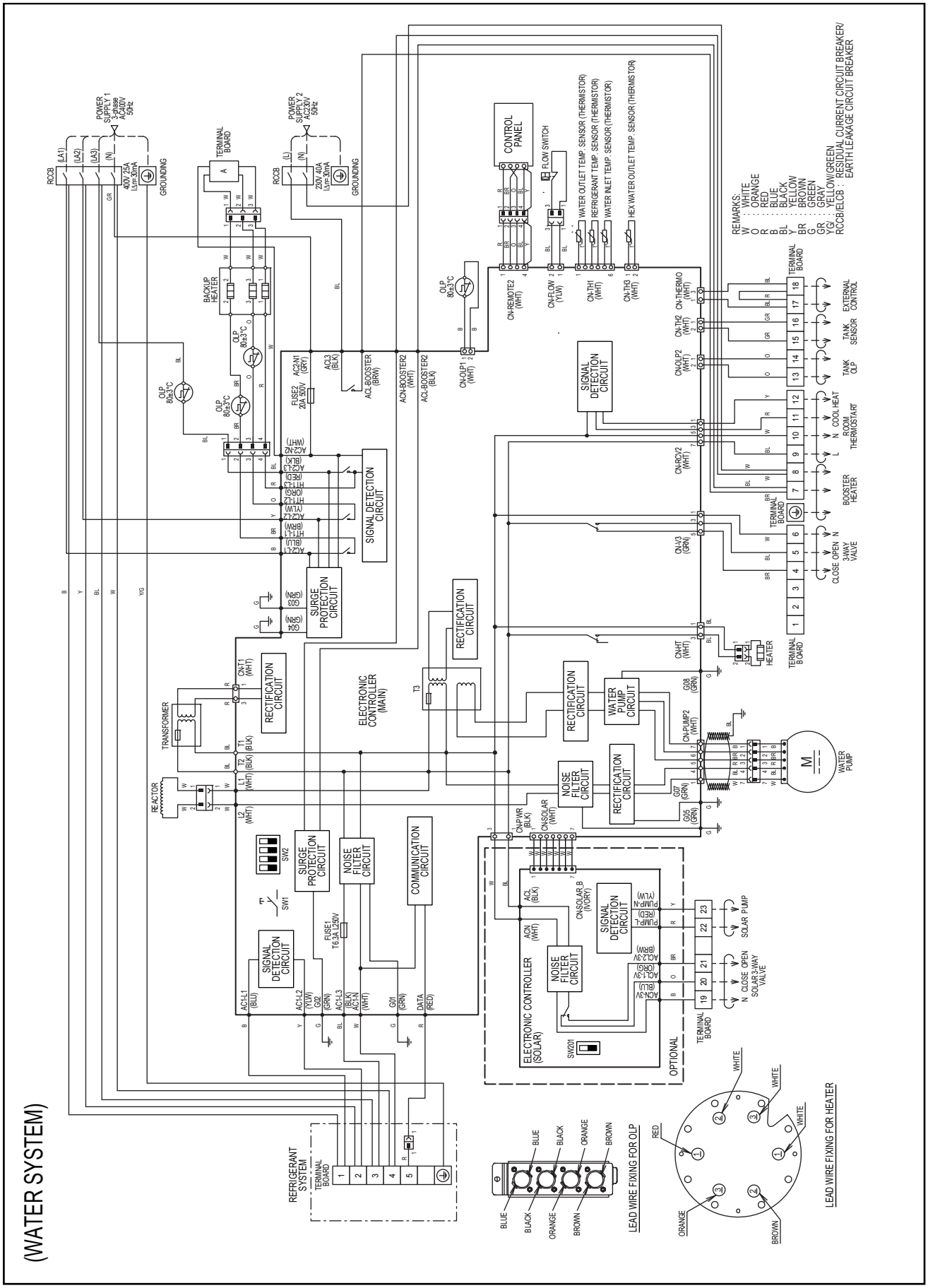

Unit: mm

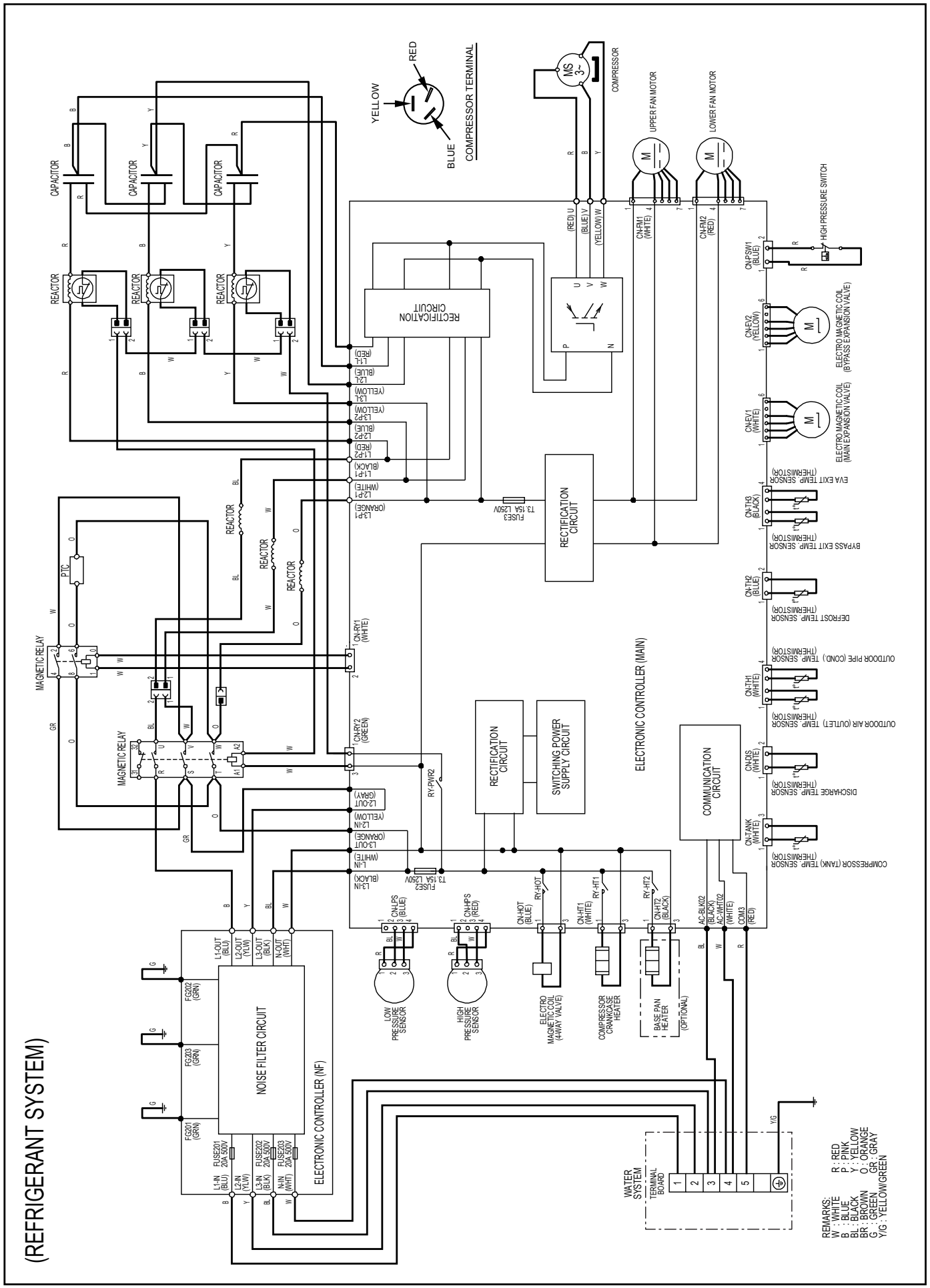
# 6. Refrigeration and Water Cycle Diagram



# 8. Wiring Connection Diagram

## *8.1 WH-MHF09G3E8*



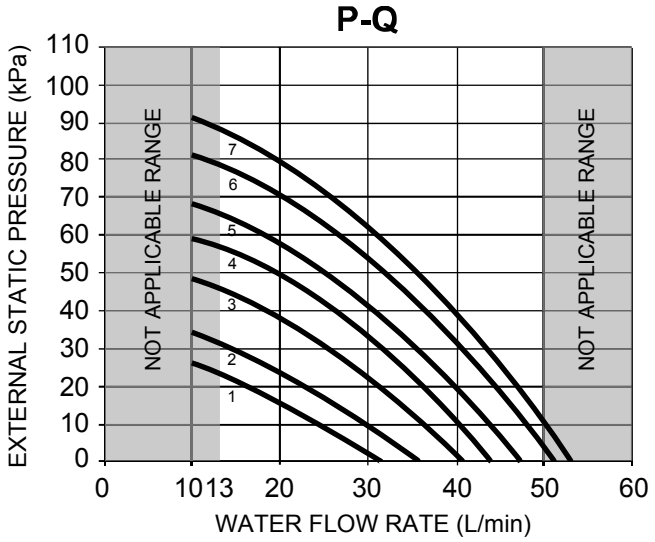

(REFRIGERANT SYSTEM)
ELECTRONIC CONTROLLER (MAIN)
ELECTRONIC CONTROLLER (NF)
NOISE FILTER CIRCUIT
RECTIFICATION CIRCUIT
SWITCHING POWER SUPPLY CIRCUIT
COMMUNICATION CIRCUIT
COMPRESSOR
UPPER FAN MOTOR
LOWER FAN MOTOR
HIGH PRESSURE SWITCH
ELECTRO MAGNETIC COIL (BYPASS EXPANSION VALVE)
ELECTRO MAGNETIC COIL (MAIN EXPANSION VALVE)
EVA EXIT TEMP. SENSOR (THERMISTOR)
BYPASS EXIT TEMP. SENSOR (THERMISTOR)
DEFROST TEMP. SENSOR (THERMISTOR)
OUTDOOR PIPE (COND.) TEMP. SENSOR (THERMISTOR)
OUTDOOR AIR (OUTLET) TEMP. SENSOR (THERMISTOR)
DISCHARGE TEMP. SENSOR (THERMISTOR)
COMPRESSOR (TANK) TEMP. SENSOR (THERMISTOR)
LOW PRESSURE SENSOR
HIGH PRESSURE SENSOR
ELECTRO MAGNETIC COIL (4-WAY VALVE)
COMPRESSOR CRANKCASE HEATER
BASE PAN HEATER
(OPTIONAL)
CAPACITOR
REACTOR
PTC
MAGNETIC RELAY
FUSE1 20A 500V
FUSE2 15A 250V
FUSE3 15A 250V
WATER SYSTEM
TERMINAL BOARD
REMARKS:
W : WHITE
B : BLUE
BL : BLACK
BR : BROWN
G : GREEN
Y/G : YELLOW/GREEN
R : RED
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.



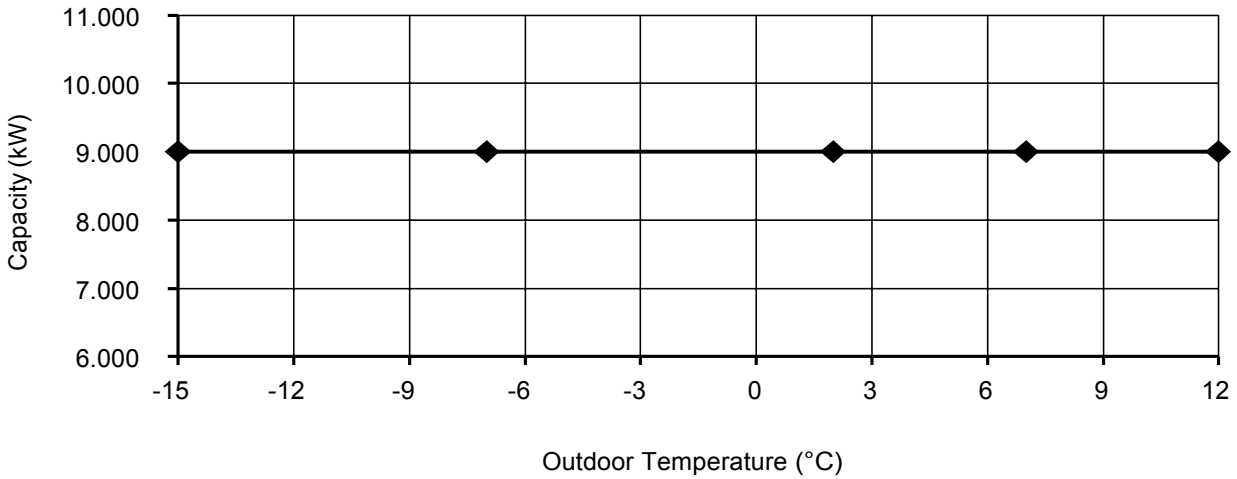
# 18. Technical Data

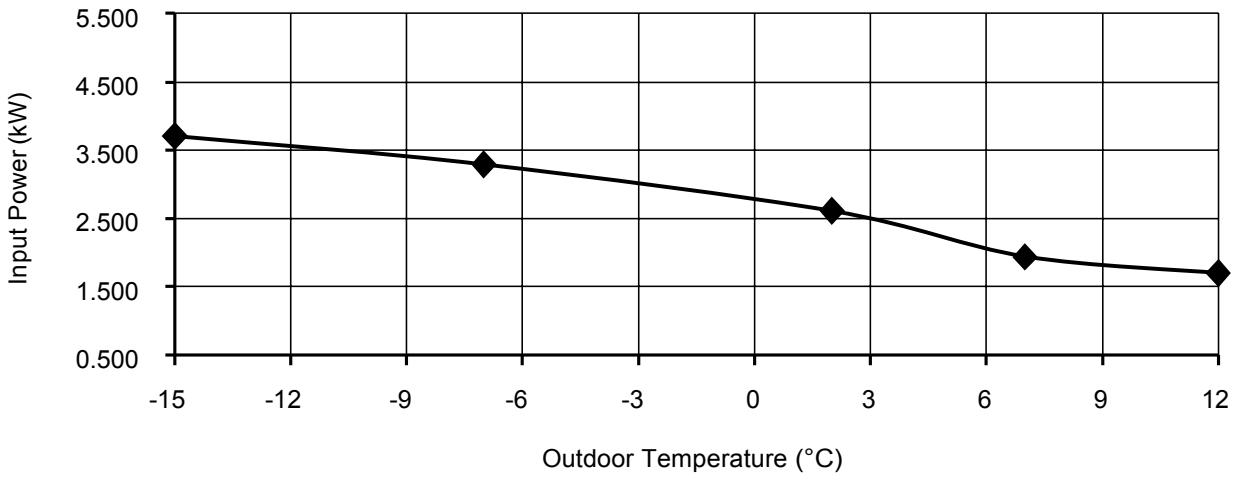
## *18.1 Operation Characteristics*

### 18.1.1 WH-MHF09G3E8

**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*

### 18.2.1 WH-MHF09G3E8

| Water Out (°C) | 30 | | 35 | | 40 | | 45 | | 55 | | 65 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 9000 | 3460 | 9000 | 3710 | 9000 | 4010 | 8800 | 4260 | 8500 | 4710 | 7800 | 5380 |
| -7 | 9000 | 3060 | 9000 | 3290 | 9000 | 3560 | 8900 | 3830 | 8900 | 4280 | 9000 | 5020 |
| 2 | 9000 | 2430 | 9000 | 2610 | 9000 | 2910 | 9000 | 3210 | 9000 | 3720 | 9000 | 4370 |
| 7 | 9000 | 1820 | 9000 | 1940 | 9000 | 2210 | 9000 | 2460 | 9000 | 2990 | 9000 | 3640 |
| 12 | 9000 | 1520 | 9000 | 1700 | 13200 | 1880 | 9000 | 2160 | 9000 | 2630 | 9000 | 3200 |