

# Service Manual

Air-to-Water Heatpump

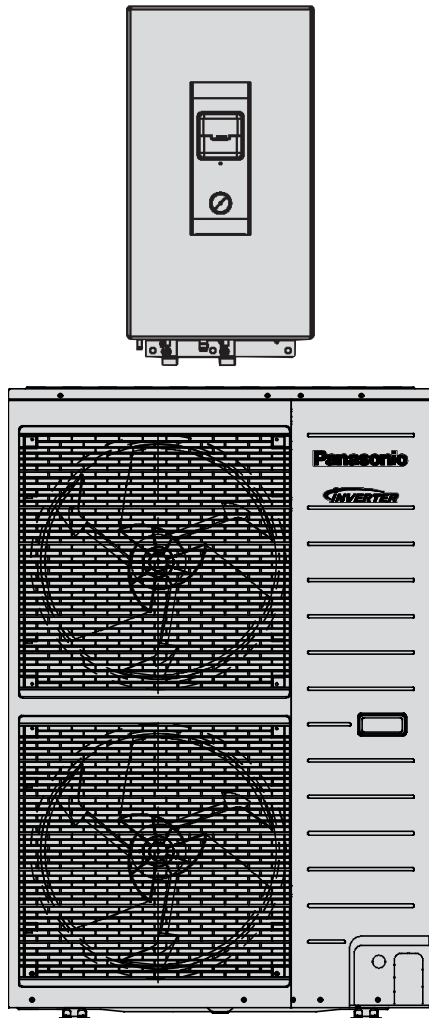
Indoor Unit

Outdoor Unit

WH-SXC12F9E8

WH-UX12FE8

Destination  
Europe



## ⚠ 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 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.

# 1. Safety Precautions

- Read the following "SAFETY PRECAUTIONS" carefully before perform any servicing.
- Electrical work must be installed or serviced by a licensed electrician. Be sure to use the correct rating and main circuit for the model 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 or servicing due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

|                                                                                                  |                                                                                  |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|  <b>WARNING</b> | This indication shows the possibility of causing death or serious injury.        |
|  <b>CAUTION</b> | This indication shows the possibility of causing injury or damage to properties. |

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

|                                                                                   |                                                         |
|-----------------------------------------------------------------------------------|---------------------------------------------------------|
|  | This symbol denotes item that is PROHIBITED from doing. |
|-----------------------------------------------------------------------------------|---------------------------------------------------------|

- Carry out test run to confirm that no abnormality occurs after the servicing. 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.

|  <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1. Do not modify the machine, part, material during repairing service.                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                       |
| 2. If wiring unit is supplied as repairing part, do not repair or connect the wire even only partial wire break. Exchange the whole wiring unit.                                                                                                                                                                                                                                                                                                                     |                                                                                       |
| 3. Do not wrench the fasten terminal. Pull it out or insert it straightly.                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                       |
| 4. Engage dealer or specialist for installation and servicing. If installation of servicing done by the user is defective, it will cause water leakage, electrical shock or fire.                                                                                                                                                                                                                                                                                    |                                                                                       |
| 5. Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electric shock or fire.                                                                                                                                                                                                                                                                                                                  |                                                                                       |
| 6. Use the attached accessories parts and specified parts for installation and servicing. Otherwise, it will cause the set to fall, water leakage, refrigerant leakage, fire or electrical shock.                                                                                                                                                                                                                                                                    |                                                                                       |
| 7. Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.                                                                                                                                                                                                                                                                        |                                                                                       |
| 8. Do not install outdoor unit near handrail of veranda. When installing outdoor unit at veranda of high rise building, child may climb up to outdoor unit and cross over the handrail and causing accident.                                                                                                                                                                                                                                                         |  |
| 9. For electrical work, follow the local national wiring standard, regulation and the 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.                                                                                                                                                                      |                                                                                       |
| 10. This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electric shock in case equipment breakdown or insulation breakdown.                                                                                                                                                                                                                             |                                                                                       |
| 11. Do not use joint cable for indoor/outdoor connection cable. Use specified indoor/outdoor connection cable, refer to Installation Instructions CONNECT THE CABLE TO THE INDOOR UNIT and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection.                                                          |                                                                                       |
| 12. When install or relocate Air to Water Heatpump indoor/outdoor unit, do not let any substance other than the specified refrigerant, eg. air etc. mix into refrigerant cycle (piping). Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.                                                                                                                                                            |                                                                                       |
| 13. This is a R410A model, when connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A refrigerant. Thickness of copper pipes used with R410A must be more than 0.8 mm. Never use copper pipes thinner than 0.8 mm. It is desirable that the amount of residual oil is less than 40 mg/10 m. |  |
| 14. During installation, install the refrigerant piping properly before run the compressor. Operation of compressor without fixing refrigeration piping and valves at opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.                                                                                                                                                                 |                                                                                       |
| 15. During pump down operation, stop the compressor before remove the refrigeration piping. Removal of refrigeration piping while compressor is operating and valves are opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.                                                                                                                                                              |                                                                                       |
| 16. After completion of the installation servicing confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.                                                                                                                                                                                                                                                                                                |                                                                                       |
| 17. Ventilate the room if there is refrigerant gas leakage during operation. Extinguish all fire sources if present. It may cause toxic gas when the refrigerant contacts with fire.                                                                                                                                                                                                                                                                                 |                                                                                       |
| 18. Only use the supplied or specified installation parts, else, it may cause unit vibrate loose, water/refrigerant leakage, electrical shock or fire.                                                                                                                                                                                                                                                                                                               |                                                                                       |

**WARNING**

|                                                                                                                                                                                                                                                                      |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 19. The unit is only for use in a closed portable water system. Utilization in an open water circuit or non-portable water circuit, may lead to excessive corrosion of the water piping and risk of incubating bacteria colonies, particularly Legionella, in water. |  |
| 20. Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.                                                                                                                                                             |  |
| 21. Do not dismantle refrigerant piping using pipe wrench. It might deform the piping and cause the unit to malfunction.                                                                                                                                             |  |
| 22. Select a location where in case of water leakage, the leakage will not cause damage to other properties.                                                                                                                                                         |  |
| 23. Do not locally purchase electrical parts of the product for the purpose of installation, service, maintenance and etc. They might cause electrical shock or fire.                                                                                                |  |
| 24. Do not branch the power from terminal block to heater tape. Overloaded terminal block will cause electrical shock or fire.                                                                                                                                       |  |
| 25. Installation or servicing work. It may need two people to carry out the installation or servicing work.                                                                                                                                                          |  |
| 26. Do not use unspecified cord, modified cord, joint 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.              |  |
| 27. Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.                                                                          |  |

**CAUTION**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1. Do not install the air-to-water heatpump indoor unit and outdoor unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| 2. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| 3. It may need two persons to carry out the installation work. The weight of indoor/outdoor unit might cause injury if carried by one person.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| 4. Do not touch outdoor unit air inlet and aluminium fin. It may cause injury.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| 5. Select an installation location which is easy for maintenance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| 6. Pb free solder has a higher melting point than standard solder; typically the melting point is 50°F - 70°F (30°C - 40°C) higher. Please use a high temperature solder iron. In case of the soldering iron with temperature control, please set it to 700 ± 20°F (370 ± 10°C). Pb free solder will tend to splash when heated too high (about 1100°F/600°C).                                                                                                                                                                                                                                                                                                                                                                   |  |
| 7. Power supply connection to the indoor unit.<br>1. Power supply point should be in easily accessible place for power disconnection in case of emergency.<br>2. Must follow local national wiring standard, regulation and this installation instruction.<br>3. Strongly recommended to make permanent connection to a circuit breaker.<br>- Power Supply 1: Use approved 20A 4-poles circuit breaker with a minimum contact gap of 3.0 mm.<br>- Power Supply 2: Use approved 15/16A 2-poles circuit breaker with a minimum contact gap of 3.0 mm.<br>(Only applicable for WH-S**09*3E8)<br>or<br>Use approved 20A 4-poles circuit breaker with a minimum contact gap of 3.0 mm.<br>(Only applicable for WH-S**09/12/14/16*9E8) |  |
| 8. Do not release refrigerant during piping work for installation, servicing, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| 9. Do not install this appliance in a laundry room or other high humidity location. This condition will cause rust and damage to the unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| 10. Make sure the insulation of power supply cord does not contact to hot part (i.e. refrigerant piping, water piping) to prevent from insulation failure (melt).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| 11. Do not sit, step or place anything on the unit, you may fall down accidentally.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| 12. Do not touch the sharp aluminum fins or edges of metal parts.<br>If you are required to handle sharp parts during installation or servicing, please wear hand glove.<br>Sharp parts may cause injury.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| 13. After installation, check the water leakage condition in connection area during test run. If leakage occur, it will cause damage to other properties.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| 14. The unit described in this manual is designed for use in a closed water system only. Utilization in an open water circuit may lead to excessive corrosion of the water piping.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |

## 2.3 WH-SXC12F9E8 WH-UX12FE8

| Item                         |                           | Unit                                       | Outdoor Unit                                                         |             |       |
|------------------------------|---------------------------|--------------------------------------------|----------------------------------------------------------------------|-------------|-------|
| Performance Test Condition   |                           |                                            | EN 14511                                                             |             |       |
| Cooling Capacity             | Condition (Ambient/Water) |                                            | A35W7                                                                |             |       |
|                              | kW                        |                                            | 10.00                                                                |             |       |
|                              | BTU/h                     |                                            | 34100                                                                |             |       |
|                              | kcal/h                    |                                            | 8600                                                                 |             |       |
| Cooling EER                  | W/W                       |                                            | 2.81                                                                 |             |       |
|                              | kcal/hW                   |                                            | 2.42                                                                 |             |       |
| Heating Capacity             | Condition (Ambient/Water) |                                            | A7W35                                                                | A2W35       |       |
|                              | kW                        |                                            | 12.00                                                                | 12.00       |       |
|                              | BTU/h                     |                                            | 41000                                                                | 41000       |       |
|                              | kcal/h                    |                                            | 10320                                                                | 10320       |       |
| Heating COP                  | W/W                       |                                            | 4.74                                                                 | 3.44        |       |
|                              | kcal/hW                   |                                            | 4.08                                                                 | 2.96        |       |
| Noise Level                  | Condition (Ambient/Water) |                                            | A35W7                                                                | A7W35       | A2W35 |
|                              | dB (A)                    |                                            | Cooling: 50                                                          | Heating: 50 | —     |
|                              | Power Level dB            |                                            | Cooling: 68                                                          | Heating: 67 | —     |
| Air Flow                     |                           | m <sup>3</sup> /min (ft <sup>3</sup> /min) | Cooling: 93.3 (3290)<br>Heating: 80.0 (2830)                         |             |       |
| Refrigeration Control Device |                           |                                            | Expansion Valve                                                      |             |       |
| Refrigeration Oil            |                           |                                            | cm <sup>3</sup> FV50S (1200)                                         |             |       |
| Refrigerant (R410A)          |                           |                                            | kg (oz) 2.85 (100.6)                                                 |             |       |
| Dimension                    | Height                    | mm (inch)                                  | 1340 (52-3/4)                                                        |             |       |
|                              | Width                     | mm (inch)                                  | 900 (35-7/16)                                                        |             |       |
|                              | Depth                     | mm (inch)                                  | 320 (12-19/32)                                                       |             |       |
| Net Weight                   |                           | kg (lbs)                                   | 109 (240)                                                            |             |       |
| Pipe Diameter                | Liquid                    | mm (inch)                                  | 9.52 (3/8)                                                           |             |       |
|                              | Gas                       | mm (inch)                                  | 15.88 (5/8)                                                          |             |       |
| Standard Length              |                           | m (ft)                                     | 7 (23.0)                                                             |             |       |
| Pipe Length Range            |                           | m (ft)                                     | 3 (9.8) ~ 30 (98.4)                                                  |             |       |
| I/D & O/D Height Difference  |                           | m (ft)                                     | 20 (65.6)                                                            |             |       |
| Additional Gas Amount        |                           | g/m (oz/ft)                                | 50 (0.5)                                                             |             |       |
| Refrigeration Charge Less    |                           | m (ft)                                     | 10 (32.8)                                                            |             |       |
| Compressor                   | Type                      |                                            | Hermetic Motor                                                       |             |       |
|                              | Motor Type                |                                            | Brushless (4-poles)                                                  |             |       |
|                              | Rated Output              | kW                                         | 4.30                                                                 |             |       |
| Fan                          | Type                      |                                            | Propeller Fan                                                        |             |       |
|                              | Material                  |                                            | PP                                                                   |             |       |
|                              | Motor Type                |                                            | DC (8-poles)                                                         |             |       |
|                              | Input Power               | W                                          | —                                                                    |             |       |
|                              | Output Power              | W                                          | 60                                                                   |             |       |
|                              | Fan Speed                 | rpm                                        | Cooling: 600 (Top), 640 (Bottom)<br>Heating: 520 (Top), 560 (Bottom) |             |       |
| 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                      | Outdoor Unit       |               |               |
|--------------------------------------------------------------------------------------|----------------|---------------------------|--------------------|---------------|---------------|
| Power Source (Phase, Voltage, Cycle)                                                 |                | ø                         | Three              |               |               |
|                                                                                      |                | V                         | 400                |               |               |
|                                                                                      |                | Hz                        | 50                 |               |               |
| Input Power                                                                          |                | Condition (Ambient/Water) | A35W7              | A7W35         | A2W35         |
|                                                                                      |                | kW                        | Cooling: 3.56      | Heating: 2.53 | Heating: 3.49 |
| Maximum Input Power For Heatpump System                                              |                | kW                        | 7.91               |               |               |
| Power Supply 1 : Phase (Ø) / Max. Current (A) / Max. Input Power (W)                 |                |                           | 3Ø / 11.9 / 7.91k  |               |               |
| Power Supply 2 : Phase (Ø) / Max. Current (A) / Max. Input Power (W)                 |                |                           | 3Ø / 13.0 / 3.00k  |               |               |
| Power Supply 3 : Phase (Ø) / Max. Current (A) / Max. Input Power (W)                 |                |                           | — / — / —          |               |               |
| Starting Current                                                                     |                | A                         | 5.4                |               |               |
| Running Current                                                                      |                | Condition (Ambient/Water) | A35W7              | A7W35         | A2W35         |
|                                                                                      |                | A                         | Cooling: 5.4       | Heating: 3.9  | Heating: 5.3  |
| Maximum Current For Heatpump System                                                  |                | A                         | 11.9               |               |               |
| Power Factor<br>Power factor means total figure of compressor and outdoor fan motor. |                | %                         | Cooling: 97        | Heating: 96   | Heating: 97   |
| Power Cord                                                                           | Number of core |                           | —                  |               |               |
|                                                                                      | Length         | m (ft)                    | —                  |               |               |
| Thermostat                                                                           |                |                           | Electronic Control |               |               |
| Protection Device                                                                    |                |                           | Electronic Control |               |               |

| Item                                |                  | Unit                      | Indoor Unit                                |             |       |
|-------------------------------------|------------------|---------------------------|--------------------------------------------|-------------|-------|
| Performance Test Condition          |                  |                           | EN 14511                                   |             |       |
| Operation Range                     | Outdoor Ambient  | °C                        | Cooling: 16 ~ 43<br>Heating: -20 ~ 35      |             |       |
|                                     | Water Outlet     | °C                        | Cooling: 5 ~ 20<br>Heating: 25 ~ 55        |             |       |
| Internal Pressure Differential      |                  | kPa                       | Cooling: 23.1<br>Heating: 33.0             |             |       |
| Noise Level                         |                  | Condition (Ambient/Water) | A35W7                                      | A7W35       | A2W35 |
|                                     |                  | dB (A)                    | Cooling: 33                                | Cooling: 33 | —     |
|                                     |                  | Power Level dB            | Cooling: 46                                | Cooling: 46 | —     |
| Dimension                           | Height           | mm (inch)                 | 892 (35-1/8)                               |             |       |
|                                     | Width            | mm (inch)                 | 502 (19-3/4)                               |             |       |
|                                     | Depth            | mm (inch)                 | 353 (13-29/32)                             |             |       |
| Net Weight                          |                  | kg (lbs)                  | 46 (101)                                   |             |       |
| Refrigerant Pipe Diameter           | Liquid           | mm (inch)                 | 9.52 (3/8)                                 |             |       |
|                                     | Gas              | mm (inch)                 | 15.88 (5/8)                                |             |       |
| Water Pipe Diameter                 | Inlet            | mm (inch)                 | 28 (1-3/32)                                |             |       |
|                                     | Outlet           | mm (inch)                 | 28 (1-3/32)                                |             |       |
| Water Drain Hose Inner Diameter     |                  | mm (inch)                 | 15 (19/32)                                 |             |       |
| Pump                                | Motor Type       |                           | DC Motor                                   |             |       |
|                                     | No. of Speed     |                           | 7 (Software Selection)                     |             |       |
|                                     | Input Power      | W                         | 60                                         |             |       |
| Hot Water Coil                      | Type             |                           | Brazen Plate                               |             |       |
|                                     | No. of Plates    |                           | 36                                         |             |       |
|                                     | Size (W × H × L) | mm                        | 65 × 120 × 376                             |             |       |
|                                     | Water Flow Rate  | l/min (m³/h)              | Cooling: 28.7 (1.7)<br>Heating: 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 (40)      |             |       |

| Item                                   |        | Unit | Indoor Unit |
|----------------------------------------|--------|------|-------------|
| Expansion Vessel                       | Volume | l    | 10          |
|                                        | MWP    | bar  | 3           |
| Capacity of Integrated Electric Heater |        | kW   | 9.00        |

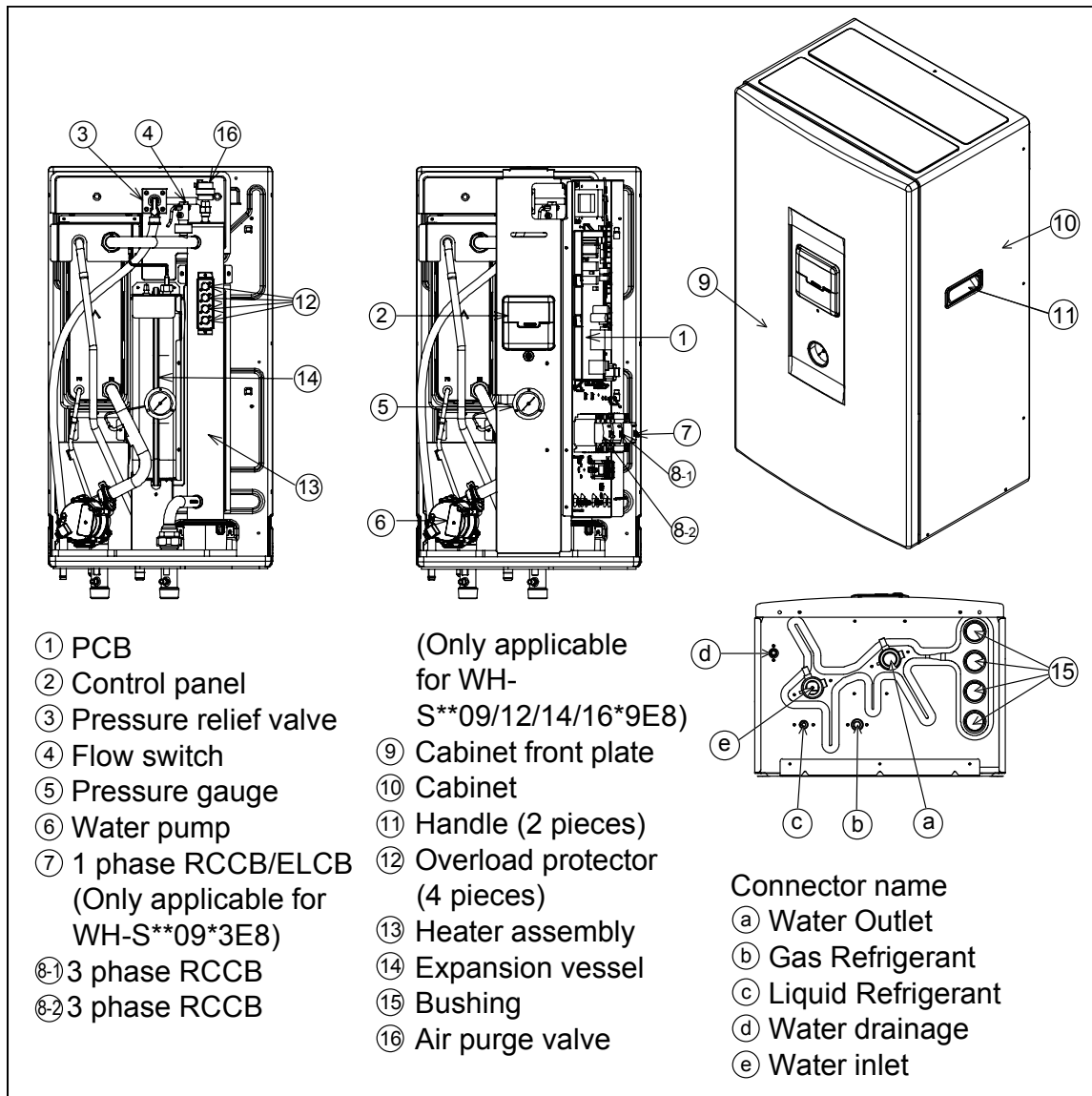
**Note:**

- Cooling capacities are based on outdoor air temperature of 35°C Dry Bulb with controlled indoor 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 indoor water inlet temperature of 30°C and water outlet temperature of 35°C.
- Specification are subjected to change without prior notice for further improvement.

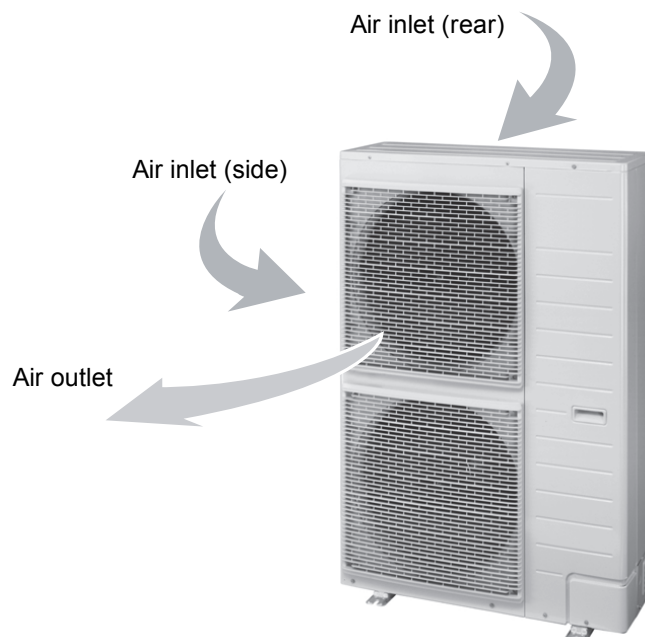
### 3. Features

- **Inverter Technology**
  - Energy saving
- **High Efficiency**
- **Environment Protection**
  - Non-ozone depletion substances refrigerant (R410A)
- **Long Installation Piping**
  - Long piping up to 30 meter with height difference 20 meter
  - Flexible 4-way piping for outdoor unit
- **Easy to use control panel**
  - Auto mode
  - Holiday mode
  - Dry concrete function
  - Weekly timer setting
- **A-class energy efficiency pump**
  - Water pump speed can be set by selection at control panel
- **Improved deice cycle**
- **Protection Feature**
  - Random auto restart after power failure for safety restart operation
  - Gas leakage protection
  - Prevent compressor reverse cycle
  - Inner protector to protect compressor
- **Serviceability Feature**
  - Breakdown Self Diagnosis function
  - System Status Check Buttons for servicing purpose
  - System Pumpdown Button for servicing purpose
  - Front maintenance design for outdoor unit

#### 4.1.4 Main Components

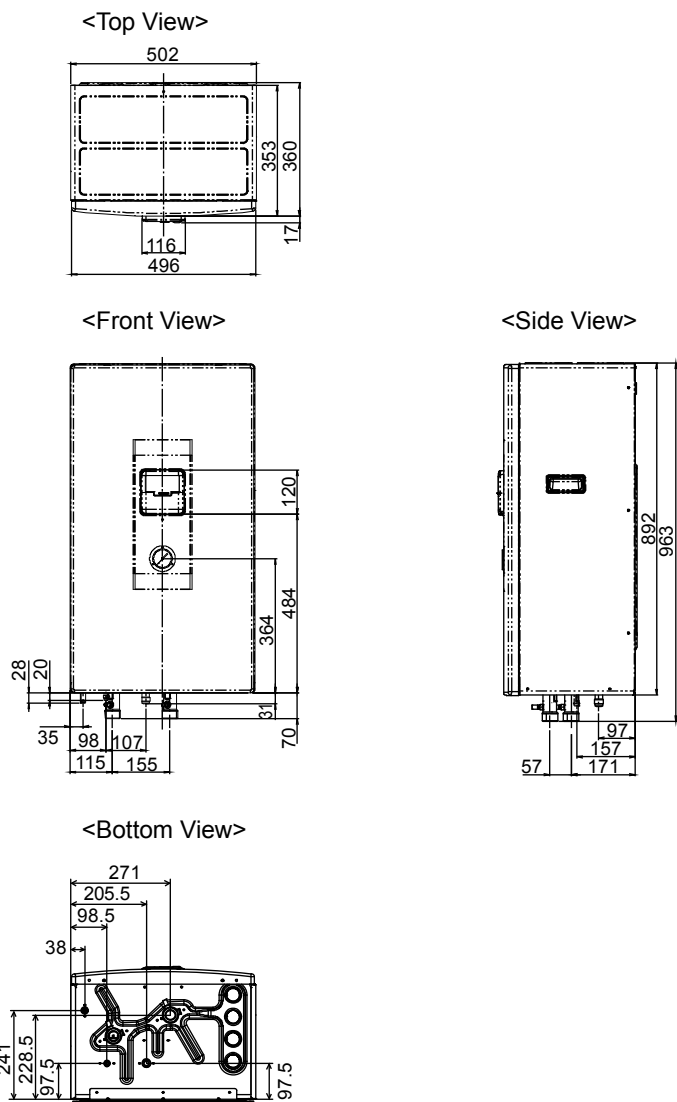


#### 4.2 Outdoor Unit

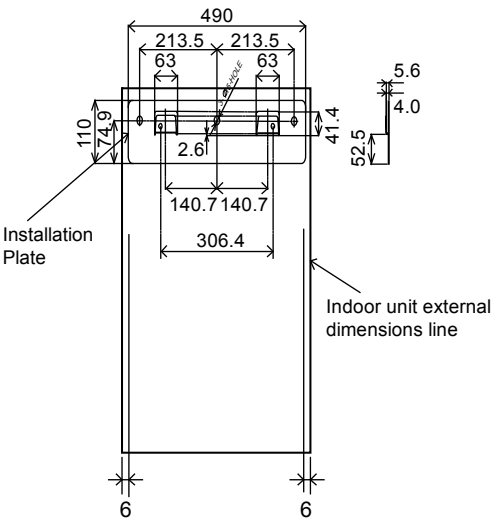


5. Dimensions

5.1 Indoor Unit

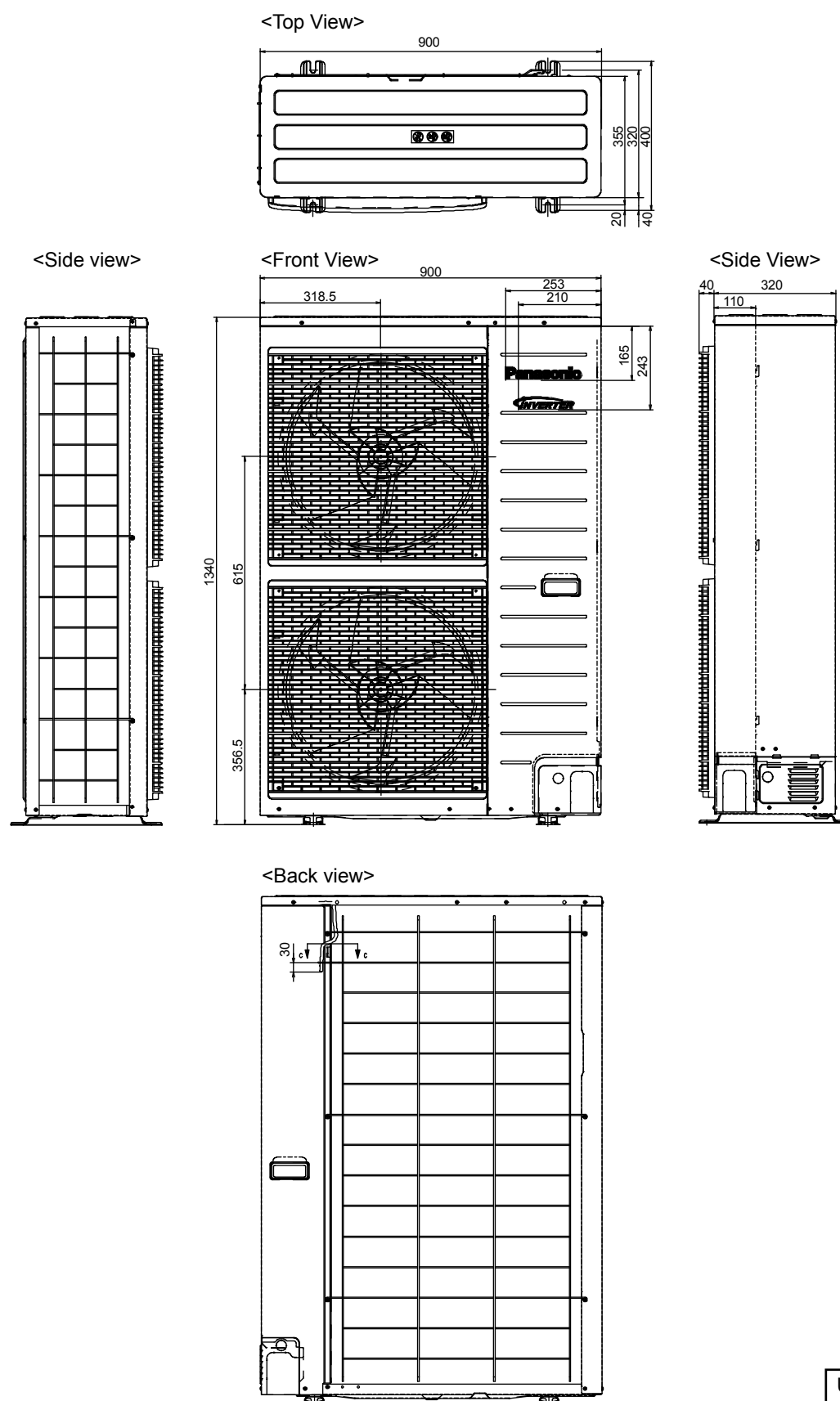


Relative position between the indoor unit and the installation plate <Front View>



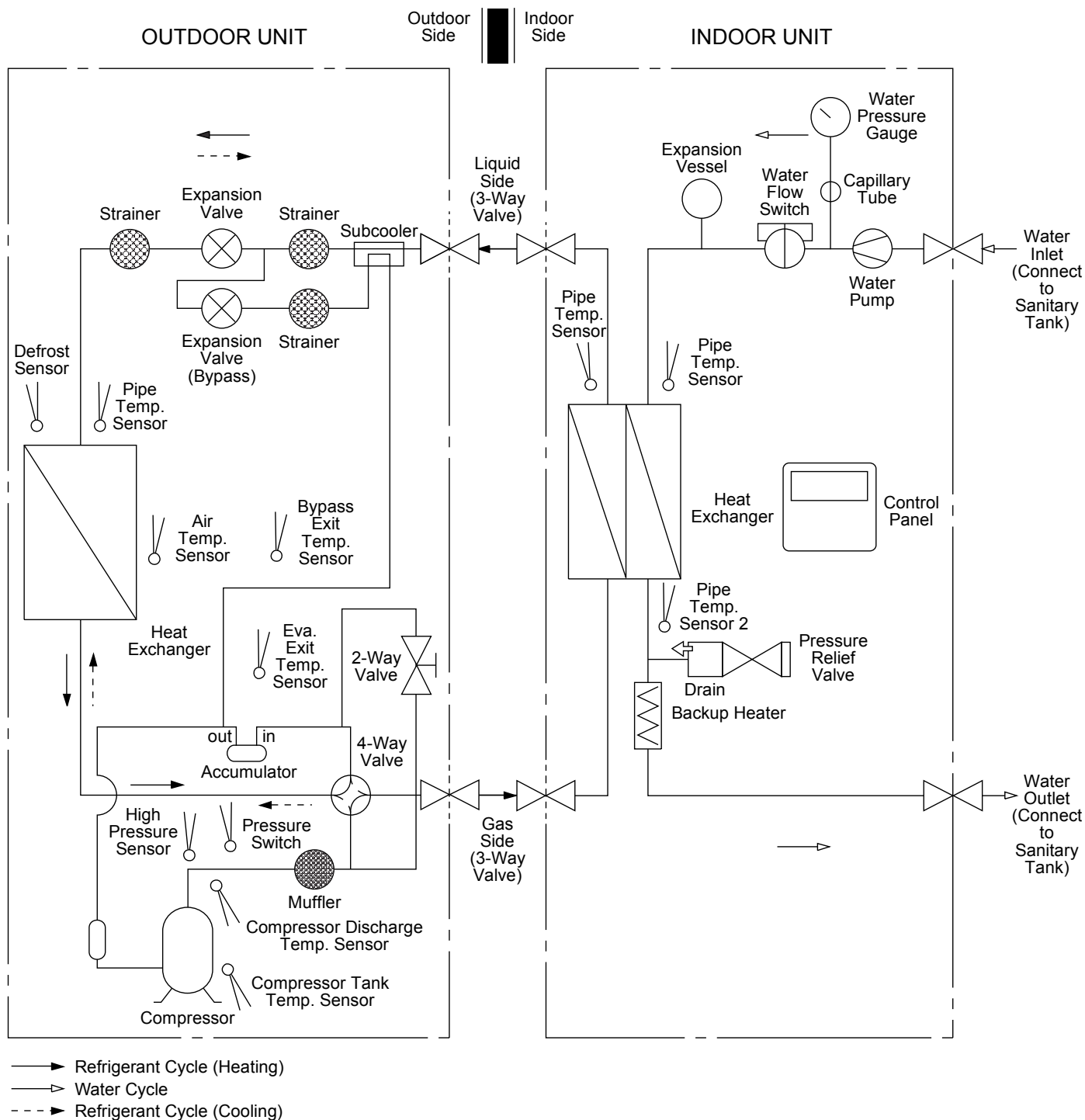
Unit: mm

## 5.2 Outdoor Unit



Unit: mm

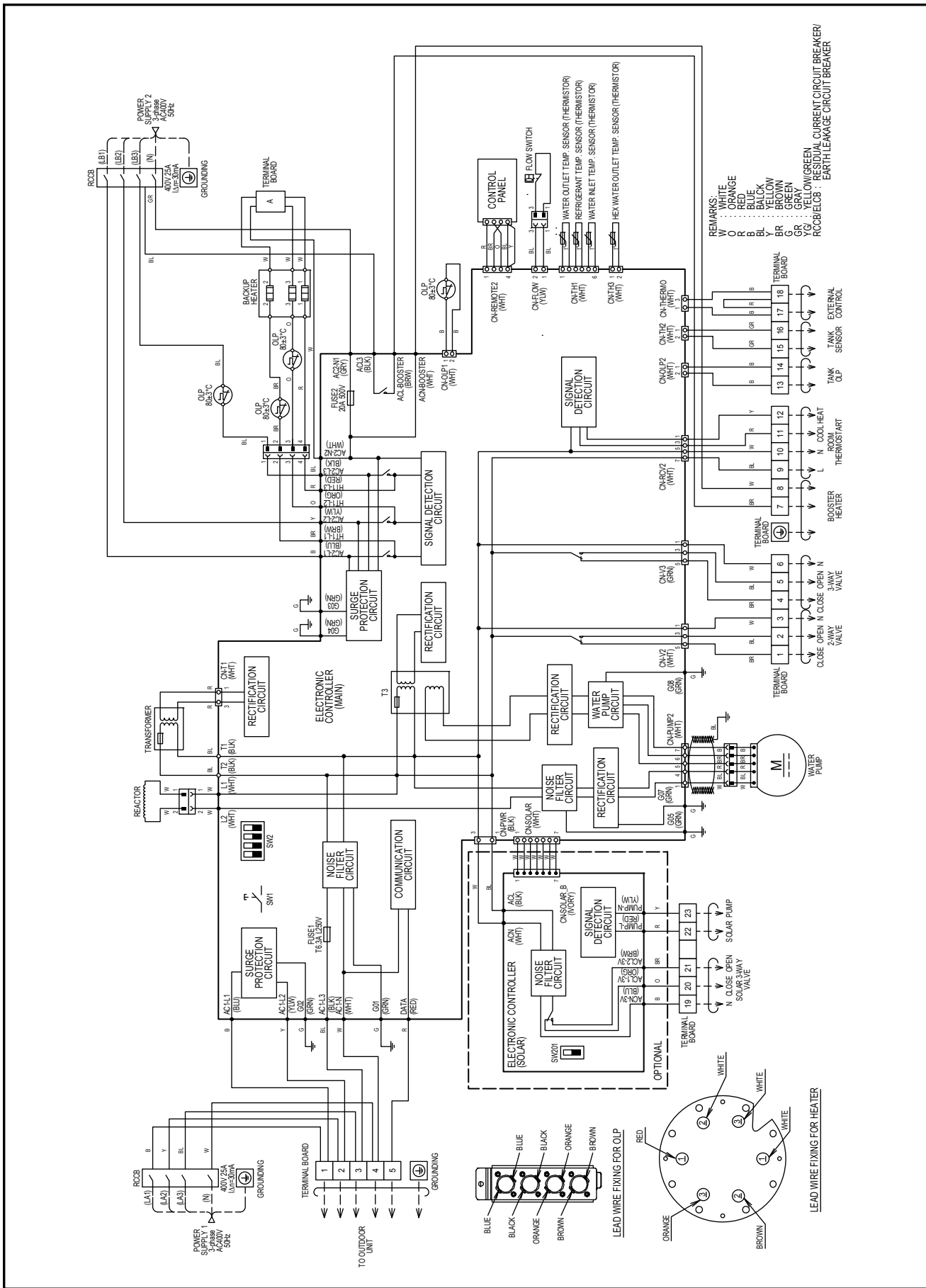
## 6. Refrigeration and Water Cycle Diagram



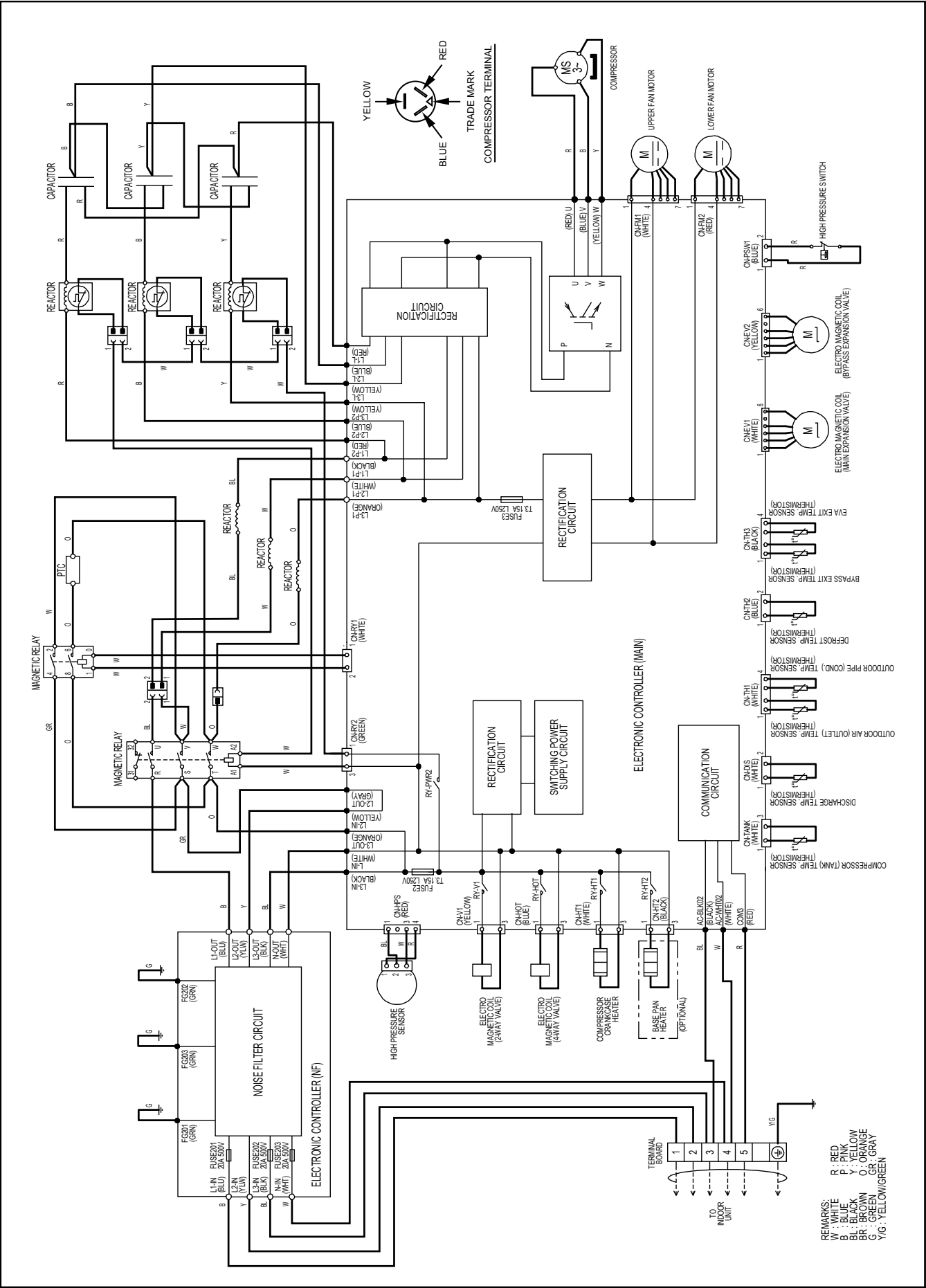
| Model   |                                              | Piping size         |                    | Rated Length (m) | Max Elevation (m) | Min. Piping Length (m) | Max. Piping Length (m) | Additional Refrigerant (g/m) |
|---------|----------------------------------------------|---------------------|--------------------|------------------|-------------------|------------------------|------------------------|------------------------------|
|         |                                              | Gas                 | Liquid             |                  |                   |                        |                        |                              |
| Cooling | WH-S*C09*3E8<br>WH-U*09*E8                   | Ø15.88 mm<br>(5/8") | Ø9.52 mm<br>(3/8") | 5 ~ 7.5          | 20                | 3                      | 30                     | 50                           |
|         | WH-S*C09/12/14/16*9E8<br>WH-U*09/12/14/16*E8 |                     |                    |                  |                   |                        |                        |                              |
| Heating | WH-S*F09*3E8<br>WH-U*09*E8                   |                     |                    |                  |                   |                        |                        |                              |
|         | WH-S*F09/12/14/16*9E8<br>WH-U*09/12/14/16*E8 |                     |                    |                  |                   |                        |                        |                              |

\* If piping length is over common length, additional refrigerant should be added as shown in the table.

### 8.1.2 WH-SXC09F9E8 WH-SXC12F9E8



8.2 Outdoor Unit

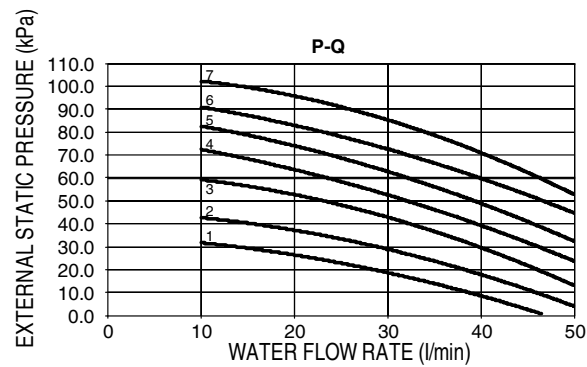


## How to Adjust Water Flow Rate [SERVICE MODE: 02]

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-S\*\*09\*3E8 and WH-S\*\*09/12\*9E8) and SPEED 4 for WH-S\*\*14/16\*9E8. 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 control panel.

1. Press SERVICE button for 5 seconds.
2. Press ▲ button to enter menu S02 and press SET button.
3. Press SELECT button then press ▲/▼ button to change SPEED and press SET to confirm.
4. Press OFF/ON button to quit setting.



## 18.1.2 WH-SXC12F9E8 WH-UX12FE8

### Heating Characteristics at Different Outdoor Air Temperature

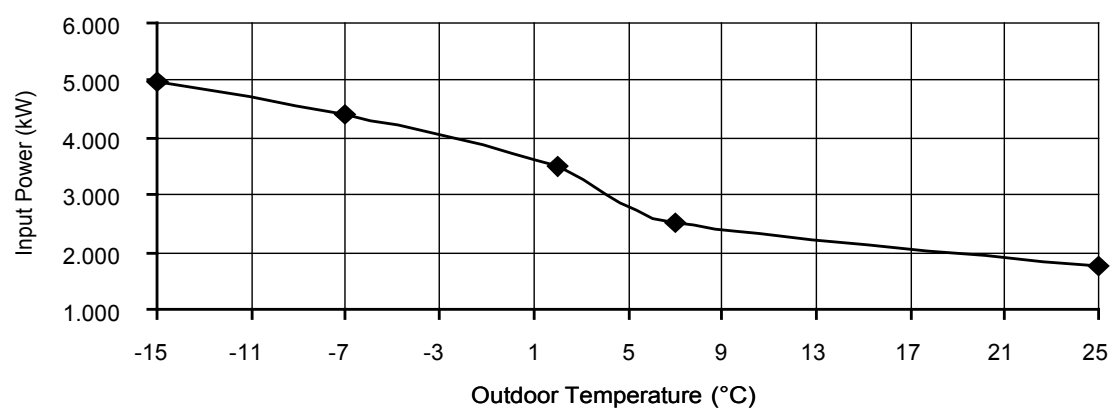
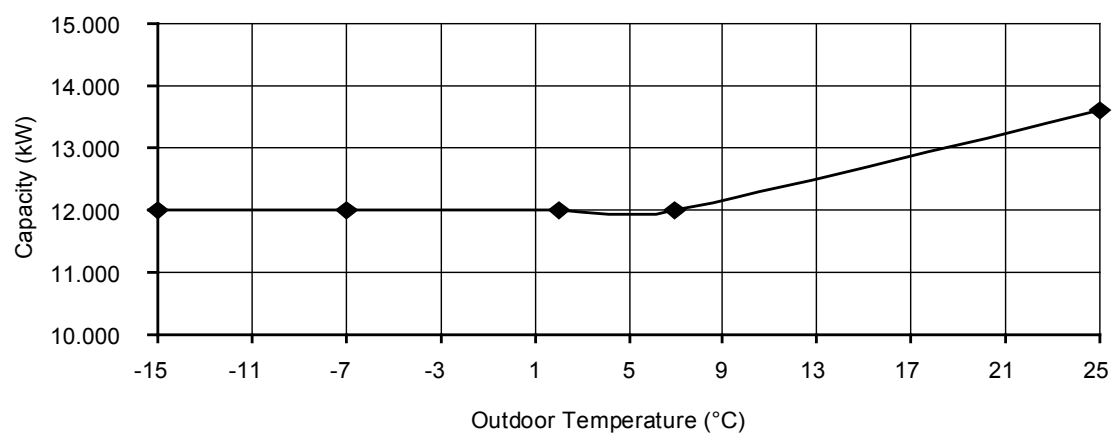
Condition

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

Indoor water inlet temperature : 30°C

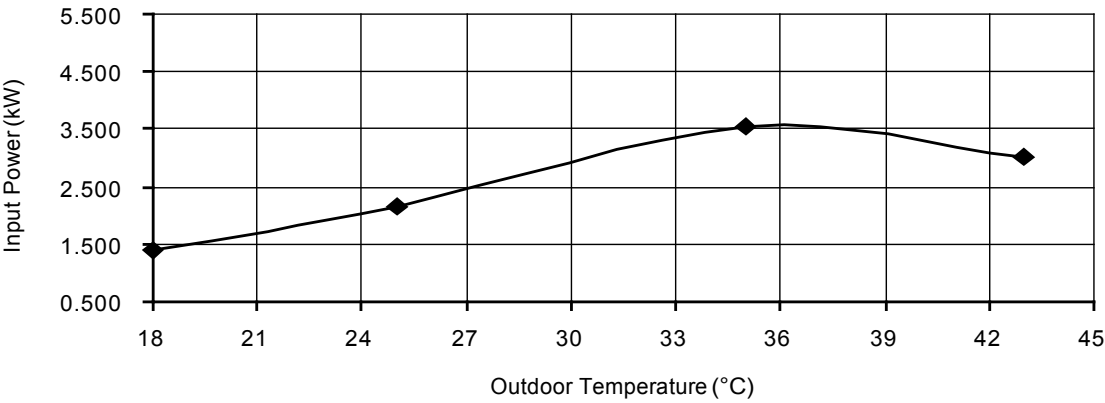
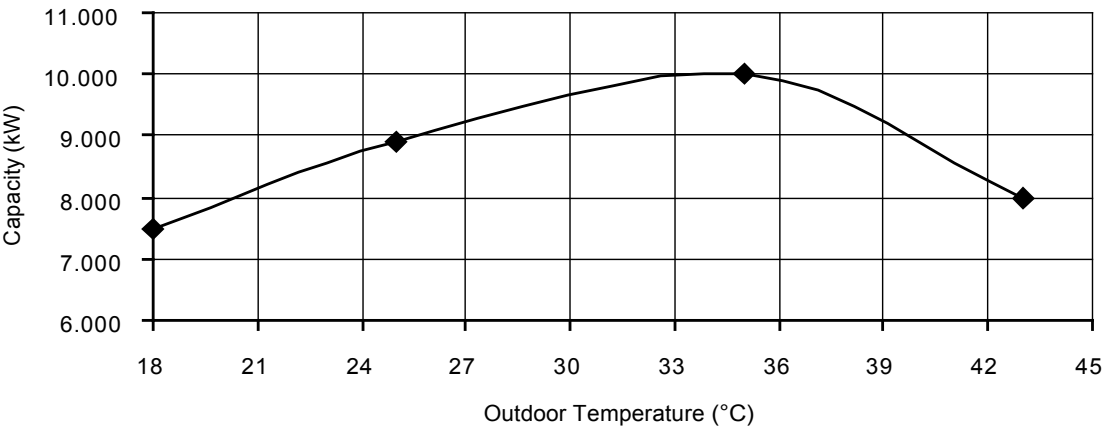
Indoor water outlet temperature : 35°C

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



## Heating Characteristics at Different Piping Length

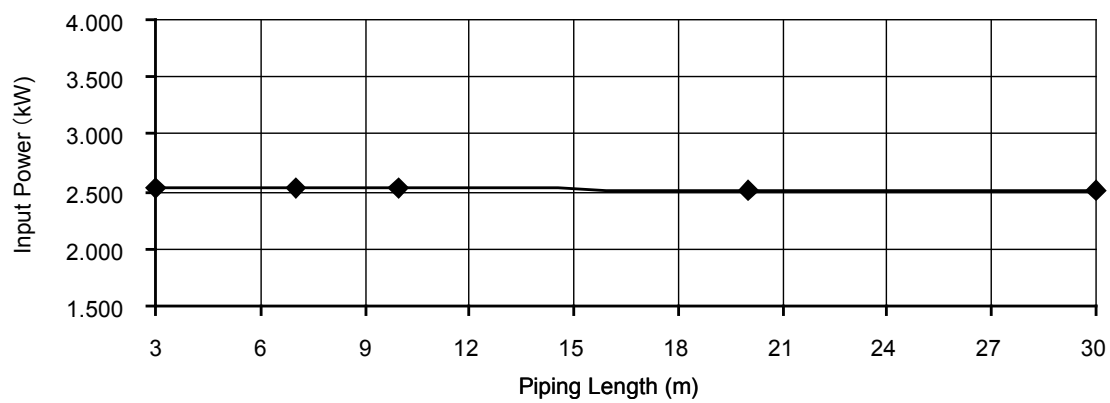
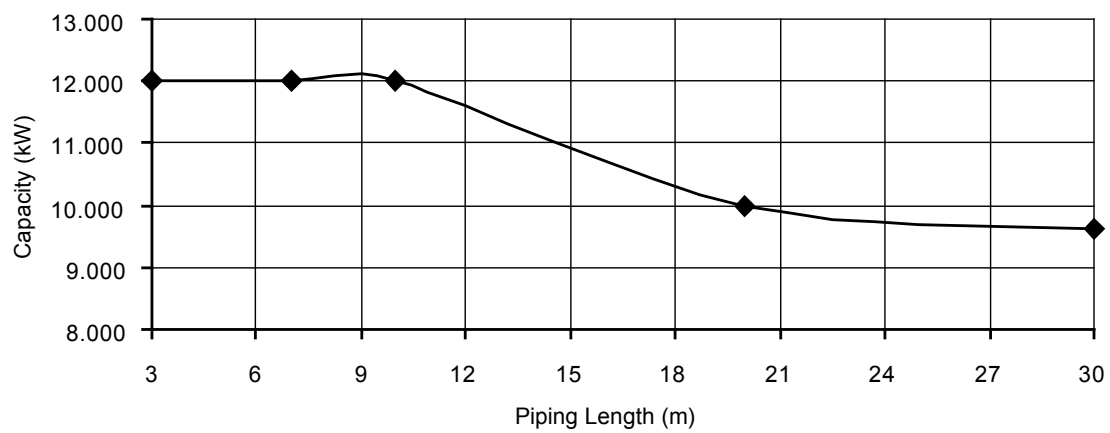
Condition

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

Indoor water inlet temperature : 30°C

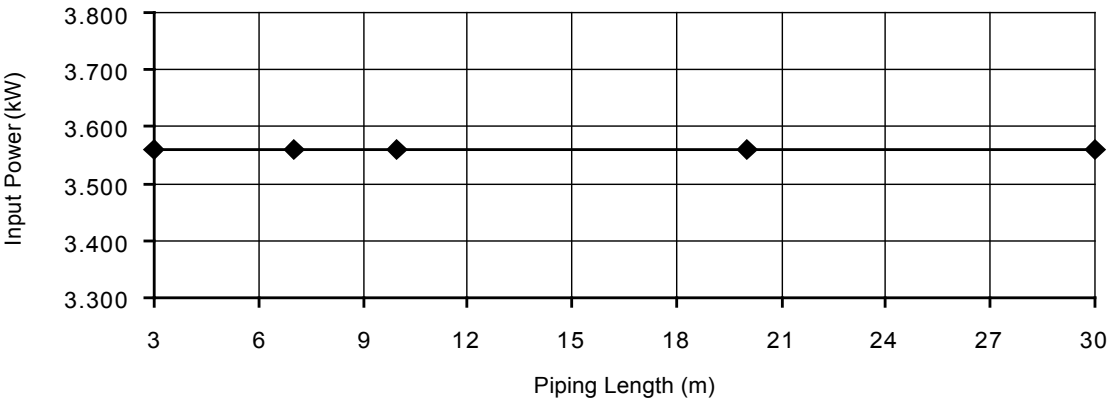
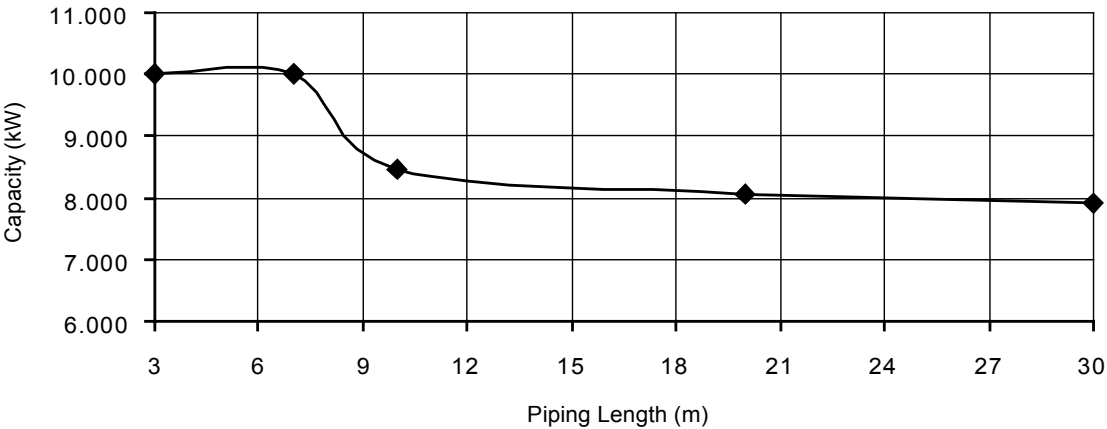
Indoor water outlet temperature : 35°C

Piping length : 7 m



Cooling Characteristics at Different Piping Length

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



## 18.2 Heating Capacity Table

### 18.2.1 WH-UX09FE8

| 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              | 9000         | 3240            | 9000         | 3510            | 9000         | 3910            | 9000         | 4300            | 9000         | 4730            | 9000         | 5160            |
| -7               | 9000         | 2710            | 9000         | 3160            | 9000         | 3620            | 9000         | 4070            | 9000         | 4270            | 9000         | 4460            |
| 2                | 9000         | 2360            | 9000         | 2510            | 9000         | 2780            | 9000         | 3050            | 9000         | 3560            | 9000         | 4070            |
| 7                | 9000         | 1640            | 9000         | 1860            | 9000         | 2160            | 9000         | 2460            | 9000         | 2760            | 9000         | 3060            |
| 25               | 13600        | 1500            | 13600        | 1710            | 13200        | 1930            | 12800        | 2140            | 12000        | 2410            | 11200        | 2670            |

### 18.2.2 WH-UX12FE8

| 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        | 4750            | 12000        | 4960            | 12000        | 5410            | 12000        | 5860            | 11800        | 6240            | 11600        | 6620            |
| -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

| Outdoor Air (°C) | WH-SXC09     |                 | WH-SXC12     |                 |
|------------------|--------------|-----------------|--------------|-----------------|
|                  | Capacity (W) | Input Power (W) | Capacity (W) | Input Power (W) |
| 18               | 7000         | 1360            | 7500         | 1410            |
| 25               | 7650         | 1910            | 8900         | 2160            |
| 35               | 7000         | 2210            | 10000        | 3560            |
| 43               | 6250         | 2660            | 8000         | 3010            |