



AW30-EVI-M

AW45-EVI-M

AW90-EVI-M

AWC30/90-EVI-M



DC Inverter Air to Water Heat Pump

User's manual

Before operating this product, please read the instructions carefully and keep this manual for future use.

Catalogue

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1. Product Specifications

1-1. Specifications

| Model information | | | | | |
|-----------------------------------------------|--------------------------|------------|-------------------|----------------|----------------|
| Model | | | AW30-EVI-M | AW45-EVI-M | AW90-EVI-M |
| Performance | | | | | |
| Min/max heating capacity (1) | | kW | 15.2~28.7 | 13.7~43.7 | 27.4~89.6 |
| El. heating power input min/max (1) | | W | 3467~7488 | 3325~12077 | 6650~24254 |
| C.O.P min/max (1) | | W/W | 3.83~4.43 | 3.62~4.42 | 3.68~4.50 |
| Min/max heating capacity (2) | | kW | 12.2~29.4 | 13.6~43.2 | 28.2~89.5 |
| El. heating power input min/max (2) | | W | 3769~9035 | 4156~14308 | 8212~28300 |
| C.O.P min/max (2) | | W/W | 3.26~3.43 | 2.99~3.38 | 3.16~3.48 |
| Min/max cooling capacity (3) | | kW | 15.2~26.8 | 17.7~32.0 | 36.4~66.0 |
| El. cooling power input min/max (3) | | W | 3253~8765 | 3491~11771 | 6982~23742 |
| E.E.R. min/max (3) | | W/W | 3.06~4.68 | 2.72~5.09 | 2.8~5.19 |
| Min/max cooling capacity (4) (A35/W7) | | kW | 7.3~21.2 | 11.2~29.9 | 23.4~61.2 |
| El. cooling power input min/max (4) | | W | 3121~7960 | 3529~11640 | 6880~23450 |
| Min/max ambient working temp. in heating mode | | °C | -30-55 | -30-55 | -30-55 |
| Min/max ambient working temp. in cooling mode | | °C | 15-55 | 15-55 | 15-55 |
| Max flow temp. in heating mode | | °C | 60 | 60 | 60 |
| Min set temp. in heating mode | | °C | 20 | 20 | 20 |
| Min set temp. in cooling mode | | °C | 7 | 7 | 7 |
| Sound power level | Outdoor unit | dB (A) | 62 | 66 | 69 |
| | Indoor unit | dB (A) | / | / | / |
| Electrical heaters | | | | | |
| Heating cable - condense water | | W | / | / | / |
| Compressor heater | | W | 30 | 30 | 30*2 |
| Anti - Freeze el. heater | Power supply | V / Hz / | / | / | / |
| Anti - Freeze el. heater | Rated power | W | / | / | / |
| Power supply | | | | | |
| Power supply - Outdoor unit | Outdoor unit | V / Hz / N | 400V/50Hz/3N | 400V/50Hz/3N | 400V/50Hz/3N |
| | Fuse Outdoor unit | A | 3p/25A/C | 3p/40A/C | 2 x 3p/40A/C |
| Power supply - Indoor unit | Indoor unit | V / Hz / N | 230V/50Hz/1N | 230V/50Hz/1N | 230V/50Hz/1N |
| | Fuse Indoor unit | A | 1p/6A/C | 1p/6A/C | 1p/6A/C |
| / | | | | | |
| Fan | Quantity | pcs | 2 | 1 | 2 |
| | Airflow | m³/h | 5250*2 | 13500 | 13500*2 |
| | Rated power | W | 93*2 | 700 | 700*2 |
| | Blade diameter | mm | 552*2 | 760 | 760*2 |
| Plate heat exchanger | Water press. drop | kPa | 60 | 80 | 100 |
| | Piping connection | Inch | 1 1/2"Inner gorve | 2"Inner gorve | Dn65 Flange |
| Refrigerant | type | / | R410A | R410A | R410A |
| | chrage | kg | 5.2kg | 8kg | 8kg*2 |
| | GWP | / | 2088 | 2088 | 2088 |
| | t CO ₂ Equiv. | / | 10.9 | 16.7 | 33.4 |
| Compressor | Manufacturer | / | Panasonic Wanbao | SIAM | SIAM |
| | type | / | Inverter+EVI | Inverter+EVI | Inverter+EVI |
| | Compressor oil | type | FVC68S | FVC68D | FVC68D |
| | Comp. oil volume | L | 1.9 | 2.3 | 2.3*2 |
| Hydraulics | | | | | |
| Minimum water flow | | m³/h-l/s | 2.7m³/h | 5m³/h | 10m³/h |
| Nominal water flow | | m³/h | 5.2m³/h | 8m³/h | 16m³/h |
| Hydraulic connections | | Size | 1 1/2"Inner gorve | 2"Inner gorve | Dn65 Flange |
| Flow switch | Manufacturer | | Anchao | Hengsen | Hengsen |
| Flow switch | type | | WFS27028PG- φ 13 | SLG-01 | SLG-01 |
| Dimensions and weight | | | | | |
| Dimensions net (L x D x H) | Outdoor unit | mm | 1295*455*1450 | 1010*1160*1650 | 2160*1200*1650 |
| | Indoor unit | mm | 385*476*150 | 385*476*150 | 385*476*150 |
| Dimensions Brutto (L x D x H) | Outdoor unit | mm | 1325*475*1580 | 1030*1180*1750 | 2180*1220*1750 |
| | Indoor unit | mm | 400*490*180 | 400*490*180 | 400*490*180 |
| Net weight | Outdoor unit | kg | 180 | 300 | 600 |
| | Indoor unit | kg | 9 | 9 | 9 |
| Brutto weight | Outdoor unit | kg | 200 | 370 | 680 |
| | Indoor unit | kg | 10 | 10 | 10 |

1. Product Specifications

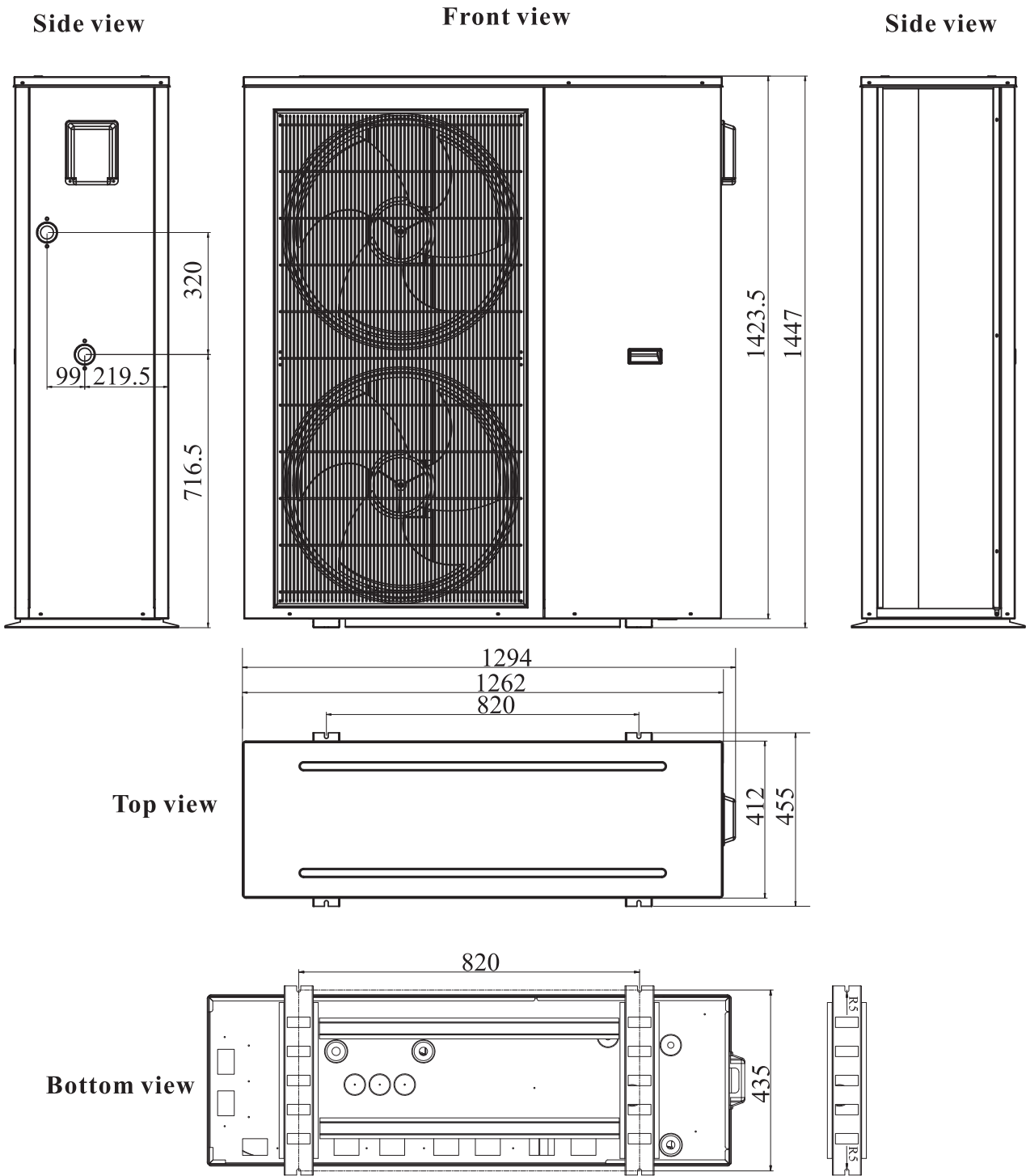
- (1) Heating condition: water inlet/outlet temperature: 30 °C/35°C, Ambient temperature: DB 7 °C /WB 6 °C ;
- (2) Heating condition: water inlet/outlet temperature: 40°C/45°C, Ambient temperature: DB 7 °C /WB 6 °C ;
- (3) Cooling condition: water inlet/outlet temperature: 23 °C/18°C, Ambient temperature: DB 35 °C /WB 24 °C ;
- (4) Cooling condition: water inlet/outlet temperature: 12°C/7°C, Ambient temperature: DB 35 °C /WB 24 °C.

1. Product Specifications

1-2. External Dimensions

Unit:mm

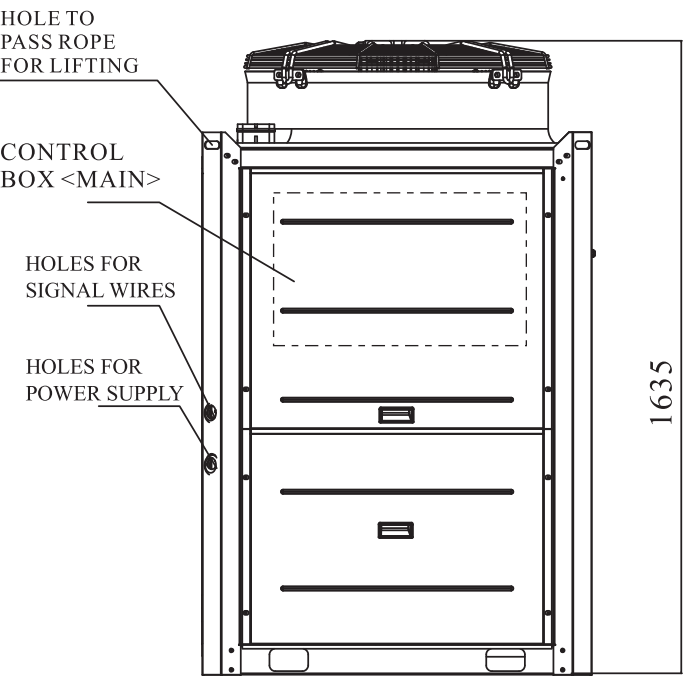
AW30-EVI-M



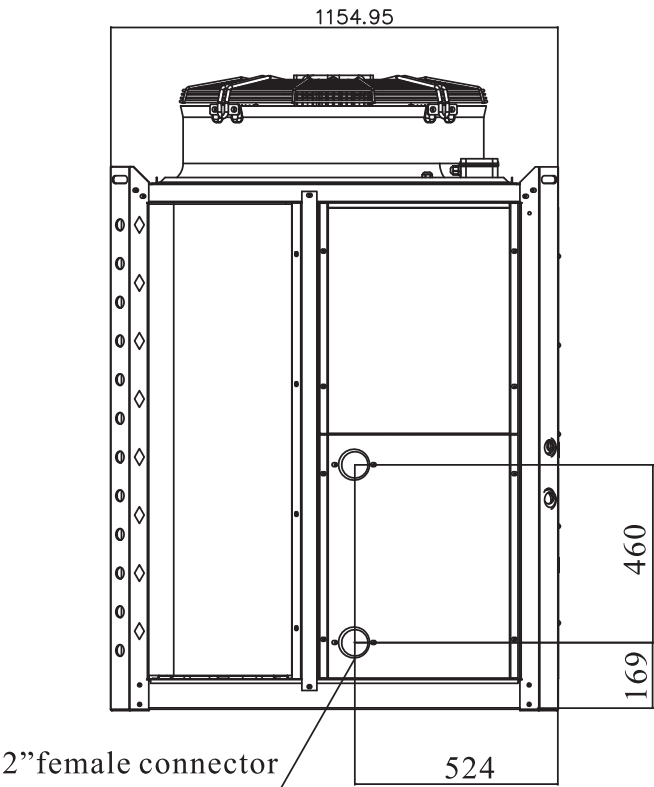
1. Product Specifications

AW45-EVI-M

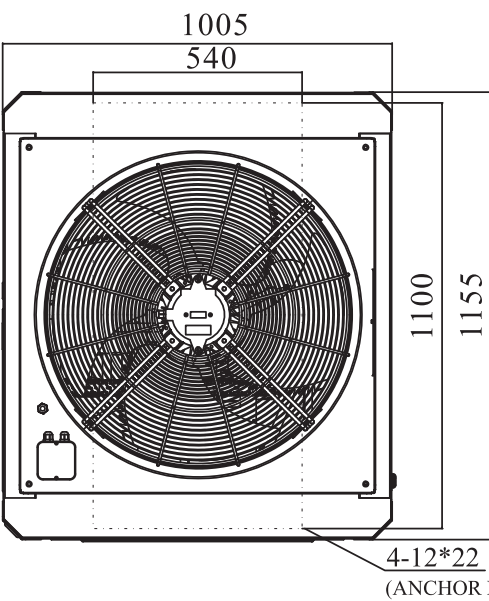
Unit:mm



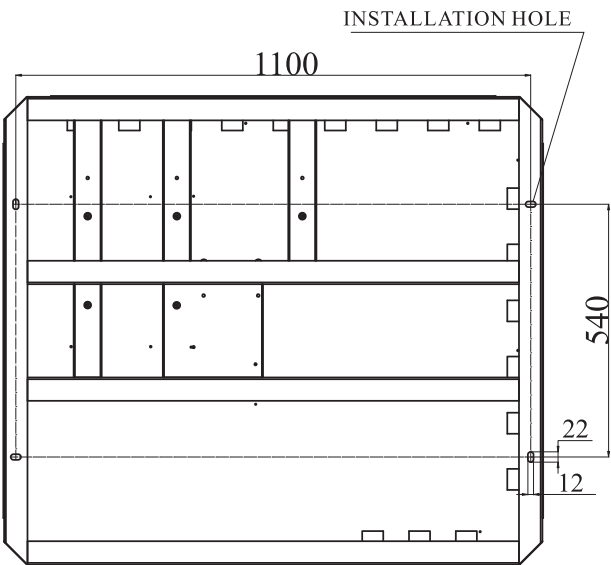
Front view



Side view

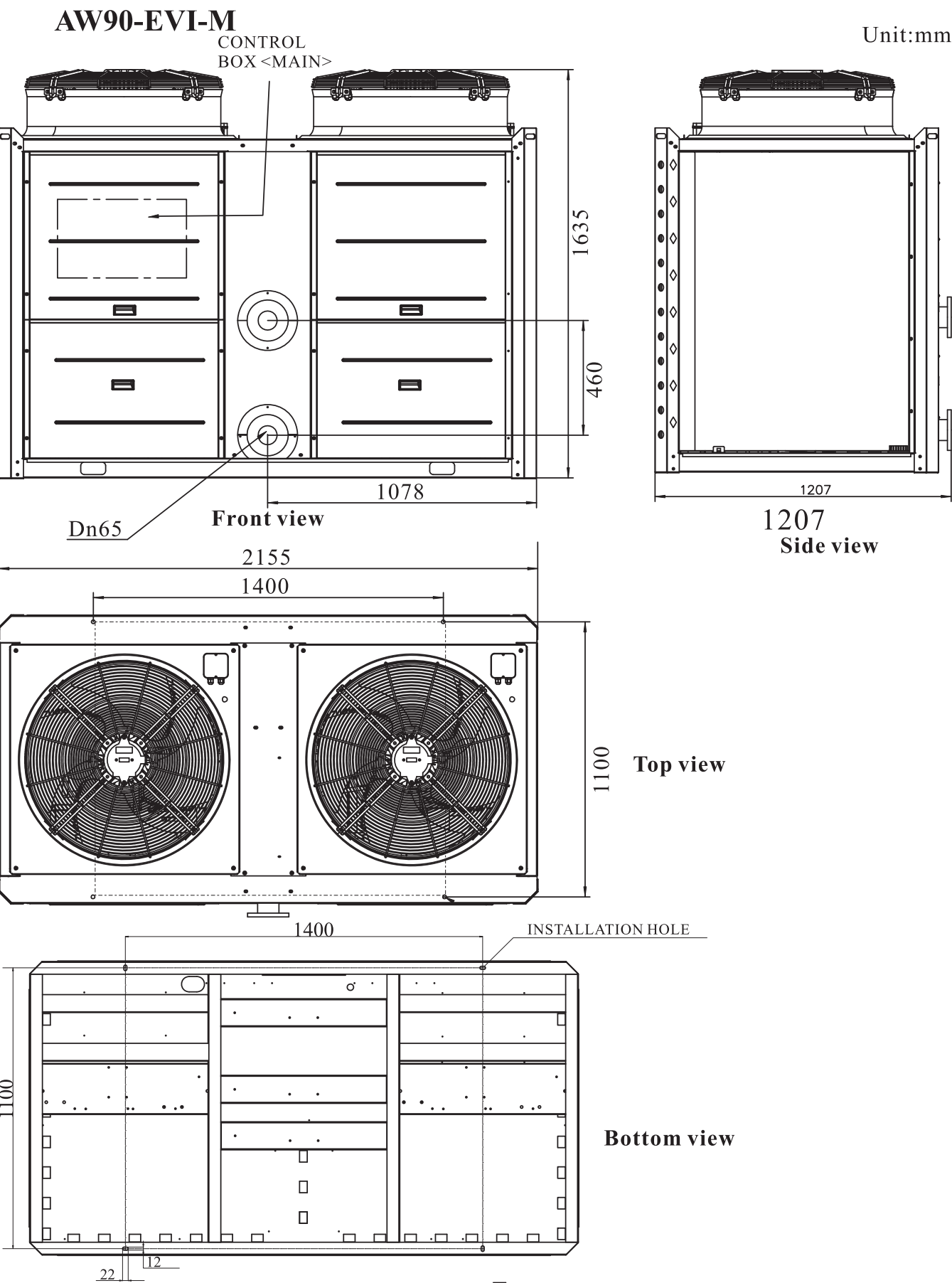


Top view



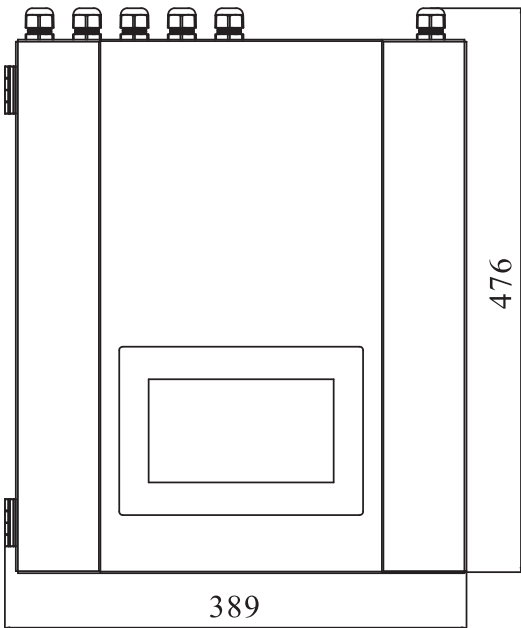
Bottom view

1. Product Specifications

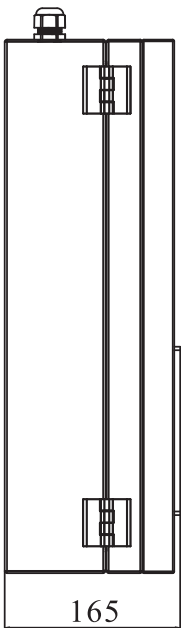


1. Product Specifications

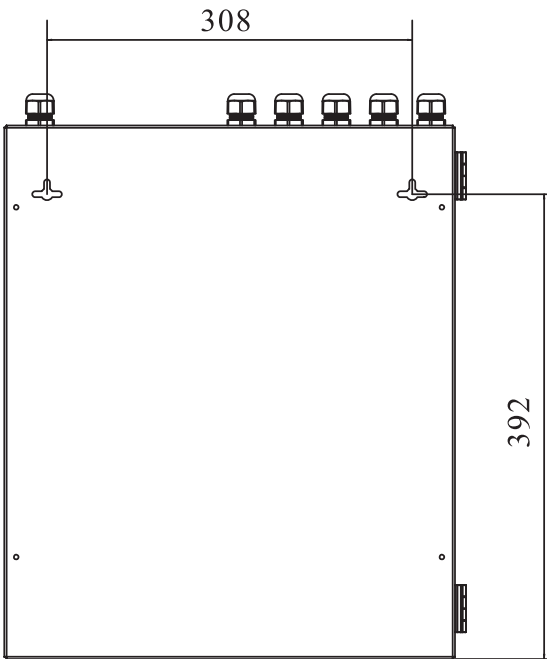
AWC30/90-EVI-M



Front view



Side view

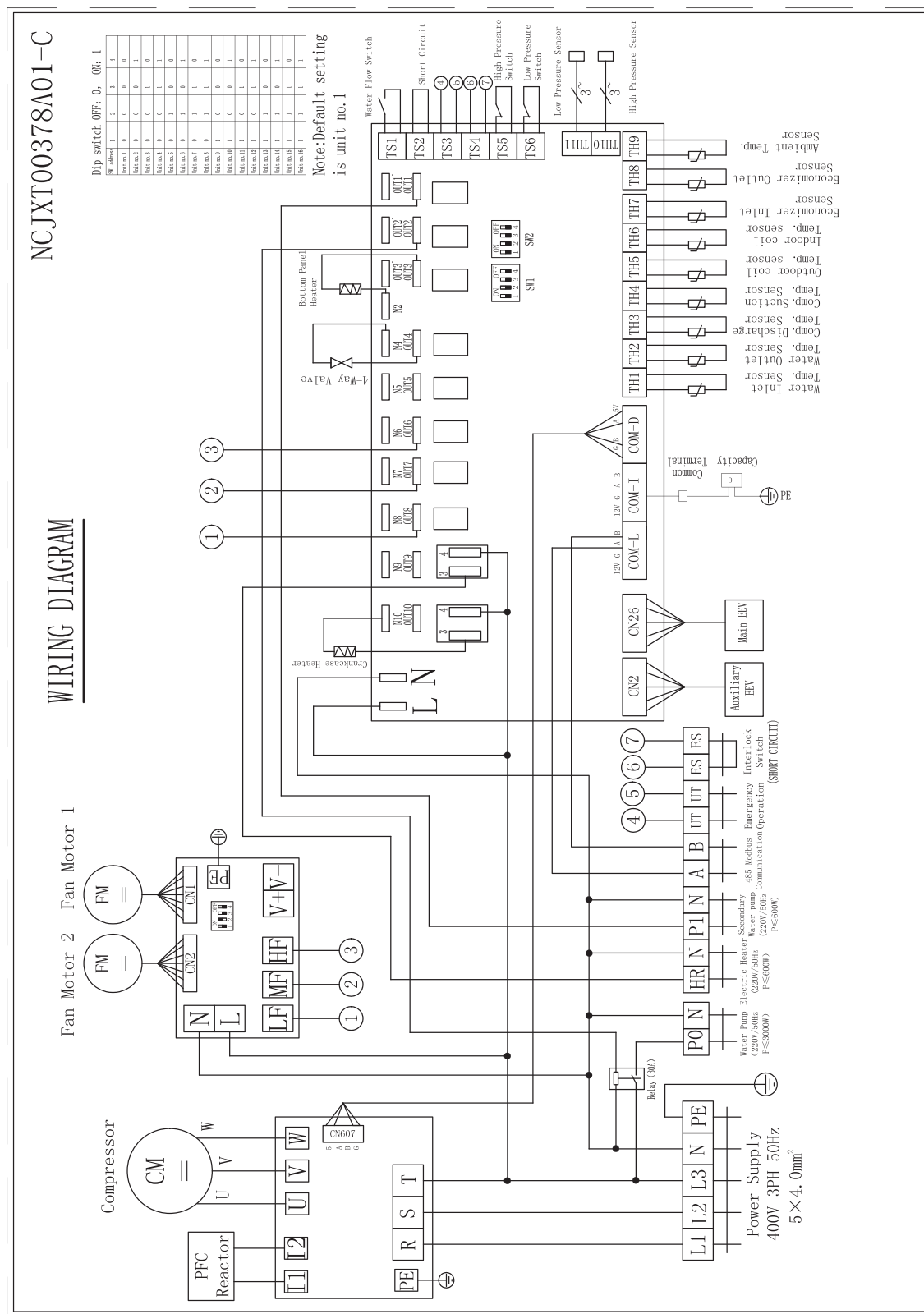


Back view

2. Product Data

2-1.Electrical Wiring Diagrams

AW30-EVI-M--Outdoor unit



TAKE CARE!

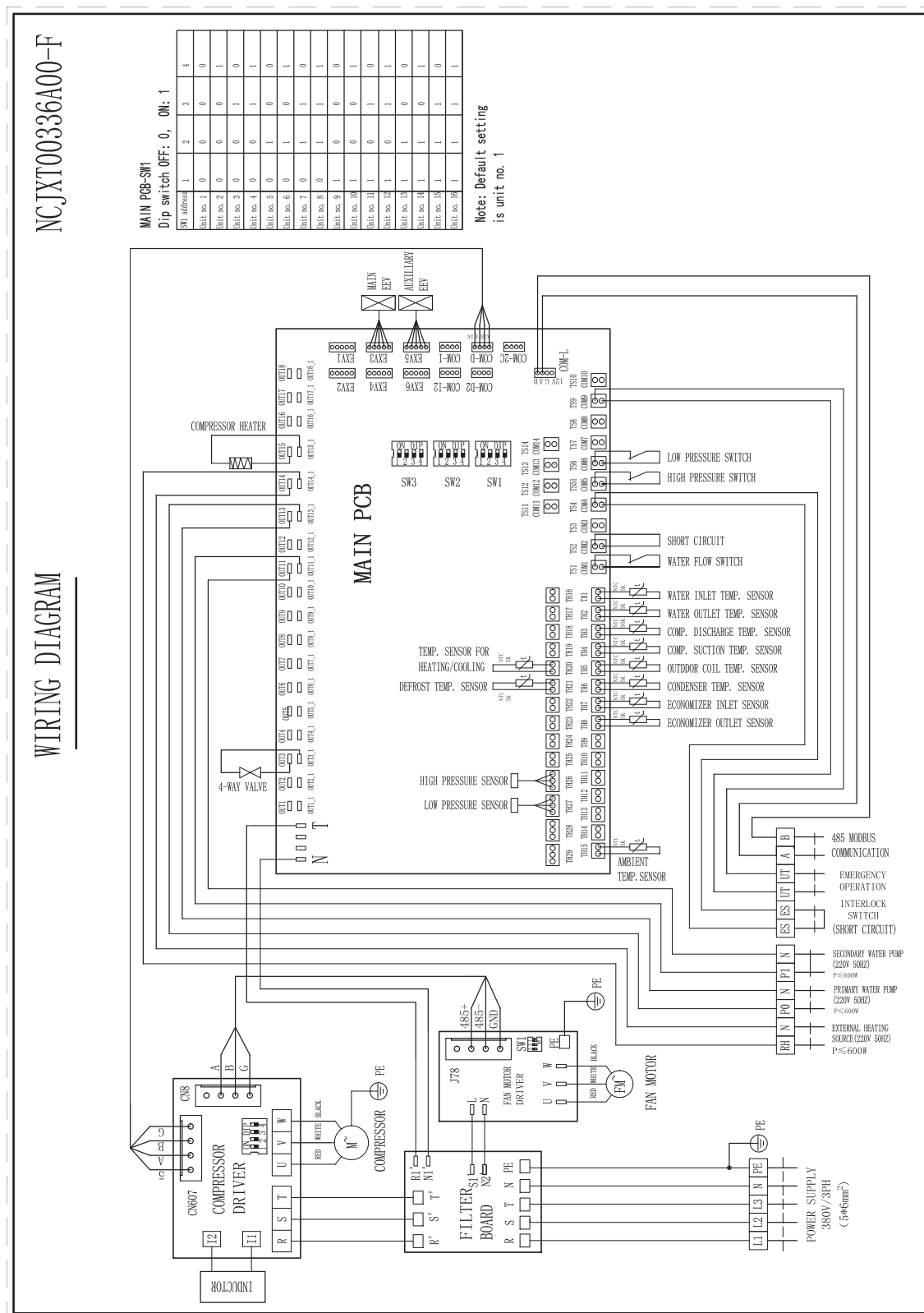
PLEASE CARE:
The specifications are subject to change without prior notice.

For actual specifications of the unit, please refer to the specification stickers on the unit.

2. Product Data

2-1.Electrical Wiring Diagrams

AW45-EVI-M--Outdoor unit



TAKE CARE!

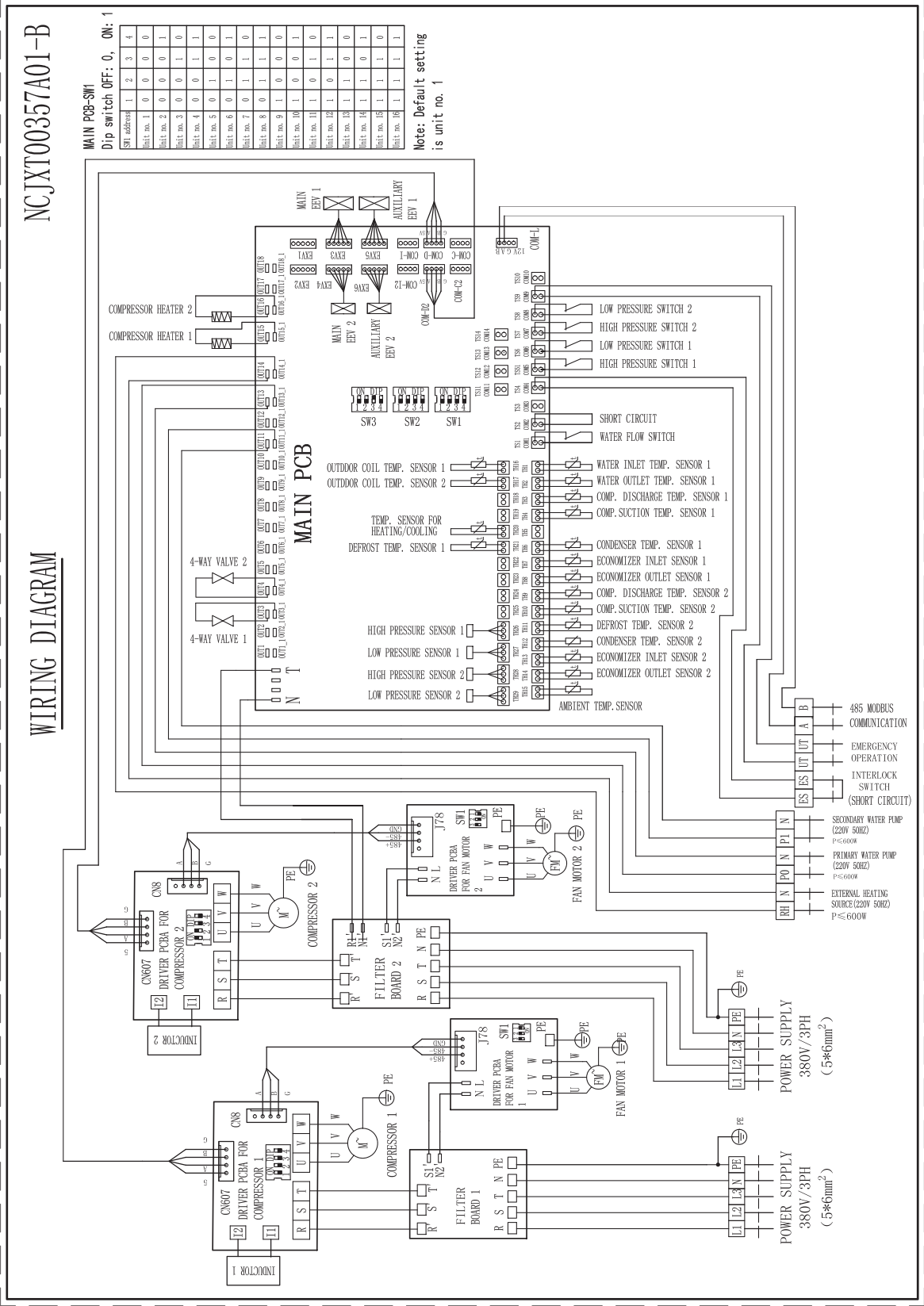
PLEASE CARE:
The specifications are subject to change without prior notice.

For actual specifications of the unit, please refer to the specification stickers on the unit.

2. Product Data

2-1.Electrical Wiring Diagrams

AW90-EVI-M--Outdoor unit

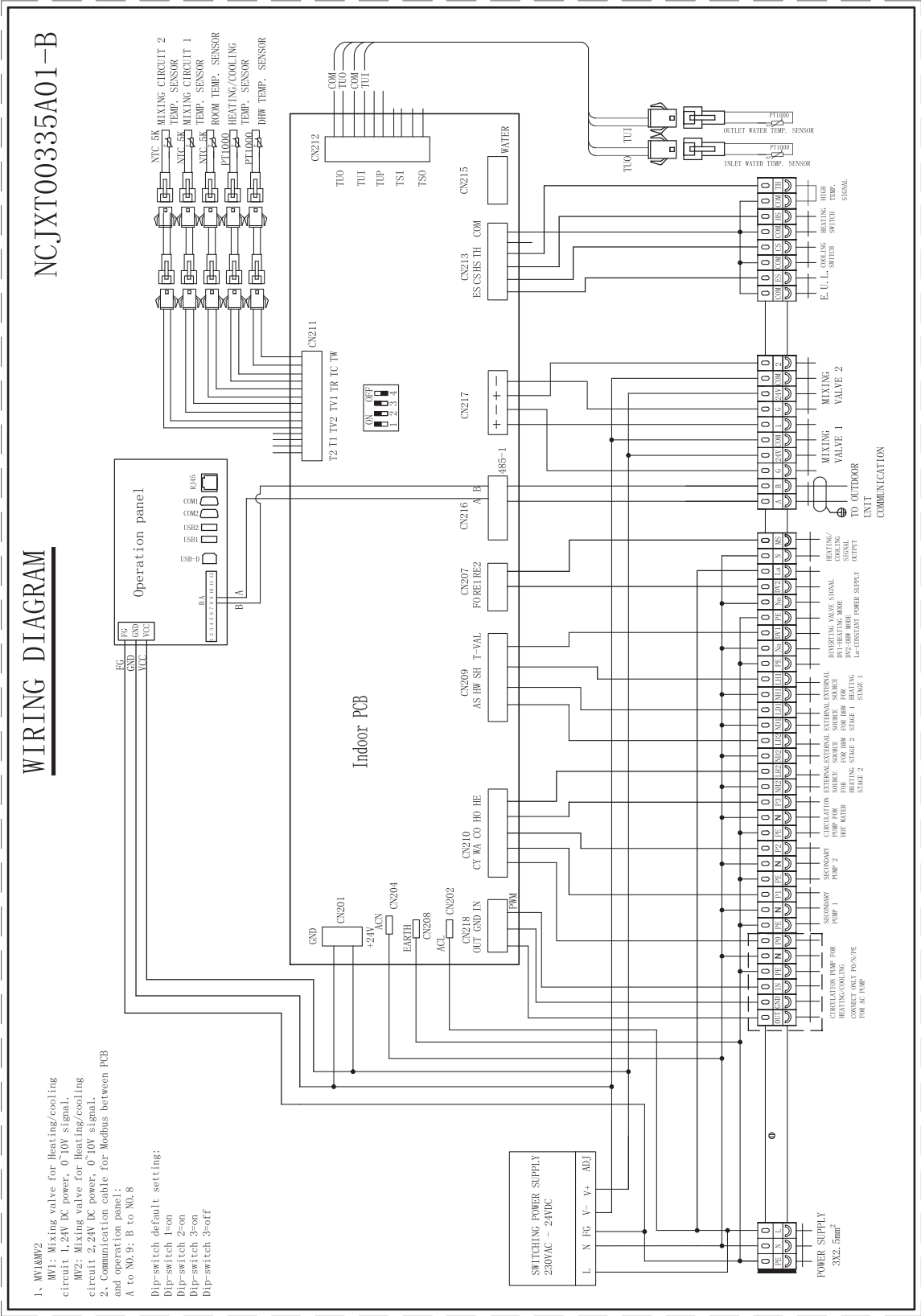


TAKE CARE!
The specifications are subject to change without prior notice.
For actual specifications of the unit, please refer to the specification stickers on the unit.

2. Product Data

2-1.Electrical Wiring Diagrams

AWC30/90-EVI-M



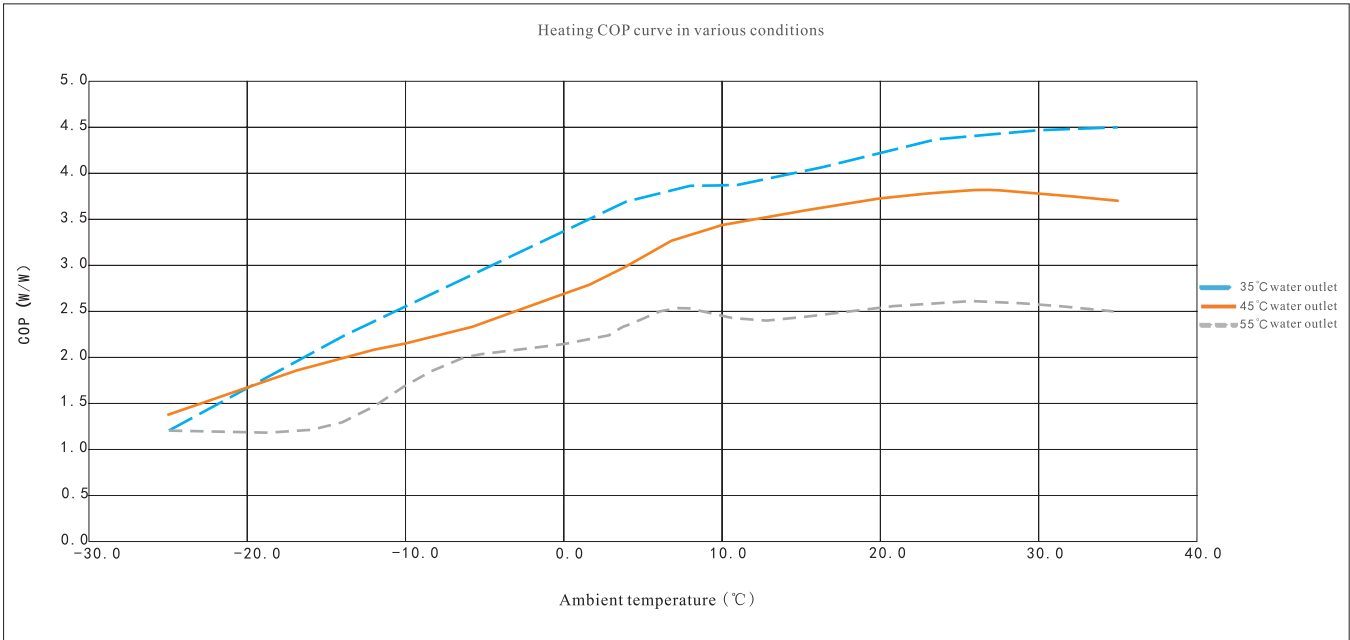
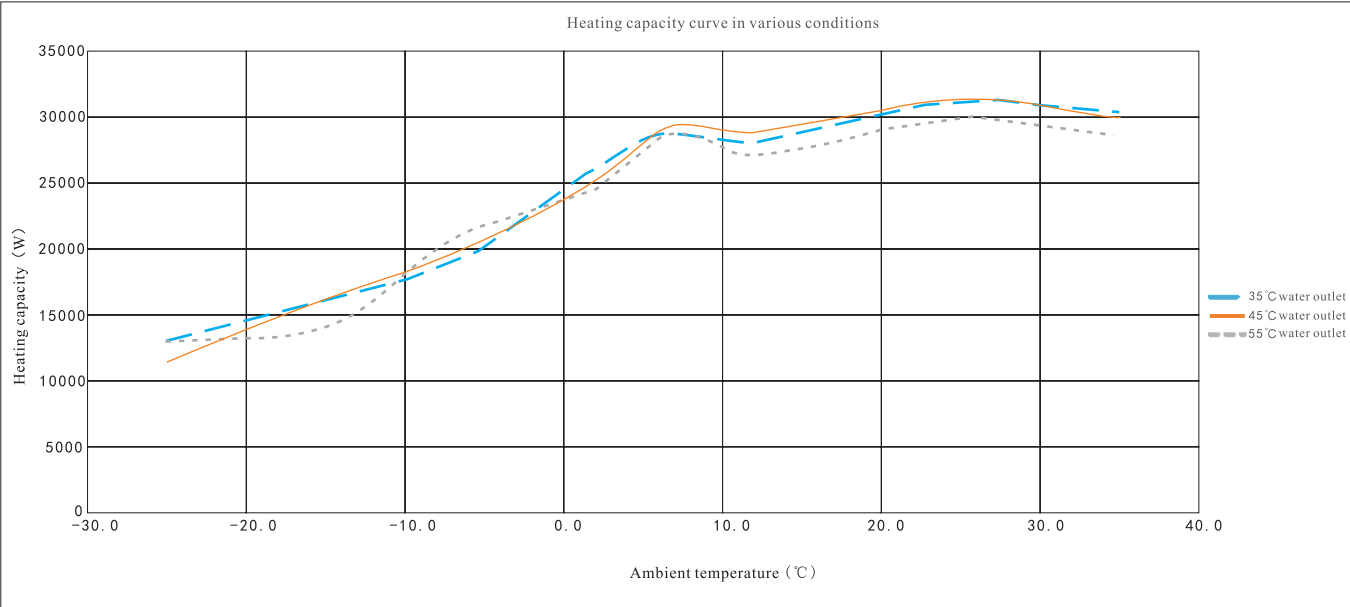
TAKE CARE!
The specifications are subject to change without prior notice.
For actual specifications of the unit, please refer to the specification stickers on the unit.

2. Product Data

2-2. Capacity tables

2-2-1. Heating capacity curve in various conditions

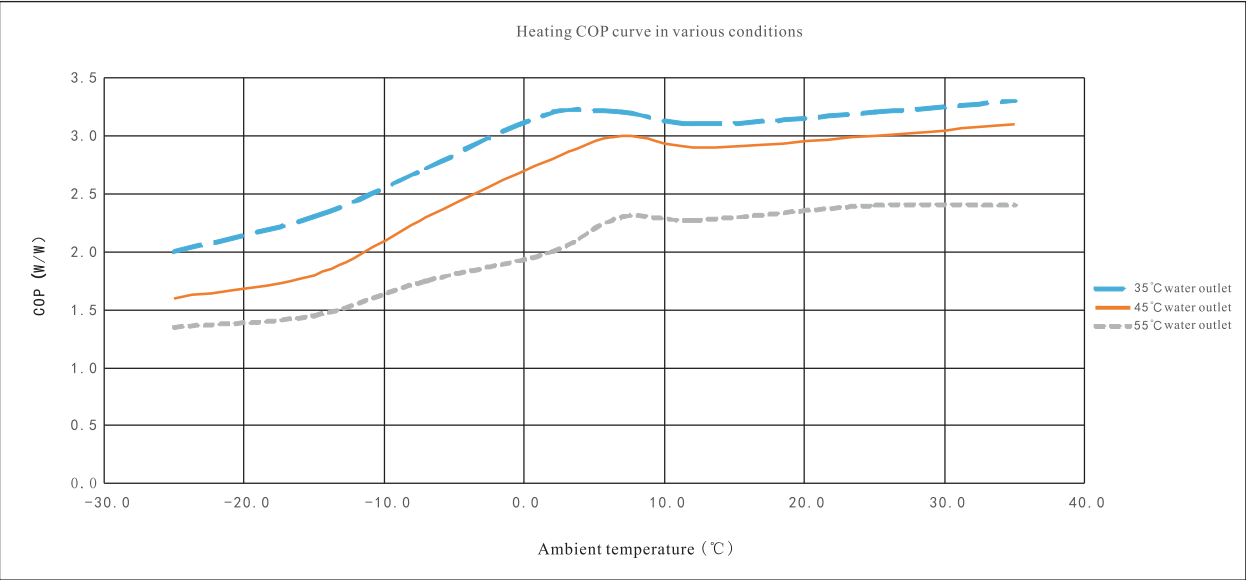
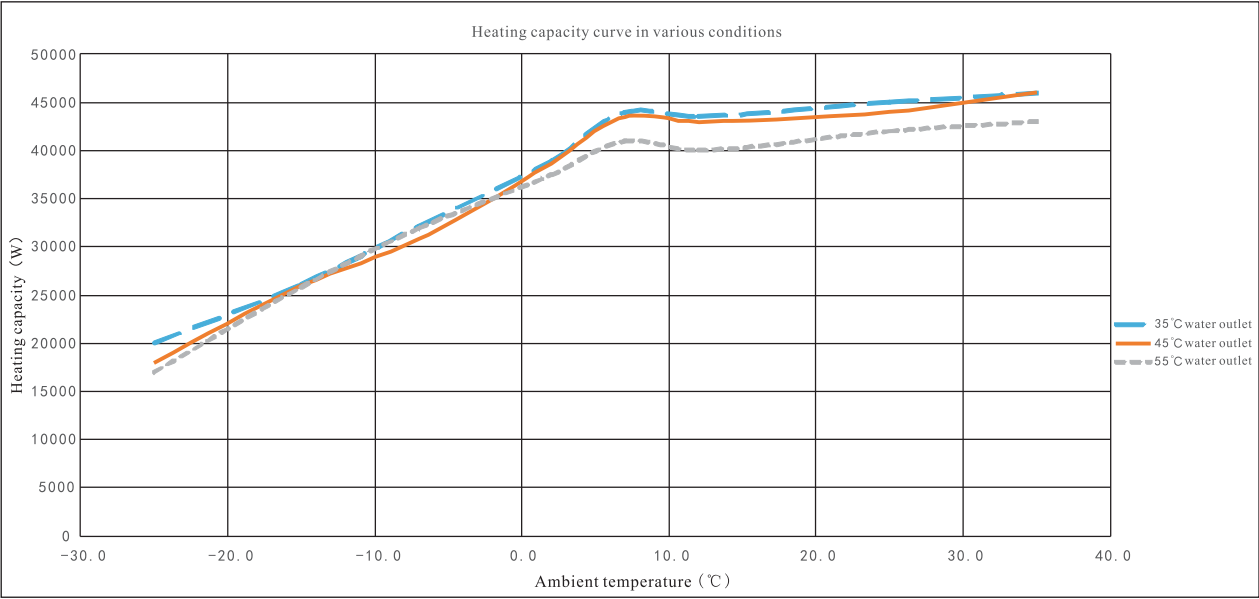
AW30-EVI-M



2. Product Data

2-2. Capacity tables

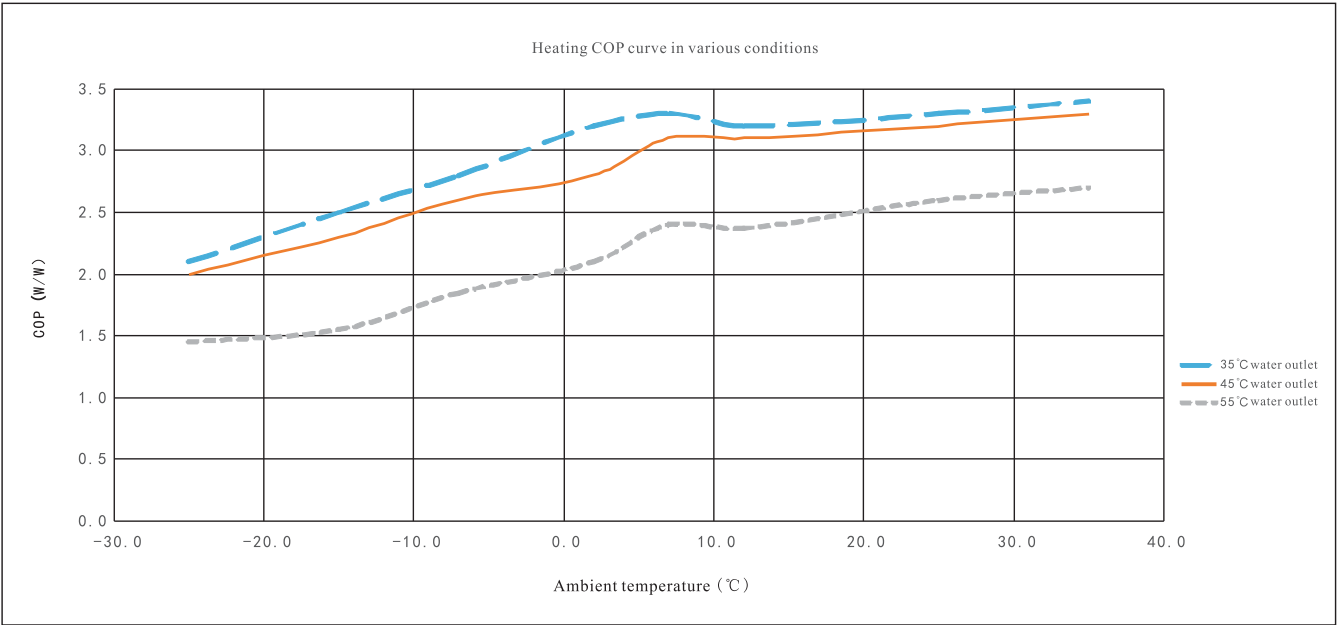
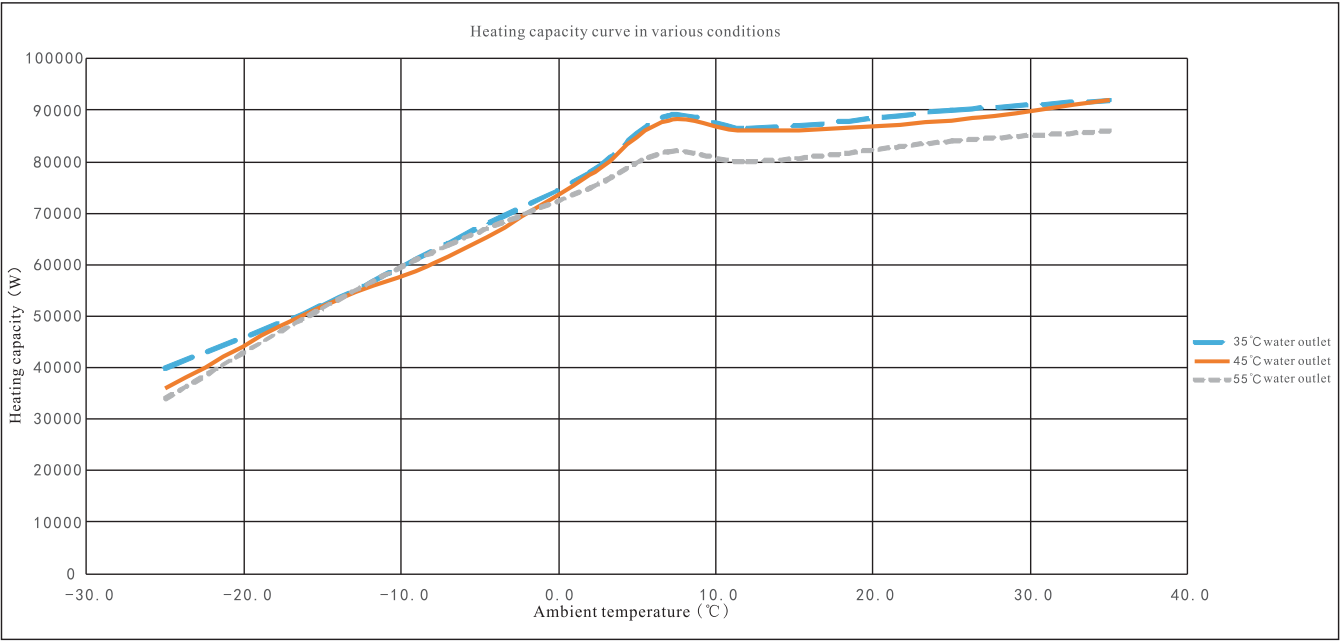
AW45-EVI-M



2. Product Data

2-2. Capacity tables

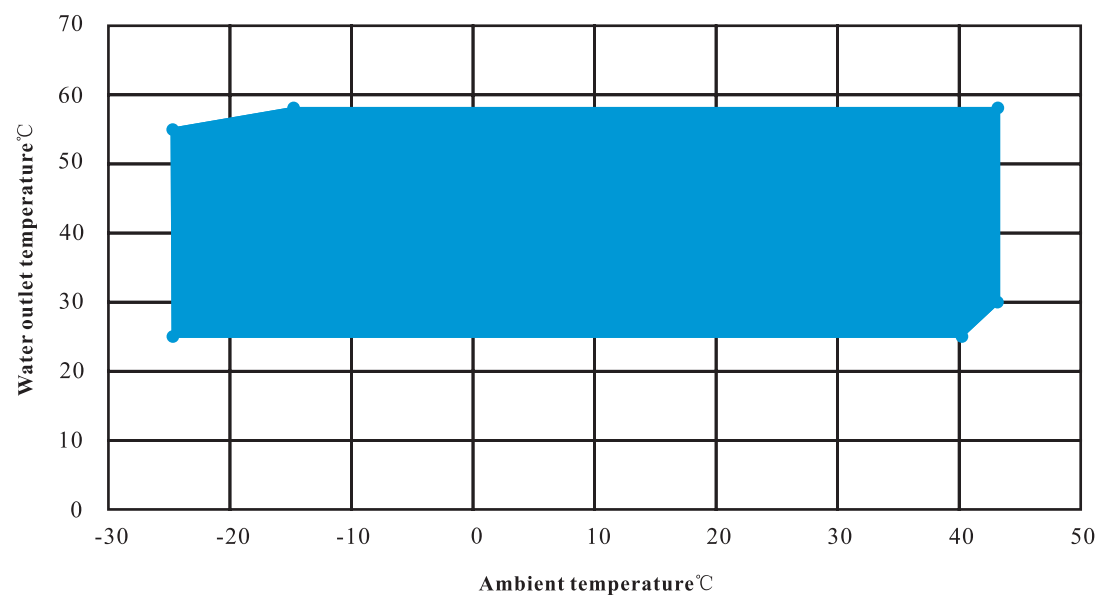
AW90-EVI-M



2. Product Data

2-2-2. Operation temperature range

AW30-EVI-M, AW45-EVI-M, AW90-EVI-M



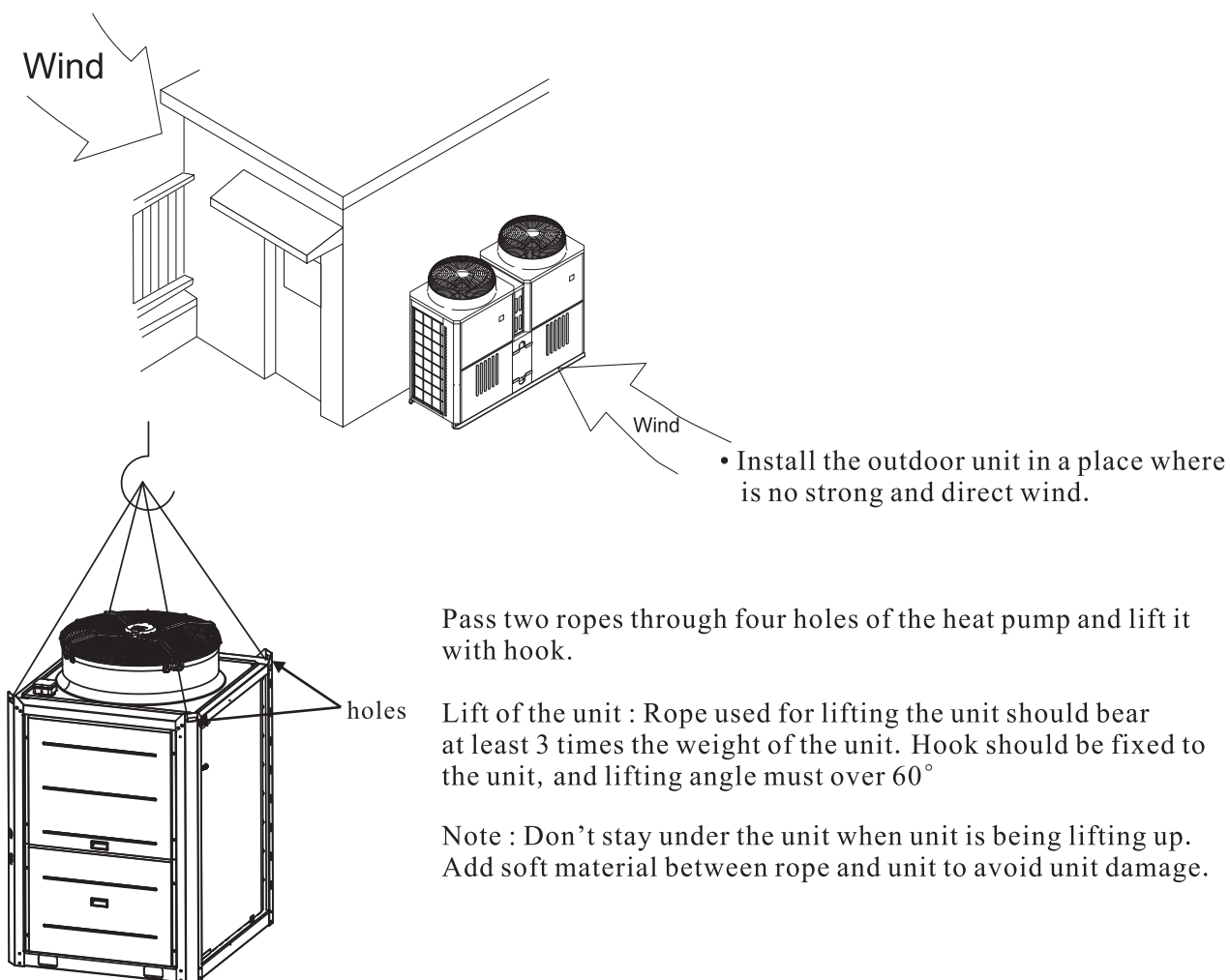
3. Installation

3.1. Selecting the Installation Site

3.1.1 Installation Conditions

Select a installation site that meets the following conditions:

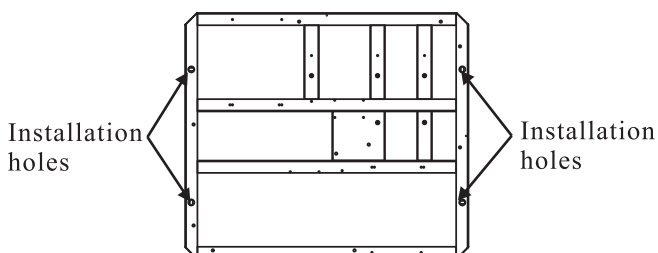
- Unit can have free air circulation.
- The noise from the unit will not be a problem.
- No strong winds.
- Condense water from the unit can be drained.
- Unit has open space as shown in the drawing 3.1.2.
- Stand of the unit must be at least 50cm high in cold areas, to avoid snow accumulation.



1. Fix the outdoor unit on the bracket.

2. Four M8 bolts pass through four holes of bracket and of the bottom plate installation holes.

3. Tighten nuts with a wrench.

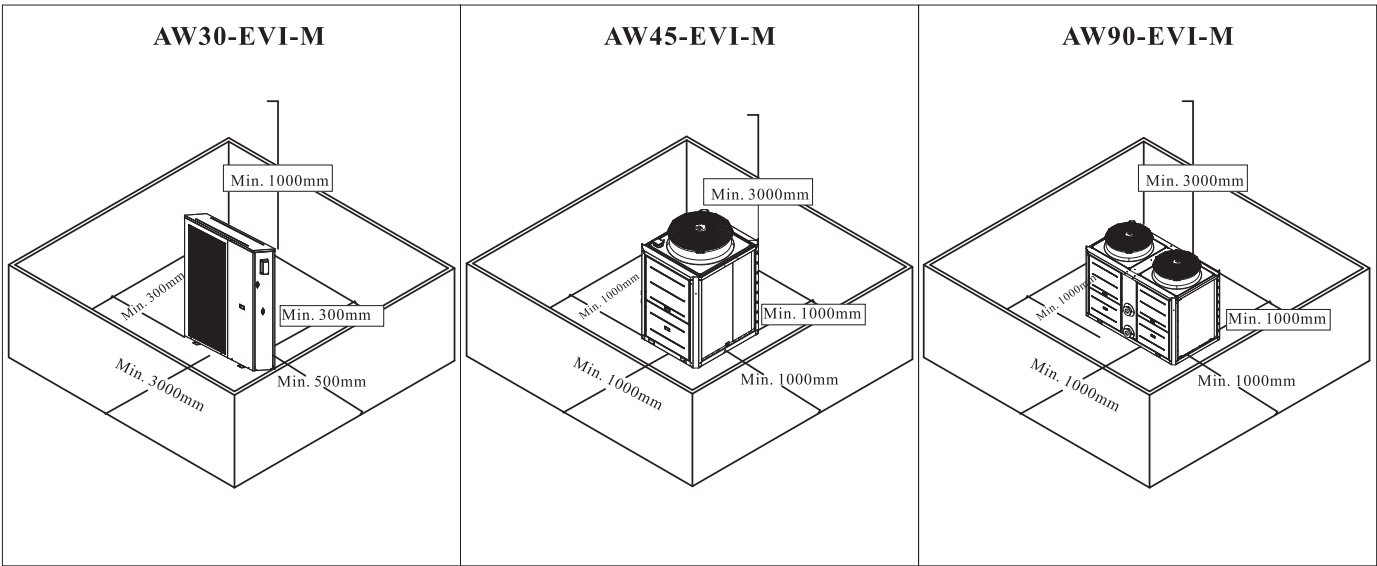


3. Installation

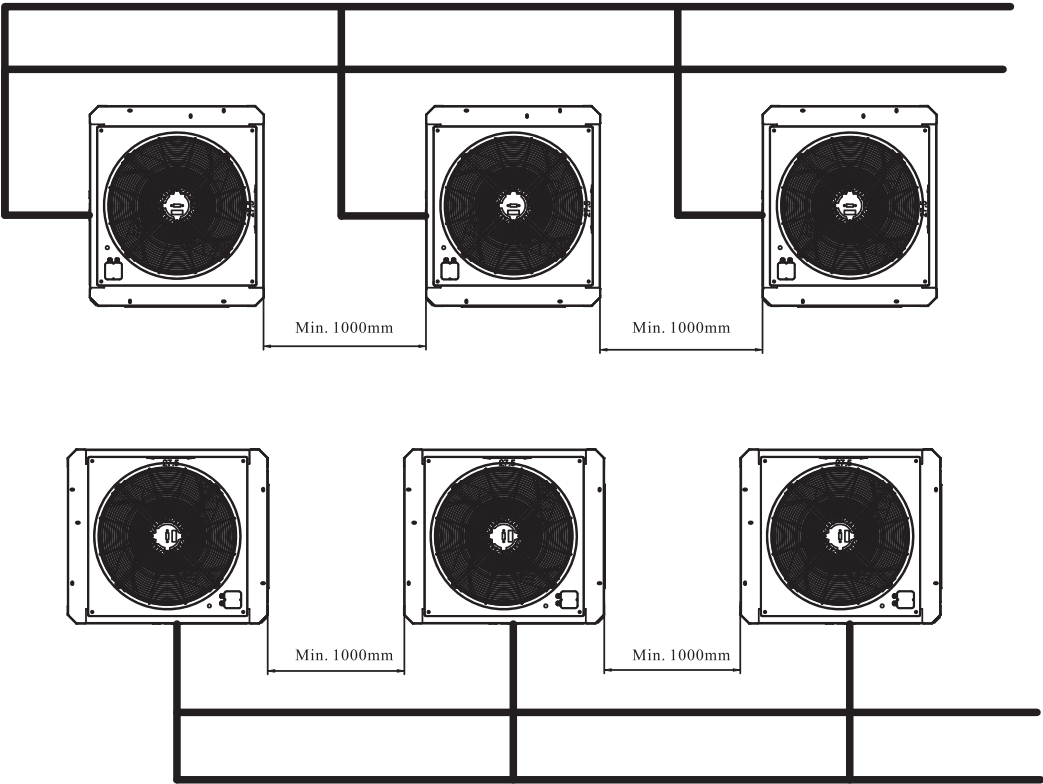
3.1.2. Installation space requirements

1.Single unit installation

Secure enough space around the unit as shown in the figures below.



Side-by-side installation



3.2. Unit Installation

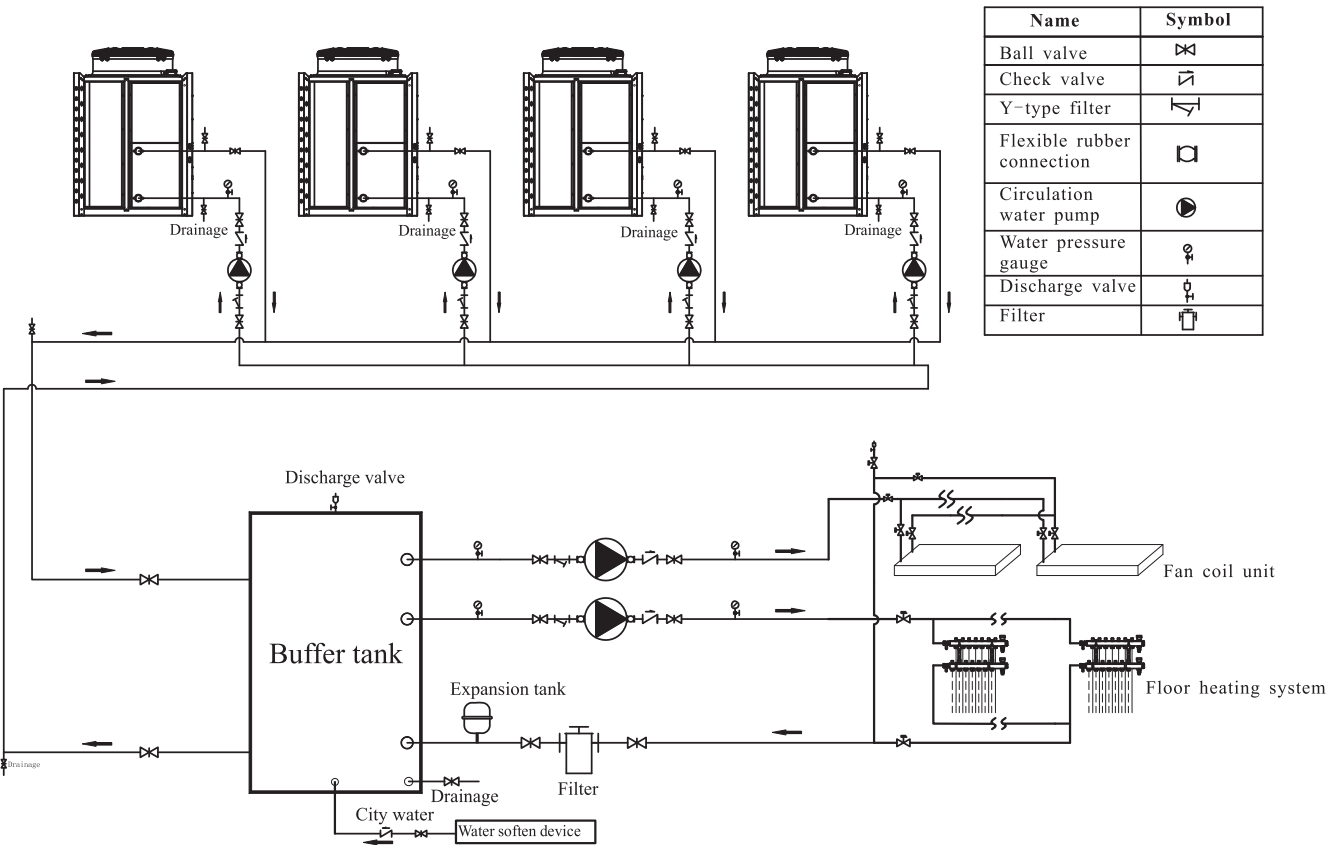
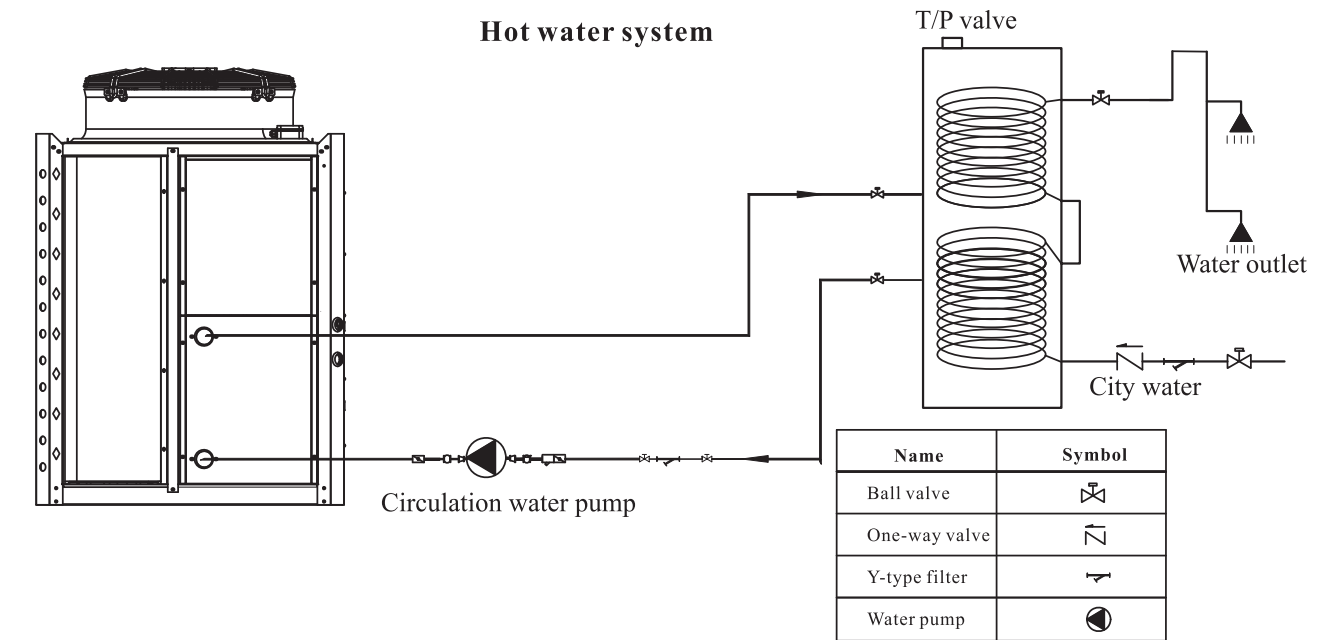
The unit must be installed on flat concrete blocks, or a dedicated mounting bracket.

4. System Design

4.1. Water Pipe Installation

4.1.1. Caution for water pipe installation

The installation should be done by qualified installer. Before installation, please make sure the power supply is cut off.



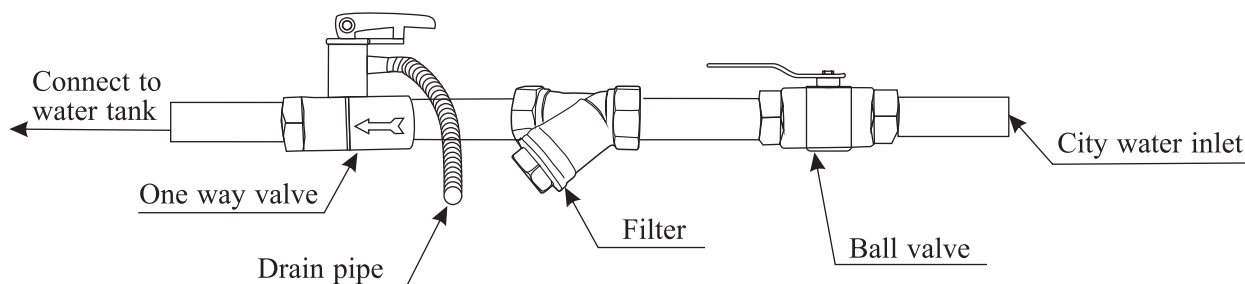
Attention: Maximum 16 units can be connected in parallel.

4. System Design

4.1.2. Installing the water pipes

Installing the Filter

A mesh filter must be installed in front of the water inlet of the unit and water tank, to keep the water quality and collect impurity contained in the water. Take care to keep the water filter mesh towards the bottom. Ball valve is recommended to be installed at both sides of the filter, so as to clean or change the filter in a easier way.



4-2. Ensuring enough water in the water circuit

4.2.1.Required amount of water

Buffer tank is to be included in the system,

It should be installed between heat pump and distribution system,in order to:

- 1) Ensure heat pump unit has stable and enough water flow rate.
- 2) Store heat to minimize fluctuation of system heating/cooling load.
- 3) Extend the water volume of distribution system for proper working of heat pump unit.

| Model | Minimum amount of water (ℓ) |
|------------|-----------------------------|
| AW30-EVI-M | 260 |
| AW45-EVI-M | 360 |
| AW90-EVI-M | 720 |

4-3. Inlet/Outlet pipe connection size and material

The table below shows the inlet/outlet pipe connection size

Inlet/Outlet pipe connection size

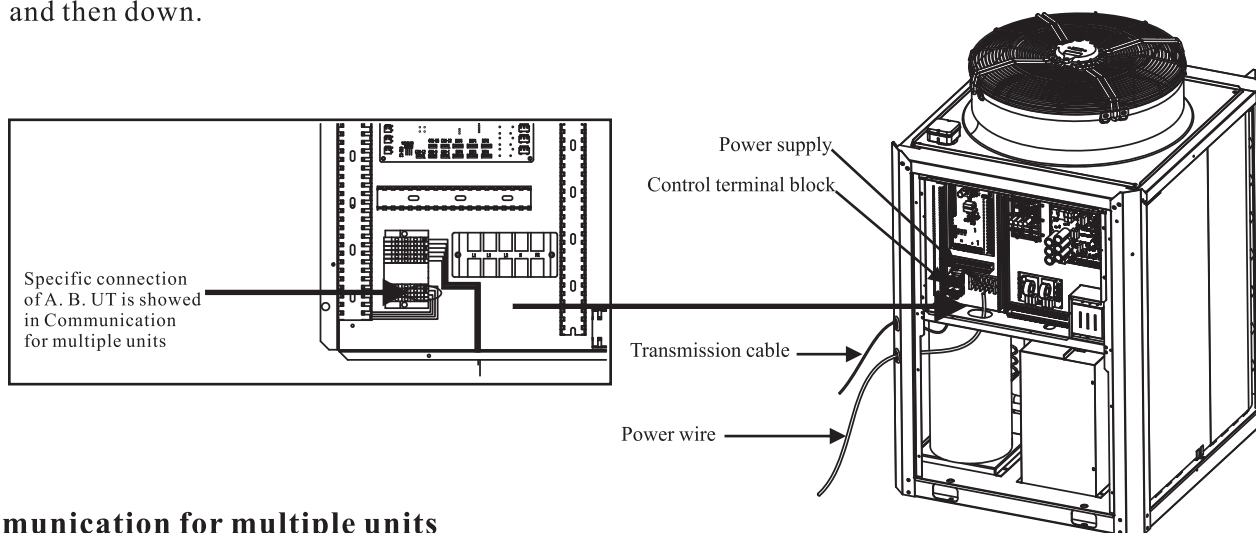
| Model | Inlet pipe connection | Outlet pipe connection |
|------------|-----------------------|------------------------|
| AW30-EVI-M | 1 1/2"Inner gorve | 1 1/2"Inner gorve |
| AW45-EVI-M | 2"Female screw | 2"Female screw |
| AW90-EVI-M | Dn65Flange | Dn65Flange |

5. Wiring Design

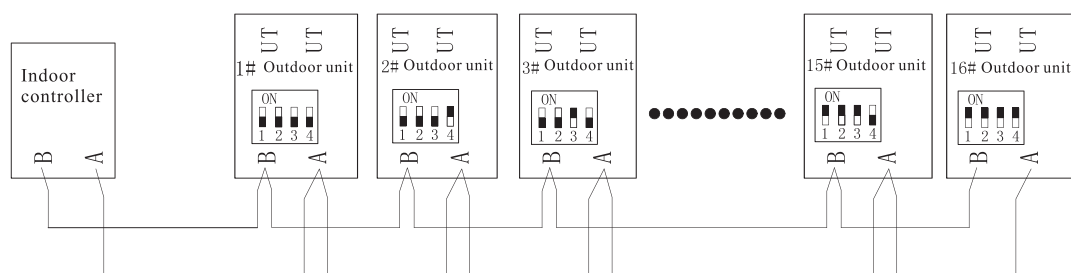
5-1. Connect to power supply

(1) Terminal Block Arrangement

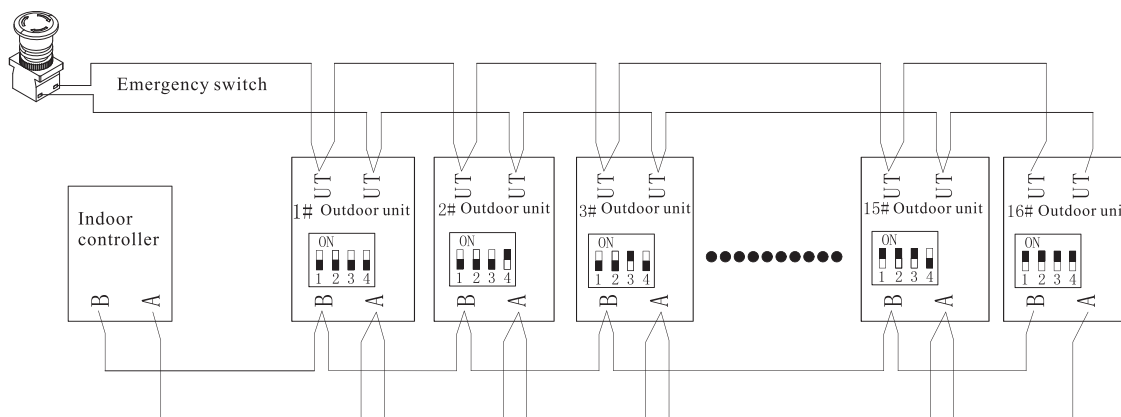
Remove the front panel of the control box, unscrew the four screws and pull the panel forward and then down.



Communication for multiple units



Emergency operation



UT Terminal is open as default.

When the outdoor unit can't receive the communication signal of indoor PCB and has communication failure, turn on an external switch, and connect the UT terminals, the outdoor unit will work with preset temp. of this function.

When the ambient temperature is lower than 20 °C, the unit will start heating mode automatically, and stop when the water temperature reaches 45 °C.

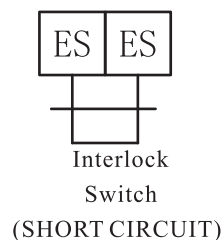
When the ambient temperature is higher than 25 °C, the unit will start cooling mode automatically, and stop when the water temperature reaches 15 °C.



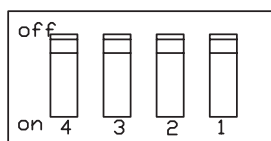
5. Wiring Design

Interlock switch

ES terminal is closed as default, and it's controlled by ON/OFF signal (no power input). When it's open, the unit can't work, when it's closed, the unit just can work. It can be used as remote control.



Dip switch (SW1) is used to set the system number.



Outdoor unit main PCB--SW1

When multiple units work together, please set the dip switch as follows.

The Dip switch is detected only once when the unit is powered on. If you want to reset the dip switch, please cut off power first and reset dip switch, then power on the unit.

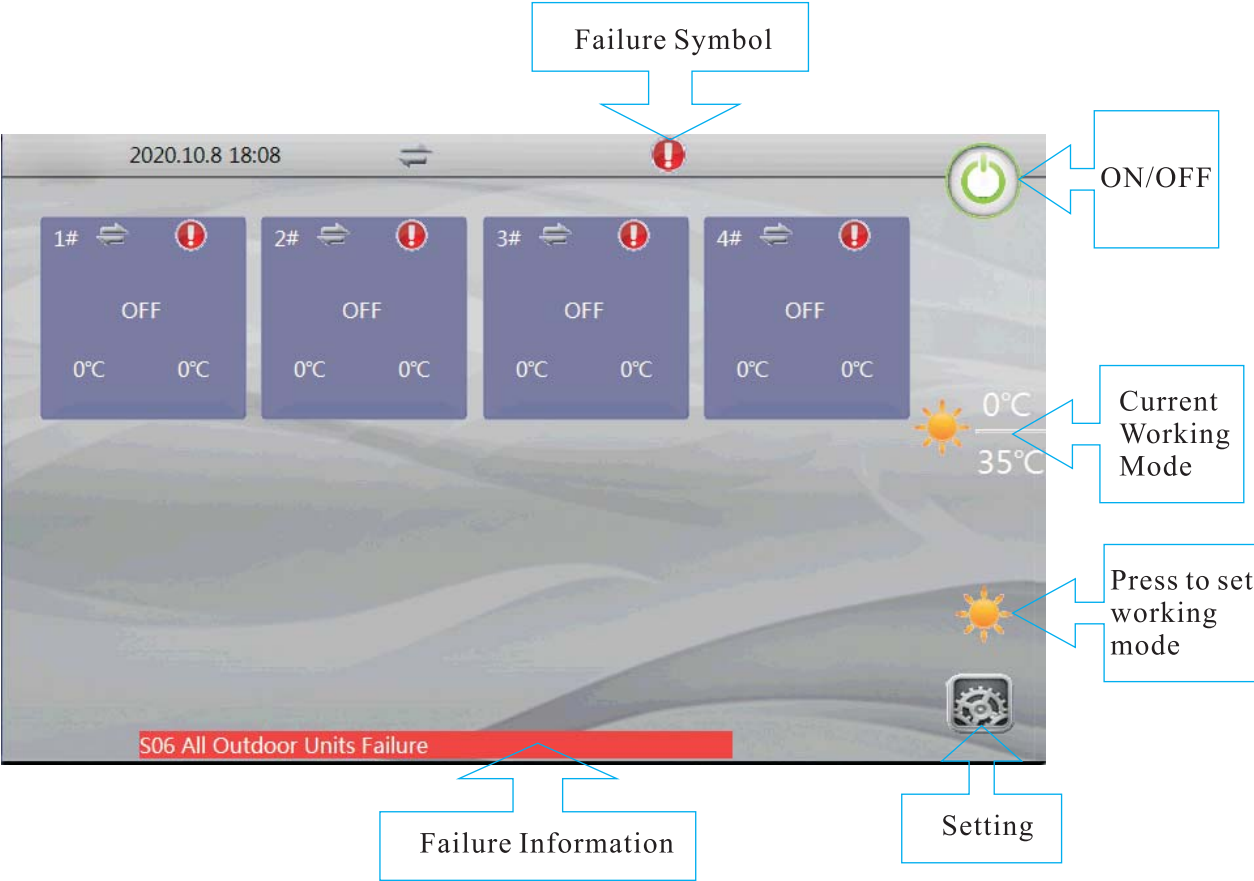
The value of dip switch: OFF=0, ON=1.

Dip switch setting for SW 1

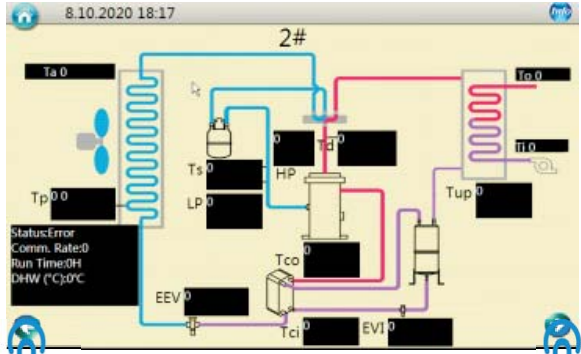
| System number | SW1-1 | SW1-2 | SW1-3 | SW1-4 |
|---------------|-------|-------|-------|-------|
| #1 | 0 | 0 | 0 | 0 |
| #2 | 0 | 0 | 0 | 1 |
| #3 | 0 | 0 | 1 | 0 |
| #4 | 0 | 0 | 1 | 1 |
| #5 | 0 | 1 | 0 | 0 |
| #6 | 0 | 1 | 0 | 1 |
| #7 | 0 | 1 | 1 | 0 |
| #8 | 0 | 1 | 1 | 1 |
| #9 | 1 | 0 | 0 | 0 |
| #10 | 1 | 0 | 0 | 1 |
| #11 | 1 | 0 | 1 | 0 |
| #12 | 1 | 0 | 1 | 1 |
| #13 | 1 | 1 | 0 | 0 |
| #14 | 1 | 1 | 0 | 1 |
| #15 | 1 | 1 | 1 | 0 |
| #16 | 1 | 1 | 1 | 1 |

6. Touchscreen Panel Overview

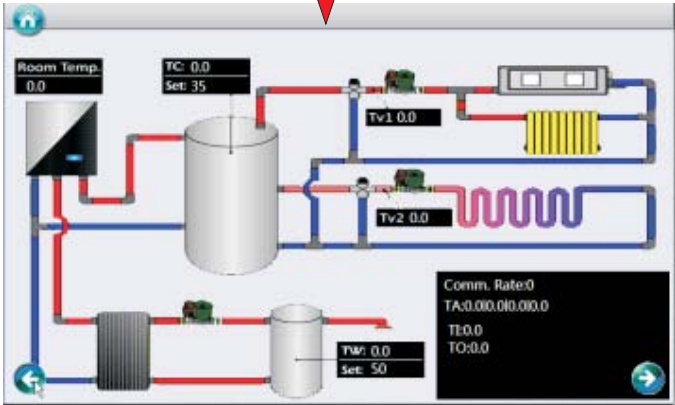
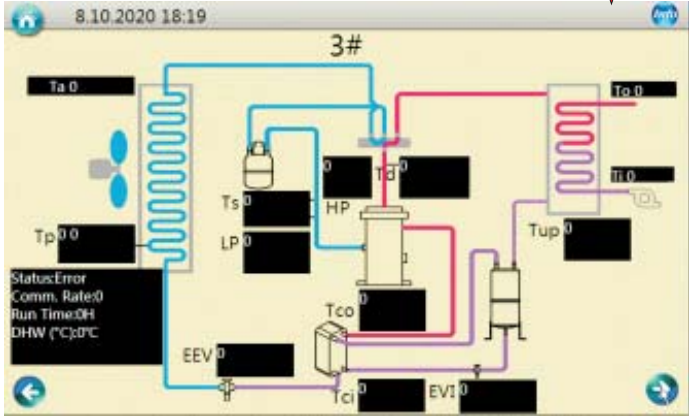
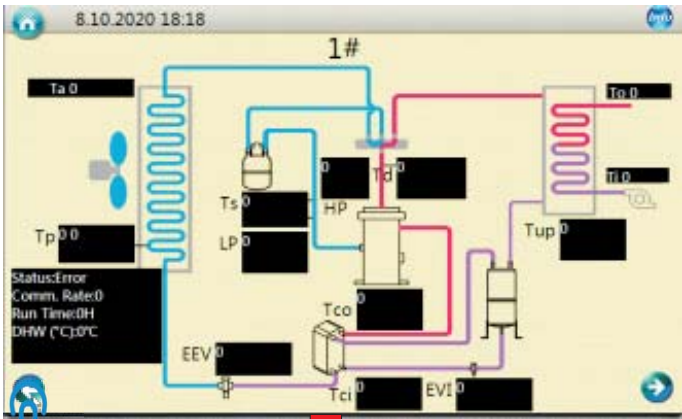
1. Main Page



6. Touchscreen Panel Overview



View System detailed running statue.



6. Touchscreen Panel Overview

1. Main Page



2. Zone 1



Click to make the settings for distribution system Zone 1.

6. Touchscreen Panel Overview

2. Zone 1

| | |
|----------------------------------------------------|------|
| Set temp. for heating (fix flow water temperature) | 40°C |
|----------------------------------------------------|------|

If the heating curve feature is DISABLED, a fixed heating water temperature can be set via this parameter.

| | |
|----------------------------------------------------|------|
| Set temp. for cooling (fix flow water temperature) | 15°C |
|----------------------------------------------------|------|

If the cooling curve feature is DISABLED, a fixed cooling water temperature can be set via this parameter.

| | |
|------------------------|------|
| High temperature limit | 50°C |
| Low temperature limit | 15°C |

These two parameters should only be configured by the installer to configure a safe set temperature range for circuit 1.

| | |
|-----------------------|--------------------------|
| Heating curve 1 (HC1) | <input type="checkbox"/> |
|-----------------------|--------------------------|

Set whether you would like the heating curve feature to be used. If this box is left unchecked, the system can follow a fixed water temperature that is set.
If this box is checked, you will be able to create a custom heating curve by setting the parameters in next page.

6. Touchscreen Panel Overview

System 1 heating curve parallel move 0°C

Adjust the heating curve setting for heating & cooling Zone 1, based on the set heating curve (parallel move).

Water / Outdoor temp. 1 - HC1 50°C

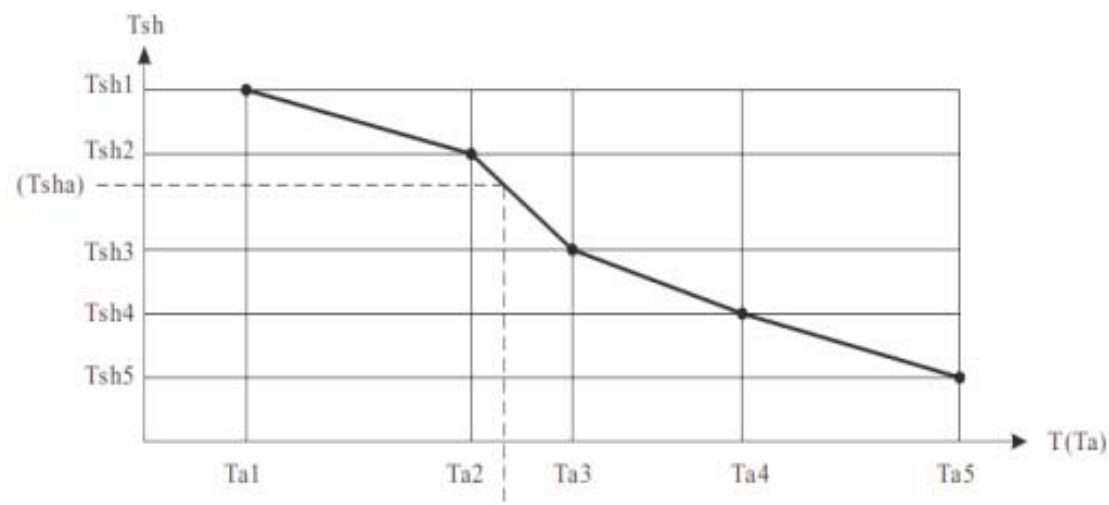
Water / Outdoor temp. 2 - HC1 45°C

Water / Outdoor temp. 3 - HC1 40°C

Water / Outdoor temp. 4 - HC1 35°C

Water / Outdoor temp. 5 - HC1 30°C

What a custom heating curve looks like (T_{sh} = Set Heating Temperature, T_a = Ambient Temperature):



Set 5 different set water temperature, based on 5 different outdoor ambient temp values (set in “Heating Configuration” menu), to generate a heating curve set for Zone 1.

6. Touchscreen Panel Overview

Cooling curve 1 (CC1)

Activate Cooling Curve function, if needed. If not, a fixed set temperature for cooling can be set in page 1.

| | |
|-------------------------------|------|
| Water / Outdoor temp. 1 - CC1 | 20°C |
| Water / Outdoor temp. 2 - CC1 | 18°C |
| Water / Outdoor temp. 3 - CC1 | 15°C |

Set 3 different set water temperature, based on 3 different outdoor ambient temp value (set in “Cooling Configuration” menu), to generate a cooling curve set for Zone 1.

6. Touchscreen Panel Overview

| | |
|---------------------|--------------------------|
| Mixing valve ZONE 1 | <input type="checkbox"/> |
|---------------------|--------------------------|

Check this box if a mixing valve is connected. If not, leave this unchecked.

| | |
|---------------------------|--------------------------|
| P1 for heating operation | <input type="checkbox"/> |
| P1 for cooling operation | <input type="checkbox"/> |
| P1 with high temp. demand | <input type="checkbox"/> |
| P1 Timer function | <input type="checkbox"/> |

These parameters are used for setting the functionalities of the external circulation pumps P1 for Zone 1.

- If Zone 1 is used for heating operation, “P1 for heating operation” should be activated.
- If Zone 1 is used for cooling operation, “P1 for cooling operation” should be activated.
- If Zone 1 needs to work when system get a “high temp. demand” signal only (or say this is a high temp. circuit), “P1 with high temp. demand” should be activated.
- If Zone 1 should work only in the set time period, “P1 Timer function” should be activated.

6. Touchscreen Panel Overview



If “P1 Timer function” is activated, P1 will only work in the time period set in “P1 Timer” menu.



If “buffer tank” menu (see in menu “System Configuration) is activated, P1 will always work if system had demanding, so to circulate the energy between buffer tank and distribution system.
If “buffer tank” menu is not activated, P1 should stop working after compressor stops.

If P1 needs to work occasionally so to read the temperature in the system, “P1 Interval working mode” should be activated. After activated, P1 will work for “P1 ON duration” time everytime, after it stops for “P1 OFF duration”.

6. Touchscreen Panel Overview

3. Zone 2



Click to make the settings for distribution system Zone 2.

| | |
|--------|--------------------------|
| Zone 2 | <input type="checkbox"/> |
|--------|--------------------------|

If you need a dual water temperature setting, please tick this item.

| | |
|----------------------------------------------------|------|
| Set temp. for heating (fix flow water temperature) | 45°C |
| Set temp. for cooling (fix flow water temperature) | 20°C |

If the heating/cooling curve feature is DISABLED, a fixed heating/cooling water temperature can be set via this parameter.

| | |
|------------------------|------|
| High temperature limit | 50°C |
| Low temperature limit | 15°C |

These two parameters should only be configured by the installer to configure a safe set temperature range for circuit 1.

6. Touchscreen Panel Overview

Heating curve 2 (HC2)



Set whether you would like the second heating curve feature to be used. If this box is left unchecked, the system can follow a fixed water temperature that is set; If this box is checked, you will be able to create a custom heating curve by setting the parameters following.

System 2 heating curve parallel move

0°C

Adjust the heating curve setting for heating & cooling Zone 1, based on the set heating curve (parallel move).

Water / Outdoor temp. 1 - HC2

50°C

Water / Outdoor temp. 2 - HC2

45°C

Water / Outdoor temp. 3 - HC2

40°C

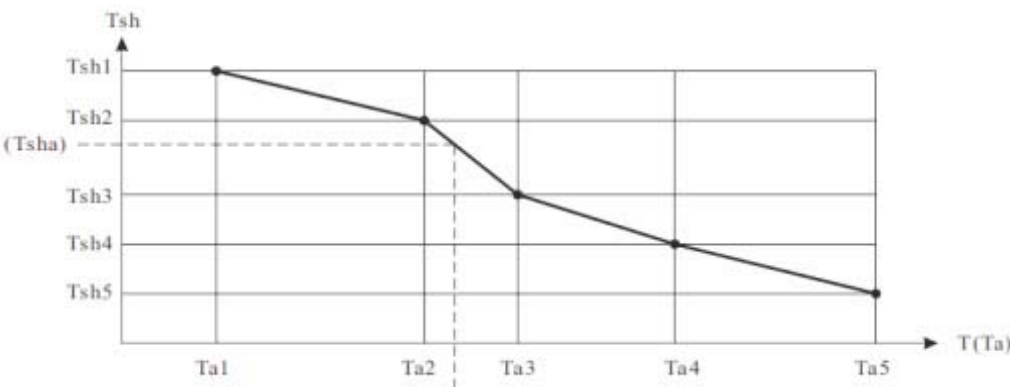
Water / Outdoor temp. 4 - HC2

35°C

Water / Outdoor temp. 5 - HC2

30°C

What a custom heating curve looks like (T_{sh} = Set Heating Temperature, T_a = Ambient Temperature):



Set 5 different set water temperature, based on 5 different outdoor ambient temp values (set in “Heating Configuration” menu), to generate a heating curve set for Zone 2.

6. Touchscreen Panel Overview

Cooling Curve 2 (CC2)

Activate Cooling Curve 2 function, if needed.
If not, a fixed set temperature for cooling can be set in page 11.

| | |
|-------------------------------|------|
| Water / outdoor temp. 1 - CC2 | 20°C |
| Water / outdoor temp. 2 - CC2 | 18°C |
| Water / outdoor temp. 3 - CC2 | 15°C |

Set 3 different set water temperature, based on 3 different outdoor ambient temp values (set in “Cooling Configuration” menu), to generate a cooling curve set for Zone 2.

6. Touchscreen Panel Overview

Mixing valve ZONE 2

☐

Check this box if a mixing valve is connected. If not, leave this unchecked.

P2 for heating operation

☐

P2 for cooling operation

☐

P2 with high temp. demand

☐

P2 Timer function

☐

P2 Timer

These parameters are used for setting the functionalities of the external circulation pumps P2 for Zone 2.

If Zone 2 is used for heating operation, “P2 for heating operation” should be activated.

If Zone 2 is used for cooling operation, “P2 for cooling operation” should be activated.

If Zone 2 needs to work when system get a “high temp. demand” signal only (or say this is a high temp. circuit), “P1 with high temp. demand” should be activated.

If Zone 2 should work only in the set time period, “P2 Timer function” should be activated.

If “P2 Timer function” is activated, P2 will only work in the time period set in “P2 Timer” menu.

6. Touchscreen Panel Overview

| | |
|--------------------------|--------------------------|
| P2 Interval working mode | <input type="checkbox"/> |
| P2 ON duration | 1 |
| P2 OFF duration | 6 |

If “buffer tank” menu (see in menu “System Configuration) is activated, P2 will always work if system had demanding, so to circulate the energy between buffer tank and distribution system. If “buffer tank” menu is not activated, P2 should stop working after compressor stops. If P21 needs to work occasionally so to read the temperature in the system, “P2 Interval working mode” should be activated. After activated, P2 will work for “P2 ON duration” time everytime, after it stops for “P2 OFF duration”.

| | |
|--------------|------|
| DHW Setpoint | 50°C |
|--------------|------|

This option sets the upper limit for the desired sanitary hot water temperature.

| | |
|------------------------|-----|
| DHW Restart ΔT | 5°C |
|------------------------|-----|

The system begins working in DHW again once the temperature drops below the set temperature minus this ΔT temperature.

6. Touchscreen Panel Overview

4. D.H.W



Click to check the information of the system.

DHW Timer function



Activate or not, the Timer function for DHW mode. Once activated, unit is only allowed to work in DHW mode in set time period, with set temperature.

6. Touchscreen Panel Overview

| | |
|-------------------------|------|
| DHW Timer 1 | |
| DHW Set temp. - Timer 1 | 50°C |
| DHW Timer 2 | |
| DHW Set temp. - Timer 2 | 51°C |
| DHW Timer 3 | |
| DHW Set temp. - Timer 3 | 52°C |

Three groups of timer setting and temperature setting, for DHW mode, if needed.

Unit will only work in DHW mode in the set timer ON period. In conflict time period, it will take higher set value as the set value for this time period for DHW mode.

| | |
|--------------------------------|--------------------------|
| DHW Pump interval working mode | <input type="checkbox"/> |
| DHW Pump ON duration | 1min |
| DHW Pump OFF duration | 6min |

After reach the set temperature for DHW, DHW pump should stop working, till water temperature drops down below DHW restart set point.

However, if DHW pump needs to circulate water occasionally to read the water temperature, “DHW Pump interval working mode” should be activated, which will make DHW pump work for “DHW Pump ON duration” time after stops for every “DHW Pump OFF duration” time.

6. Touchscreen Panel Overview

5. Information



Click to check the information of the system.

6. Heating Configuration



Click to set basic setting for heating operation.

Heating restart ΔT

2°C

This is to configure a difference in temperature at which the unit restarts, after stops due to reach the set temp.

Heating timer function



Activate or not, the Timer function for heating mode. Once activated, unit is only allowed to work in heating mode in set time period, with set temperature.

6. Touchscreen Panel Overview

| | |
|-----------------------------|------|
| Heating timer 1 | |
| Heating set temp. - Timer 1 | 40°C |
| Heating timer 2 | |
| Heating set temp. - Timer 2 | 41°C |
| Heating timer 3 | |
| Heating set temp. - Timer 3 | 42°C |

Three groups of timer setting and temperature setting, for heating mode, if needed.

Unit will only work in heating mode in the set timer ON period. In conflict time period, it will take higher set value as the set value for this time period for heating mode.

| | |
|---------------------------------------|--------------------------|
| Pump interval working mode in heating | <input type="checkbox"/> |
| Pump ON duration in heating | 1min |
| Pump OFF duration in heating | 6min |

This is setting for unit circulation pump.

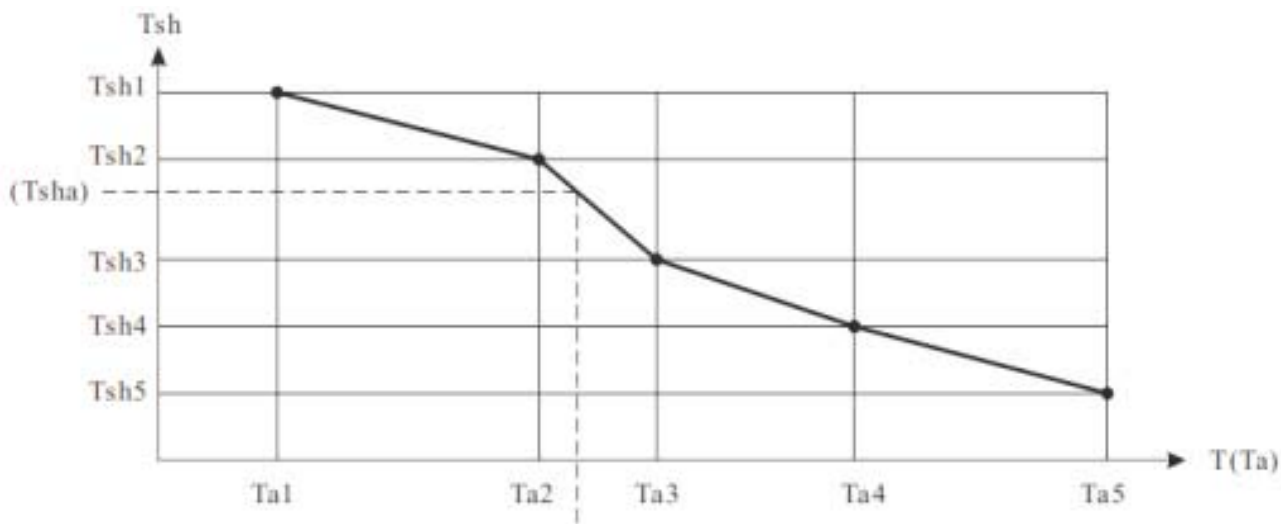
If this function is not activated, unit circulation pump will keeps on working.

If this function is activated, unit circulation pump will stop working after compressor stops, but work for “Pump ON duration in heating” time after stops for every “Pump OFF duration in heating” time.

6. Touchscreen Panel Overview

| | |
|----------------------|-------|
| Outdoor temp. 1 - HC | -25°C |
| Outdoor temp. 2 - HC | -15°C |
| Outdoor temp. 3 - HC | -5°C |
| Outdoor temp. 4 - HC | 5°C |
| Outdoor temp. 5 - HC | 15°C |

What a custom heating curve looks like (T_{sh} = Set Heating Temperature, T_a = Ambient Temperature):



Set 5 different outdoor ambient temperature value, for 5 different water temp set value (set in “Zone 1” menu), to generate a heating curve set for Zone 1.

6. Touchscreen Panel Overview

7. Cooling Configuration



Click to set basic setting for cooling operation.

Cooling restart ΔT

2°C

This is to configure a difference in temperature at which the unit restarts, after stops due to reach the set temp.

Cooling timer function



Activate or not, the Timer function for cooling mode. Once activated, unit is only allowed to work in cooling mode in set time period, with set temperature.

6. Touchscreen Panel Overview

| | |
|-----------------------------|------|
| Cooling timer 1 | |
| Cooling set temp. - Timer 1 | 15°C |
| Cooling timer 2 | |
| Cooling set temp. - Timer 2 | 16°C |
| Cooling timer 3 | |
| Cooling set temp. - Timer 3 | 17°C |

Three groups of timer setting and temperature setting, for cooling mode, if needed.

Unit will only work in cooling mode in the set timer ON period. In conflict time period, it will take higher set value as the set value for this time period for cooling mode.

6. Touchscreen Panel Overview

| | |
|---------------------------------------|--------------------------|
| Pump interval working mode in Cooling | <input type="checkbox"/> |
| Pump ON duration in cooling | 1min |
| Pump OFF duration in cooling | 6min |

This is setting for unit circulation pump.
If this function is not activated, unit circulation pump will keeps on working.
If this function is activated, unit circulation pump will stop working after compressor stops, but work for “Pump ON duration in heating” time after stops for every “Pump OFF duration in heating” time.

| | |
|----------------------|------|
| Outdoor temp. 1 - CC | 16°C |
| Outdoor temp. 2 - CC | 26°C |
| Outdoor temp. 3 - CC | 36°C |

Set 3 different set water temperature, based on 3 different outdoor ambient temp values (set in “Cooling Configuration” menu), to generate a cooling curve set for Zone 2.

6. Touchscreen Panel Overview

8. Advanced Setting



Click to set for more advanced setting.

| | |
|------------------|----------|
| Permission level | End User |
|------------------|----------|

For the safety purpose, some parameters can only be adjusted under the installer's permission level. This can be configured within this menu, by inputting a correct password.

| | |
|-------------------------------|-----------|
| Control panel backlight light | Always ON |
|-------------------------------|-----------|

Set a time limit for the touchscreen backlight. You can also set it to always be on.

| | |
|----------|---------|
| Language | English |
|----------|---------|

For setting the system language.

| | |
|------|------------------|
| Time | 16.10.2020 08:39 |
|------|------------------|

For setting the system clock date and time.

6. Touchscreen Panel Overview

ECO Operation

| | |
|------------------------------------------|--------------------------|
| DHW ECO operation | <input type="checkbox"/> |
| Outdoor temp. to start DHW ECO operation | -10°C |

Heat Pump always try to finish its DHW work as soon as possible, to concentrate in heating or cooling operation. However, when outdoor ambient temperature is higher than a certain value, unit capacity would be more than enough, if it still works in high speed. Thus it would be wiser to lower the running speed at this moment for DHW. By activating this menu, compressor speed will be lowered to 50% for DHW production when outdoor ambient temperature is higher than set value "Outdoor temp. to start DHW ECO operation", for better efficiency.

| | |
|----------------------------------------------|--------------------------|
| Heating ECO operation | <input type="checkbox"/> |
| Outdoor temp. to start heating ECO operation | -15°C |

Heat pump efficiency drops when outdoor air temperature drops. If outdoor air temperature is lower than a certain value, may more economic to use the external Heating Backup Heater(HBH) heating source for heating. If so, by activate "DHW ECO Operation" and set a proper setting of "Ambient Temperature to Start Heating ECO Operation", unit will stop compressor from working for heating but gives a "ON(close)" signal to external HBH heater when actual outdoor air temperature is lower than the set value.

6. Touchscreen Panel Overview

Vacation Mode

| | |
|---------------|--------------------------|
| Vacation mode | <input type="checkbox"/> |
|---------------|--------------------------|

During periods when users are away from home for extended lengths of time, this mode can serve to reduce the preset temperatures for both sanitary hot water, as well as for house heating, in order to save energy.

| | |
|-----------------------------------------------|------|
| Sanitary hot water temp. drop during vacation | 20°C |
|-----------------------------------------------|------|

Use this parameter to set the desired drop in temperature of sanitary hot water for when the vacation mode function is active. This number is based on the standard domestic hot water value set.

| | |
|------------------------------------------|------|
| Heating water temp. drop during vacation | 20°C |
|------------------------------------------|------|

Use this parameter to set the desired drop in temperature of the water used for heating for when the vacation mode function is active. This number is based on the standard heating value set.

| | |
|---------------------|----------|
| Vacation start date | 1.1.2020 |
|---------------------|----------|

Set the date for when vacation mode begins.

| | |
|----------------------|----------|
| Vacation finish date | 1.2.2020 |
|----------------------|----------|

Set the date for when vacation mode ends.

6. Touchscreen Panel Overview

Reduce Mode&Quiet Operation

Reduced mode

☐

During periods of low demand, such as typical sleep or working hours, the system can operate based on a reduction of the set heating value in order to deliver better efficiency and cost savings.

Reduced mode - Temp. drop / rise

8°C

This parameter can be used to set the amount of temperature drop (in heating modes) or temperature rise (in cooling modes) in Reduced Mode. This drop/rise is based on the standard temperature that is set at the time of the setpoint operation.

Reduced mode - Timer

This parameter can be used to set the schedule of when the heating setpoint reduction can take place. Each day of the week is individually customizable with separate time blocks. The feature will only work during the times that are set here.

Quiet operation

☐

Turn On or OFF Quiet operation, for a better noise level during the set time period.

Quiet operation - Max allowable temp. drifting

5°C

Quiet operation - Timer

When the unit is in quiet mode, its functional output may decrease due to both the fan and compressor operating at a restricted speed. Therefore, if the temp. begins to fluctuate outside of the ΔT value set here, the unit will automatically exit the quiet operation mode to ensure that the allowable temperatures are delivered.

This parameter can be used to set the scheduling of when the quiet operation mode takes place.

6. Touchscreen Panel Overview

Anti-legionella

Anti-legionella function

☐

If the user will be drawing hot water directly from the hot water tank (HWT), then it will be required to heat the water within the tank to over 60 °C at least once a week, for legionella prevention purposes. Please follow all local regulations regarding the proper usage of this function.

Anti-legionella - Setpoint

75°C

This parameter can be used to set the value at which the system will heat the water to in order to achieve proper legionella prevention. Please follow all local regulations regarding this practice.

| | |
|-------------------------------------|--------|
| Anti-legionella - Duration | 30Min |
| Anti-legionella - Max. running time | 180Min |

Set the duration of the anti-legionella operation. The time entered here will be how long the unit will keep the temperature set “Anti-legionella-Set point”, in order to ensure that all bacteria in the shower water tank have been killed.

Set an absolute end time (operational ceiling limit) for the anti-legionella function, even if it has not been fully completed.

Anti-legionella - Starting time

This parameter can be used to set the times and days of the week that the operation takes place.

6. Touchscreen Panel Overview

Room Temp. Effect on Curve

Room temp. effect on heating curve

☐

If activated this function, it will compare the current room temperature with below set “Ideal Room Temperature”, and deduct the difference in the current value set for water temperature, in order to compensate the gap, in both HEATING and COOLING modes.

Ideal room temp. in heating

20°C

Set the ideal room temperature in heating operation.

Ideal room temp. in cooling

26°C

Set the ideal room temperature in cooling operation.

6. Touchscreen Panel Overview

Internet Connection--WI-FI

| | |
|--------------------------|--------------------------|
| Internet connection | OFF |
| Remote settings | <input type="checkbox"/> |
| Connection to the server | Disconnected |
| Connection to the router | Disconnected |
| MAC | 00-00-00-00-00-00 |
| IP address | |
| SSID | |
| Password | ***** |
| Server address | |
| Service port | 0 |

Information of unit internet connection.

6. Touchscreen Panel Overview

Floor Curing

| | |
|---------------------------------------------------|--------------------------|
| Floor curing | <input type="checkbox"/> |
| Floor curing current stage | 0 |
| Floor curing current stage running duration | 0H |
| Floor curing current stage set temperature | 0°C |
| Floor curing current stage valid running duration | 0H |
| Floor curing total running duration | 0H |
| Highest water temp. in floor curing operation | 0°C |

After initial installation, or when a long period of unit inactivity has passed, the floor-heating system may have become damp within the concrete. Most of the heating capacity of the heat pump unit is consumed to dry up and evaporate the water in the concrete. The floor curing function is used to dry up the floor, to ensure the safe operation of the heat pump system.

Floor Curing Toggle this feature ON or OFF. This feature and the settings that follow will only be active if the checkbox is marked. When floor curing function is activated, it will run automatically the pre-set program, until the complete function is finished successfully (if not, a warning information will be shown on the screen. All the running data during the process will be recorded and can be viewd.

6. Touchscreen Panel Overview

System Setting

| | |
|----------------------------|---|
| Heat pump cascade quantity | 4 |
|----------------------------|---|

Set the system cascade unit quantity.

| | |
|--------------------|-------------------------------------|
| Sanitary hot water | <input checked="" type="checkbox"/> |
| Heating | <input checked="" type="checkbox"/> |
| Cooling | <input checked="" type="checkbox"/> |

Set the working modes need for this installation.

| |
|---------------------|
| Load saved settings |
| Save settings |

Used by the installer to save his setting, and load the saved setting.

6. Touchscreen Panel Overview

9. System Configuration



Click to set for more advanced setting.

Electrical Utility Lock

| | |
|--------------------------------------|--------------------------|
| P1/P2 operation during anti-freezing | <input type="checkbox"/> |
|--------------------------------------|--------------------------|

Unit has anti-freezing protection. Set whether P1/P2 should be also activated, during anti-freezing operation.

| | |
|--------------------------------|--------------------------|
| Electrical utility lock | <input type="checkbox"/> |
| Electrical utility lock signal | Normally Close |

Some electricity companies offer a special rate to households that lower their power consumption during predetermined “peak times”. During these times, companies will send a signal to all houses, to receive feedback signals on whether or not certain electrical equipments are ON or OFF. Actiave this function, and set the signal type according to local regulation.

6. Touchscreen Panel Overview

HBH(Heating Backup Heater)

| | |
|------------------------------------|--------------------------|
| Backup heating sources for heating | <input type="checkbox"/> |
|------------------------------------|--------------------------|

Our system can control two external heating source. One is default to have, called “AH”, Auxilary Heater. One is an option, called HBH. Use this menu to set whether system has two-stage external heating source.

| | |
|---------------------------------------------|---------------|
| Priority for backup heating sources (HBH) | Lower than AH |
|---------------------------------------------|---------------|

This provides options regarding the priority enforcement of HBH compared against the unit's AH. If the heat pump can't provide enough power when the system is operating in heating mode, it will turn on the AH or HBH automatically, according to whichever is set to have the higher priority. If the output power is still not enough after the AH or HBH has begun working, then the unit will turn on the lower priority backup heating source as well.

| | |
|----------------------------------------------|--------------------------|
| P0 running during HBH active | <input type="checkbox"/> |
| Backup source start accumulating value (HBH) | 120 |

Set whether unit circulation pump need to work, when HBH is working.

This is used to adjust how quickly the backup heating sources activate when the heat pump cannot provide sufficient power when in heating mode. The greater the value set, the longer it takes for the backup heating sources to begin working when the heat pump’s capacity is not enough.

6. Touchscreen Panel Overview

HWTBH = Hot Water Tank Backup Heater

Backup heating source for sanitary hot water

☐

Set whether the system contains a HWTBH. Toggle this feature ON or OFF.

Priority for backup heating sources (HWTBH)

Lower than AH

This provides options regarding the priority enforcement of HWTBH compared against the unit's AH. If the heat pump can't provide enough power when the system is operating in hot water mode, it will turn on the AH or HWTBH automatically, according to whichever is set to have the higher priority. If the output power is still not enough after the AH or HWTBH has begun working, then the unit will turn on the lower priority backup heating source as well.

P0 running during HWTBH active

☐

Set whether unit circulation pump need to work, when HWTBH is working.

Water temperature rise reading interval (HWTBH)

5min

The purpose of this parameter is to set the frequency of checks on the increase in temperature when the system is working in DHW mode. If the temperature is increasing too slowly during the interval of time set here, then the unit will activate other heating sources for the DHW operation. The smaller the value set, the more likely the unit is to activate AH or HWTBH for a faster DHW heating experience.

6. Touchscreen Panel Overview

Others

| | |
|---------------------|--------------------------|
| Emergency operation | <input type="checkbox"/> |
|---------------------|--------------------------|

This parameter sets whether the unit should turn on the backup heating system automatically when the heat pump fails to work. Toggle this feature ON or OFF.
Note: If this function is activated, then all users should be occasionally checking the working status of the heat pump unit, to ensure full functionality.

| | |
|---------------------------------|-------------------|
| Diverting valve switching time | Immediate |
| Diverting valve - power on time | Always with Power |

Configure how many minutes are spent switching (from start to finish) between the sanitary hot water and the heating/cooling circuit, and the way of powering by the motorized diverting valve.
Note: This parameter must comply with the capabilities of the motorized diverting valve, else the unit may not be able to work properly due to an insufficient water flow rate.

| | |
|-------------------------------------|--------------------------|
| Air purge - heating/cooling circuit | <input type="checkbox"/> |
| Air purge - DHW circuit | <input type="checkbox"/> |

Used for air purging. Once activated, unit and external pump will be turned ON, while the diverting valve will be switched to such circuit for air purging.

| | |
|--------------------|----------------|
| Mode signal output | OFF |
| Mode signal type | Normally Close |

Activate to output a signal during set working period, if needed, for controlling other devices.

| | |
|-------------|--------------------------|
| Buffer tank | <input type="checkbox"/> |
|-------------|--------------------------|

Set whether the system has buffer tank. It will affect the working of external pump P1/P2.

6. Touchscreen Panel Overview

Sensor calibration

| | |
|-------------------------------------------|-----|
| Heating / cooling stop - water ΔT | 2°C |
|-------------------------------------------|-----|

This is to configure a difference in temperature at which the unit will stop further operation.

| | |
|-------------------------------------------|---------------|
| DHW / Heating water temp. compensate type | No Compensate |
|-------------------------------------------|---------------|

Sensor calibration function.

| | |
|--------------------------------------------|-----|
| DHW / Heating water temp. compensate value | 0°C |
|--------------------------------------------|-----|

DHW/Heating Sensor calibration value.

| | |
|--------------------------------------|-----|
| Cooling water temp. compensate value | 0°C |
|--------------------------------------|-----|

Cooling Sensor calibration value.

6. Touchscreen Panel Overview

Reset all setting to factory default setting.

| | |
|--------------------------------|---------------|
| Heating / cooling switch | Ambient Temp. |
| Outdoor temp. to start heating | 20°C |
| Outdoor temp. to start cooling | 25°C |

This function's purpose is to set the conditions under which the unit starts cooling or heating automatically, according to:

- If set to “Ambient Temp.” the system will automatically choose to enter a cooling or heating operation based on the outdoor ambient temperature, compared with the parameters set in below menus.
 - If set to “External Signal Control”, an external room thermostat or central control system in the building can control the cooling or heating requirements by connecting it to the respective signal ports. The signals are binary (simple 0 or 1). If the cooling port receives the signal, the system switches to cooling. The same goes for heating. Otherwise, the system will stay in standby mode.
 - If set to “Ambient Temp. + External Signal Control”, the unit will take both the ambient temperature and the external signal into consideration for the heating or cooling mode selection.
- Note: If the parameter is set to OFF, the auto-switch function will not be active. If this is the case, ensure that the Heating Water Circuit and Cooling Water Circuit are not set to ON simultaneously, as the system cannot determine the actual requirements due to mode conflict. To avoid mode conflict when in “External Signal Control” mode, please ensure that the external signal will not be activated at the cooling and heating ports at the same time.

Reset to factory settings

Reset all setting to factory default setting.

7. Failure code list

Failure Code

| Failure code | Failure list | Possible reasons and solutions |
|--------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E01 | Communication failure between indoor PCB and outdoor PCB | Check the cable connection between indoor PCB and outdoor PCB. If cable is well connected, replace indoor PCB or outdoor PCB. |
| E02 | Communication failure between outdoor PCB and Compressor drive PCB | Check the communication cable between outdoor power PCB and driver PCB. Check whether outdoor power PCB or driver PCB is broken. |
| E03 | Compressor phase current failure | Check whether the power cable to compressor is broken or short-circuit. |
| E04 | Compressor phase current overload (over-current) | Check whether the power cable to compressor is broken or short-circuit. |
| E05 | Compressor drive failure | Check whether compressor drive PCB is broken, or cable to compressor is wrong connected. |
| E06 | Compressor drive high/low DC voltage failure | Input voltage too high or too low. |
| E07 | Input current failure | Check the current to outdoor unit, and compare it with the unit current shown on the operation panel. If the difference is not big, check whether the system has enough refrigerant (more likely it is not enough refrigerant that caused this abnormal low current). If the difference is big, outdoor power PCB is broken. Please replace it with a new one |
| E08 | Outdoor PCB EEPROM Failure | Cut the unit power and short-circuit JP404 port on outdoor power PCB, repower the unit, cut power again and cancel the short-circuit on JP404 port. If still not OK, replace the outdoor power PCB. |
| E10 | Communication failure between outdoor main PCB and driver PCB for fan motor | Check the communication cable between main PCB and driver PCB for fan motor. Check whether outdoor power PCB or driver PCB is broken. |
| E11 | Compressor phase failure | Check the power cable of compressor is connected or not, check whether phase is wrong, or driver PCB is broken. |
| E12 | Failure for abnormal temp. of Compressor Drive PCB | Check whether compressor driver has too high temperature, and the fan stops. Check whether the compressor driver PCB is broken, Replace it if necessary. |
| | | |
| F01 | Ambient temp. sensor failure | Check whether ambient temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F02 | Outdoor evaporator coil temp. sensor failure | Check whether outdoor evaporator coil temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F03 | Compressor discharge temp. sensor failure | Check whether compressor discharge temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F04 | Compressor suction temp. sensor failure | Check whether Compressor suction temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F05 | Evaporating pressure sensor failure | Check whether evaporating pressure sensor is open, short-circuit or broken. Replace it if necessary. |
| F06 | Condensing pressure sensor failure | Check whether condensing pressure sensor is open, short-circuit or broken. Replace it if necessary. |
| F07 | High pressure switch failure | If pressure switch is in open position when unit is in standby status, or 2 minutes after compressor stops, unit gives this failure. Check whether high pressure switch is broken or not well connected. |
| F08 | Low pressure switch failure | If pressure switch is in open position when unit is in standby status, or 2 minutes after compressor stops, unit gives this failure. Check whether low pressure switch is broken or not well connected. |

7. Failure code list

| Failure code | Failure list | Possible reasons and solutions |
|--------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F09 | DC fan motor failure (FAN 1) | Speed of DC fan motor (FAN 1) can't reach the required value or no feedback signal. Please check whether the PCB or fan motor is broken. |
| F10 | DC fan motor failure (FAN 2) | Speed of DC fan motor (FAN 2 for dual fan system) can't reach the required value or no feedback signal. Please check whether the PCB or fan motor is broken. |
| F11 | Evaporating pressure too low for 3 times protection | If system too low pressure protection detected by evaporating pressure sensor happened 3 times in a certain period of time, it gives this failure code and unit can't be restarted until repowered. Check whether system has not enough refrigerant or leakage inside (more likely it is not enough refrigerant that caused this abnormal evaporating pressure); whether fan motor and water pump is working OK; whether condensor is blocked; whether EEV whether EEV works normally; whether water temperature too low, and whether water inlet & outlet temperature has too big difference in cooling |
| F12 | Condensing pressure too high for 3 times protection | If system too high pressure protection detected by condensing pressure sensor happened 3 times in a certain period of time, it gives this failure code and unit can't be restarted until repowered. Check whether water flow rate is not enough (more likely it is not enough water flow rate that caused system build up too high pressure); whether fan motor and water pump is working OK; whether condensor is blocked; whether EEV works normally; whether water temperature too high, and whether water inlet&outlet temperature has too big difference |
| F13 | Room temp.sensor failure - TR | Check whether room temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F14 | DHW temp.sensor failure - TW | Check whether sanitary hot water temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F15 | Heating/cooling temp. sensor failure | Check whether cooling/heating water temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F16 | Water outlet temperature sensor failure - Tuo | Check whether water outlet temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F17 | Water inlet temperature sensor failure - Tui | Check whether water inlet temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F18 | Indoor coil temperature sensor failure - Tup | Check whether indoor coil temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F21 | Mixing circuit 1 temp. sensor failure - Tv1 | Check whether TV1 temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F22 | Mixing circuit 2 temp. sensor failure - TV2 | Check whether TV2 temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F27 | Indoor PCB EEPROM Failure | Cut the unit power, connect CN213-5 and CN213-6 together, repower the unit and then cut the power and cancel the connect. If still not OK, replace the indoor PCB. |
| F28 | DC pump PWN signal feedback failure | Check water pump cable connection; check power supply to water pump; check whether water pump is broken. |
| F29 | Mixing valve 1 failure | Check MV1 cable connection; check whether PCB output voltage signal; check whether MV1 is broken. |
| F30 | Mixing valve 2 failure | Check MV2 cable connection; check whether PCB output voltage signal; check whether MV2 is broken. |
| F31 | Economizer inlet temp. sensor failure | Check whether the sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F32 | Economizer outlet temp. sensor failure | Check whether the sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F33 | Defrosting temp. sensor failure | Check whether the sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F34 | Water tank temp. sensor failure | Check whether the sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| F35 | Compressor discharge temp. too high for 3 times protection | If it gives this failure code, unit can't be restarted until repowered. Check whether system is lacking of enough refrigerant, or blocked, whether the system has air inside, or water flow rate too small |

7. Failure code list

| Failure code | Failure list | Possible reasons and solutions |
|--------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P01 | Main line current protection | Input current too high or too low, or system works in over-load condition. Unit recovers automatically after 5 minutes when it happened the first time. If same failure happened 3 times in a certain period of time, unit stops until repowered. Check unit input current. Check whether fan motor and water pump is working OK; whether condensor is blocked; whether water temperature too high, and whether water inlet&outlet temperature has too big difference |
| P02 | Compressor phase current protection | Compressor input current too high or too low, or system works in over-load condition. Check compressor input current. Check whether fan motor and water pump is working OK; whether condensor is blocked; whether water temperature too high, and whether water inlet&outlet temperature has too big difference |
| P03 | Compressor drive protection | Compressor drive failure. Check whether cable is broken or loosen. Check whether compressor driver PCB or compressor is broken. |
| P04 | Compressor oil return protection | If unit has been continuously working in low speed for certain period of time, unit starts this protection to suck compressor oil back into compressor. This is a normal protection and doesn't need any treatment. |
| P05 | High pressure switch protection | If system pressure is too high or too low, it activates this protection. Unit recovers automatically after 5 minutes when it happened the first time. If same failure happened 3 times in a certain period of time, unit stops until repowered. Check whether fan motor and water pump is working OK; whether condensor is blocked; whether water temperature too high, and whether water inlet&outlet temperature has too big difference |
| P06 | High pressure too-high protection | This protection happens when system pressure is higher than the set compressor speed-down pressure point. If after slow down the compressor speed but pressure still higher than the protection point, compressor stops. Check whether water temperature set value is too high; whether system water flow rate too small; whether EEV works normally; whether air circulates fluently in cooling mode; whether water inlet&outlet temperature has too big difference |
| P07 | Compressor preheating | This is a normal protection and doesn't need any treatment. |
| P08 | Discharge temp. too high protection | Check whether water temperature set value is too high, especially when ambient temperature is low; whether water flow rate too small; whether system is lacking of enough refrigerant. |
| P09 | Outdoor coil temp. sensor too high in cooling | Check whether air circulates fluently in outdoor unit. |
| P10 | AC high/low voltage protection | Unit input voltage too high or too low. Check the voltage of unit power supply. |
| P11 | Outdoor ambient temp. out of working range | Ambient temperature is too high or too low for unit to work. |
| P12 | Compressor speed limit by ambient temp. | This is a normal protection and doesn't need any treatment. |
| P13 | Low pressure switch protection | If system pressure reach the set value of pressure switch, it activates this protection. Unit recovers automatically after 1 minutes when it happened the first time. If same failure happened 3 times in one hour, unit stops until repowered. Check whether there is leakage on refrigerant system, or EEV has no action or is blocked. |
| P14 | Anti-freezing protection-stage 1 active | Ambient temp. is too low, and inlet or outlet water temp. is too low. |
| P15 | Anti-freezing protection-stage 2 active | Ambient temp. is too low, and inlet or outlet water temp. is too low. |
| P17 | Condenser deltaT too high | Check whether there is air or dirty inside water system, or water flow rate is too small |
| P18 | Evaporating pressure too low protection | If system pressure reach the set value of pressure sensor, it activates this protectio. Unit recovers automatically after 30 seconds when it happened the first time. If same failure happened 3 times in one hour, unit stops until repowered. Check whether there is leakage on refrigerant system, or EEV has no action or is blocked. |
| P19 | Too high input voltage protection | If the voltage is detected higher than set value, it activates this protection. Unit recovers automatically in 60 seconds when it comes to normal. Check whether the input voltage is too high, or change driver PCB |

7. Failure code list

| Failure code | Failure list | Possible reasons and solutions |
|--------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P20 | Too low input voltage protection | If the voltage is detected lower than set value, it activates this protection. Unit recovers automatically in 60 seconds when it comes to normal. Check whether the input voltage is too high, or change driver PCB |
| P21 | Too high input current protection | If the current is detected higher than set value, it activates this protection. Unit recovers automatically in 60 seconds when it comes to normal. Check whether the current is too high, or refrigerant is too much, or change driver PCB |
| P22 | Too low input current protection | If the current is detected lower than set value, it activates this protection. Unit recovers automatically in 60 seconds when it comes to normal. Check whether the current is too low, or refrigerant is too little, or change driver PCB |
| P25 | Indoor coil temp. sensor failure in heating | Check whether there is air or dirty inside water system, or water flow rate is too small, or refrigerant system is blocked. |
| P26 | Service Lock | If the service time is up, find installer to unlock it. |
| P27 | Power supply phase protection | Check whether there is wrong phase or there is no voltage on one phase. |
| S01 | Anti-freezing protection in cooling | 1.Check whether set temperature for cooling is too low; whether system has too small water flow rate; check water system especially the filter.2.Check whether system has not enough refrigerant inside by measuring the evaporating pressure. |
| S02 | Too small water flow rate protection | System water flow rate is less than minimum allowable flow rate. Check the water system, especially the filter; check the working status of water pump. |
| S03 | Water flow switch failure | Water flow switch failed to work. Check whether flow switch is broken or not well connected. |
| S04 | Communication failure between operation panel and indoor PCB | Communication failure between operation panel and the indoor PCB. Check the cable connection in between. Communication data lost too much. Check whether communication cable is longer than 30M; whether there has a source of the disturbance nearby the unit. Unit recovers when communication recovers. |
| S05 | Communication failure between operation panel and outdoor PCB | Communication failure between operation panel and the outdoor PCB. Check the cable connection in between. Check whether the last three switches on outdoor power PCB are set to 001; whether last three switches on indoor PCB are set to 001. Unit recovers when communication recovers. |
| S06 | Water outlet temp. too low (Tuo) | Compressor stops if water outlet is lower than 5 °C in cooling mode. Check whether temperature sensor Tc is OK and well connected;whether set water temperature too low;whether system flow rate too small. |
| S07 | Water outlet temp. too high (Tuo) | Compressor stops if water outlet is higher than 57 °C in heating or hot water mode. Check whether temperature sensor Tc and Tw is OK and well connected; whether set water temperature too high; whether system flow rate too small. |
| S08 | Defrost failed for 3 times | System water temperature is too low for defrosting. Please either set the temperature higher, have the back-up heating source connected or close some heating circuit so to let the system has enough high water temperature for a safe defrosting. |
| S09 | Defrost failed | If water outlet temperature is lower than 15 °C during defrosting, water may freezing up in the plate heat exchanger and cause damage, so unit will quit current defrosting mode. It will try again in next defrosting cycle but if it continuously failed to make the defrosting for 3 times, it shows S08 failure code and can only be restarted by repower the unit. Please either set the temperature higher, have the back-up heating source connected or close some heating circuit so to let the system has enough high water temperature for a safe defrosting. |
| S10 | Not enough water flow for 3 times | If “too small water flow rate protection” happens over 3 times in certain period of time, it gives this failure code and unit stops until repower. This failure means the system water flow rate is less than minimum allowable flow rate. Check the water system, especially the filter; check the working status of water pump. |
| S11 | Anti-freezing protection in cooling for 3 times | If “Anti-freezing protection in cooling” happens over 3 times in certain period of time, it gives this failure code and unit stops until repower. 1. Check whether set temperature for cooling is too low; whether system has too small water flow rate; check water system especially the filter. 2. Check whether system has not enough refrigerant inside by measuring the evaporating pressure. |
| S12 | Floor curing failure | If floor curing function can't be finished in the maximum allowable time, it shows this information. Unit will go back to normal working mode, with failure information shown on the display. Failure information can only be erased until repower or start the floor curing function again. |

7. Failure code list

| Failure code | Failure list | Possible reasons and solutions |
|--------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S13 | 4-way valve failure | Check whether the ambient temp. sensor and outdoor evaporator coil temp. sensor are well connected. Check whether the 4-way valve is switched well. |
| S14 | 3-way valve failure | Check whether the DHW temp. and water inlet temp. is correct. Check whether the water flow rate is not enough in hydraulic system. Check whether the hydraulic system is blocked. Check whether the 3-way valve is switched well. |
| S15 | Overall water outlet temperature sensor failure | Check whether overall outlet temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| S16 | Overall water inlet temperature sensor failure | Check whether overall inlet temperature sensor is open, short-circuit or value drifts too much. Replace it if necessary. |
| S17 | Outdoor PCB failure | One of outdoor PCB has failure. Pls check the failure code for this outdoor unit, and solve it. |
| S18 | Communication failure of all outdoor PCB | Check whether the communication cable between indoor PCB and all outdoor units are connected well, or replace indoor PCB. |
| S19 | Ambient temp. sensor failure | If ambient temp. of all outdoor units failed, it activates this failure. Check whether ambient temp. sensors of all outdoor units are open, short-circuit or value drifts too much. Replace it if necessary. |
| S20 | All outdoor PCB failure | If all outdoor units stops for 3 times and be locked , it activates this failure. Check failure code for all outdoor units, and then solve it. |

Note 1: For single compressor system, failure code is 3 digits as ***, like P01.

Note 2: For double compressor system, if the failure code is for either one of systems, the failure code has 4 digits, 1*** for system 1, 2*** for system 2. *** means code for each system. for example, 1P01 for system 1, 2P01 for system 2.

Note 3: For double compressor system, for common failure of the whole system, the code is 3 digits, like ***. For example, Water outlet temperature sensor failure is common failure for whole water system, the code will be F16.





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Thank you for choosing our quality product.
Please read this manual carefully before use and
follow the instructions to operate the unit in order
to prevent damages on the device or injuries to staff.

Specifications are subject to change with product
improvements without prior notice. Please refer to the
specification sticker on the unit for upgraded specifications.

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