

Inverter Series

R410A DC INVERTER HEATING PUMP

Installation and Maintenance Instruction Manual

Applicable Model:

SBYN024/A/B

SBYN036/A/B

SBYN048/A/B

SBYN068/A/B

Dear Sir:

In order to use this machine safely, please read this user's manual carefully before using and installation, also keep it for later use. DC inverter split heat pump units is a professional machine, it may cause damage or hazard when wrong installed. Please contact professional service company for installation and help.

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1. FEATURES

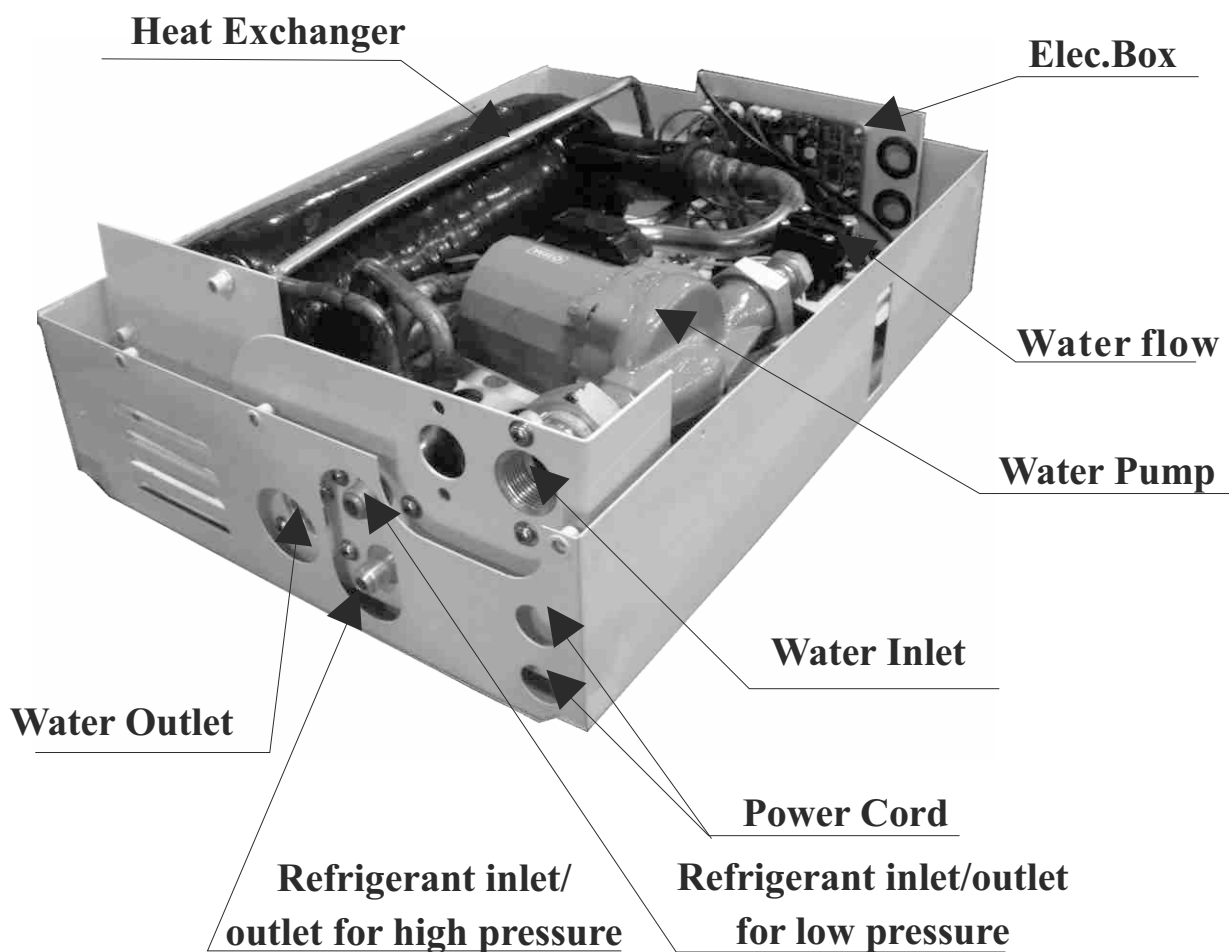
- ⊙ Our DC inverter type heat pump use environmentally friendly refrigerant R410A, which also provides one of the highest energy efficiency ratings in the industry. Compressor frequency changes according to outdoor environmental condition and the users' demands from the system.
- ⊙ LCD wire control panel for easy setting and control.
- ⊙ Special vibration absorbers on the compressor allow operation of the system with ultra low noise from both the indoor and outdoor units, only for small unit
- ⊙ Operational indicators allow the users to monitor the system working status.
- ⊙ Microprocessor is programmed to allow operation under wide range of input voltages from 165V~260V and soft starting with lower current draw at each compressor start-up.
- ⊙ Auto-restart function keeps all settings in memory and automatically resumes the operation after a power failure.
- ⊙ Compressor crank heating belts and outdoor heat exchanger heating belts are available for extreme Nordic conditions, enabling the unit to work in very low ambient temperatures with much lessened defrost frequencies. Both these optional heaters are electronically controlled based on the outdoor ambient temperatures and a sophisticated logic.
- ⊙ Self learning defrost logic constantly monitors the defrosting requirements and automatically adjusts the intervals
- ⊙ Copper tube in shell heat exchanger is made with latest technology-- inner grooved tubing, which extending the area of heat exchange in a more compact coil , and therefore increased the operational efficiency

2.SPECIFICATION

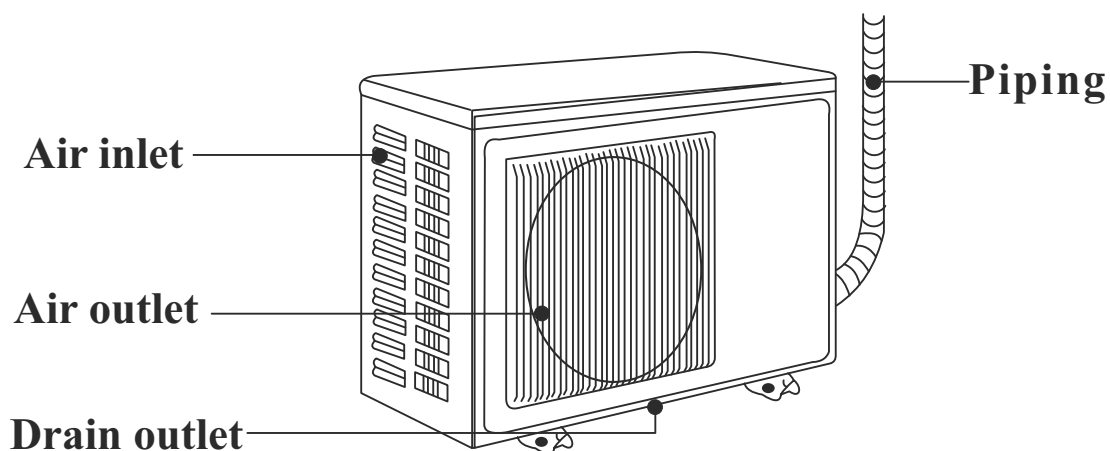
| Model | | | SBYN024/A/B | SBYN036/A/B | SBYN048/A/B | SBYN068/A/B | | |
|------------------------|-----------------------------|-------------------|--------------------|-------------|--------------------|-------------|------|----|
| Function | | | Heating/Cooling | | Heating/Cooling | | | |
| Power supply | | | 220V-240V/1PH/50Hz | | 220V-240V/1PH/50Hz | | | |
| Capacity | Heating capacity | KW/h | 7.35 | 11 | 14 | 20 | | |
| | | BTU/h | 24000 | 36000 | 48000 | 68000 | | |
| | COP | W/W | 2.9-4.5 | 2.9-4.5 | 2.9-4.5 | 2.9-4.5 | | |
| | Cooling capacity | KW/h | 5.15 | 7.7 | 9.8 | 14 | | |
| | | BTU/h | 17600 | 26500 | 33600 | 48000 | | |
| EER | W/W | 2.0-3.5 | 2.0-3.5 | 2.0-3.5 | 2.0-3.5 | | | |
| Electric data | Operation current | A | 7.5 | 11.4 | 14.4 | 20.6 | | |
| | Input power | W | 1630 | 2450 | 3100 | 4450 | | |
| | Efficiency of power supply | % | 98 | 98 | 98 | 98 | | |
| | Starting up current | A | 8.1 | 13.6 | 7.9 | 13 | | |
| | Current of compressor motor | A | 6.6 | 9.1 | 6.4 | 9.5 | | |
| | Input power of fan | W | 90 | 90 | 90*2 | 90*2 | | |
| Quantity of compressor | | | 1 | 1 | 2 | 2 | | |
| Compressor | | | Rotary | Rotary | Rotary | Rotary | | |
| Quantity of fan | | | 1 | 1 | 2 | 2 | | |
| Fan rotate speed | | RPM | 850 | 850 | 850 | 850 | | |
| Water connection | | inch | 1" | 1" | 1" | 1" | | |
| Water flow volume | | m ³ /h | 2.28-4.8 | 2.28-4.8 | 3.0-6.9 | 3.0-6.9 | | |
| Water pressure drop | | kpa | 12 | 12 | 15 | 15 | | |
| Noise | | Outdoor unit | dB(A) | | 48 | 49 | 50 | 52 |
| Net dimension | Indoor unit | L | mm | 580 | 580 | 690 | 690 | |
| | | W | | 430 | 430 | 510 | 510 | |
| | | H | | 220 | 220 | 300 | 300 | |
| | Outdoor unit | L | mm | 880 | 880 | 1115 | 1115 | |
| | | W | | 420 | 420 | 470 | 470 | |
| | | H | | 800 | 800 | 1250 | 1250 | |
| Package dimension | Indoor unit | L | mm | 650 | 650 | 770 | 770 | |
| | | W | | 510 | 510 | 580 | 580 | |
| | | H | | 280 | 280 | 390 | 390 | |
| | Outdoor unit | L | mm | 980 | 980 | 1220 | 1220 | |
| | | W | | 460 | 460 | 480 | 480 | |
| | | H | | 965 | 965 | 1360 | 1360 | |
| Net weight | | Indoor unit | kg | 45 | 45 | 58 | 58 | |
| | | Outdoor unit | kg | 51 | 55 | 107 | 111 | |

3.NAME OF EACH PART

Indoor unit(SBYN024/A SBYN036/A)

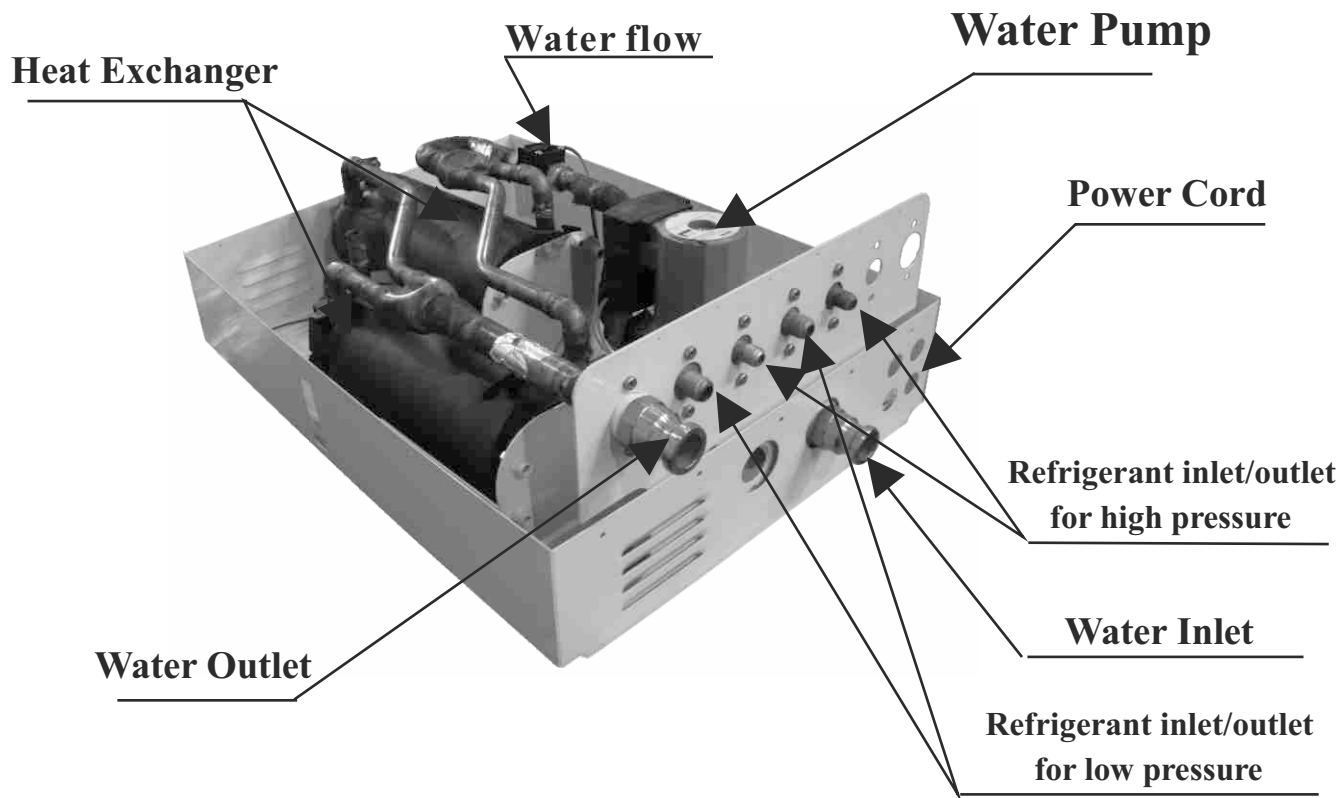


Outdoor unit(SBYN024/B SBYN036/B)

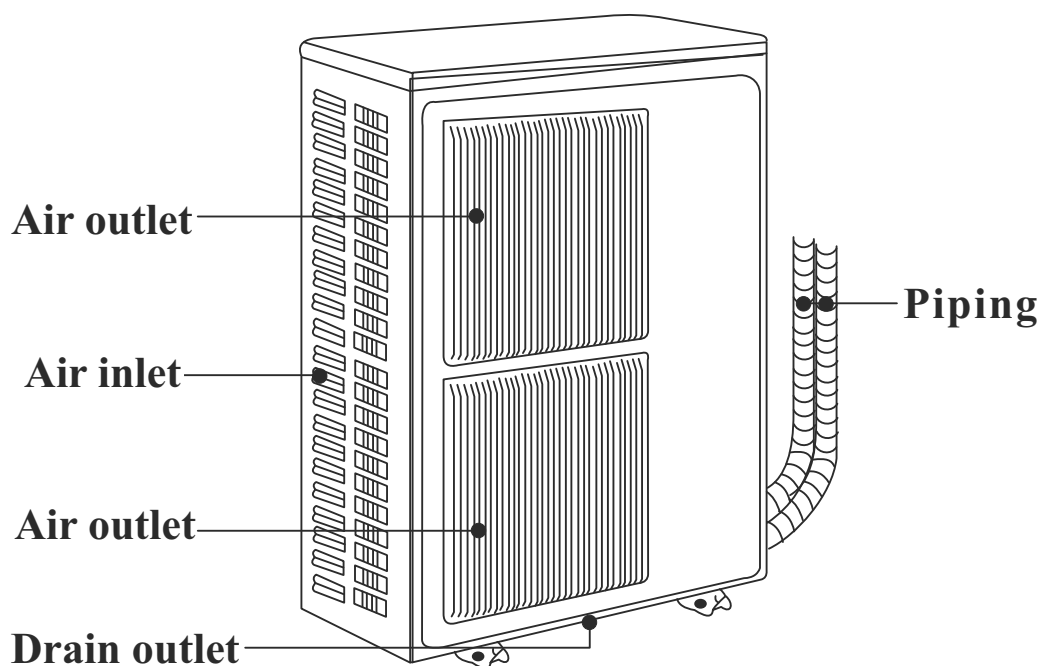


3.NAME OF EACH PART

Indoor unit(SBYN048/A SBYN068/A)

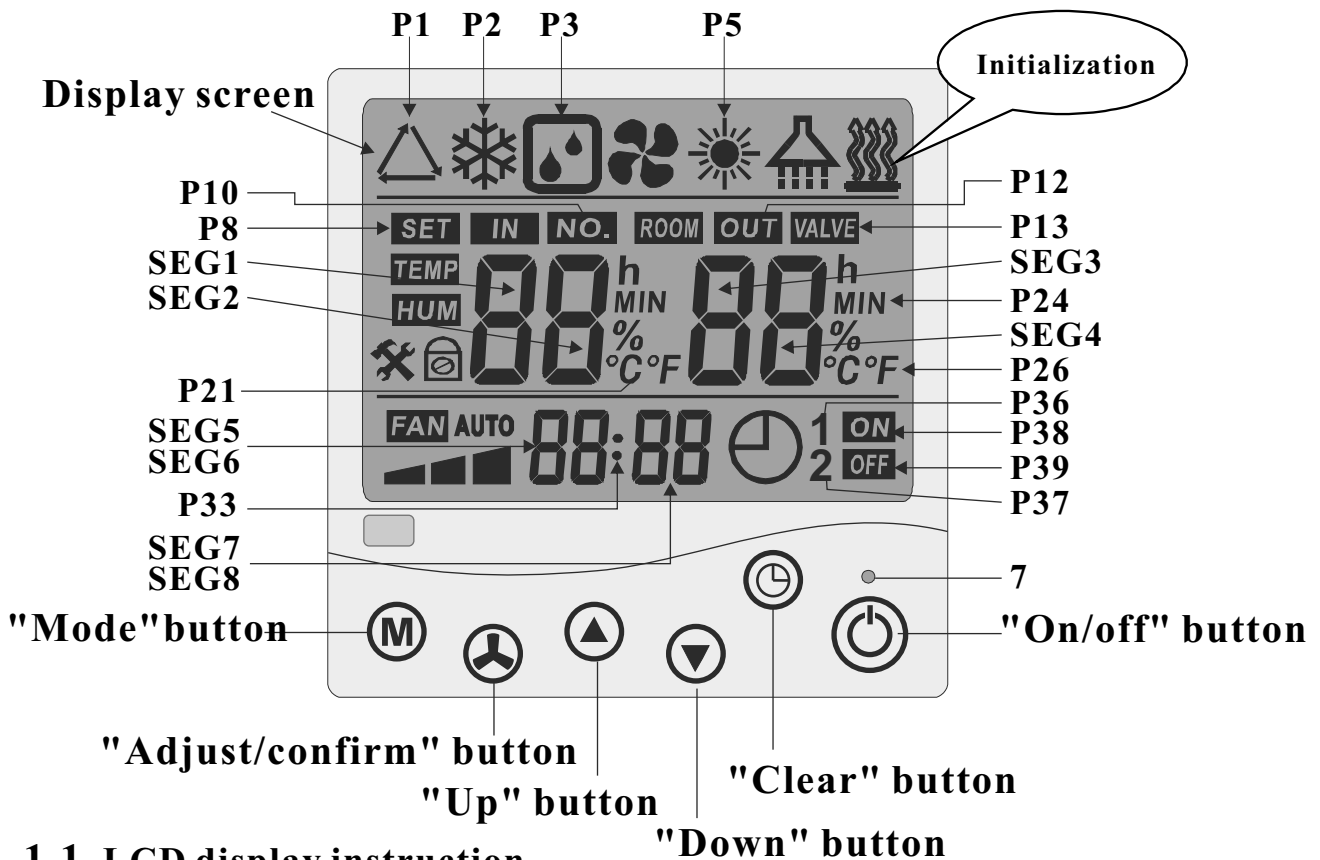


Outdoor unit(SBYN048/B SBYN068/B)



4. WIRE CONTROLLER SETTING INSTRUCTION

1. Wire controller



1.1 LCD display instruction

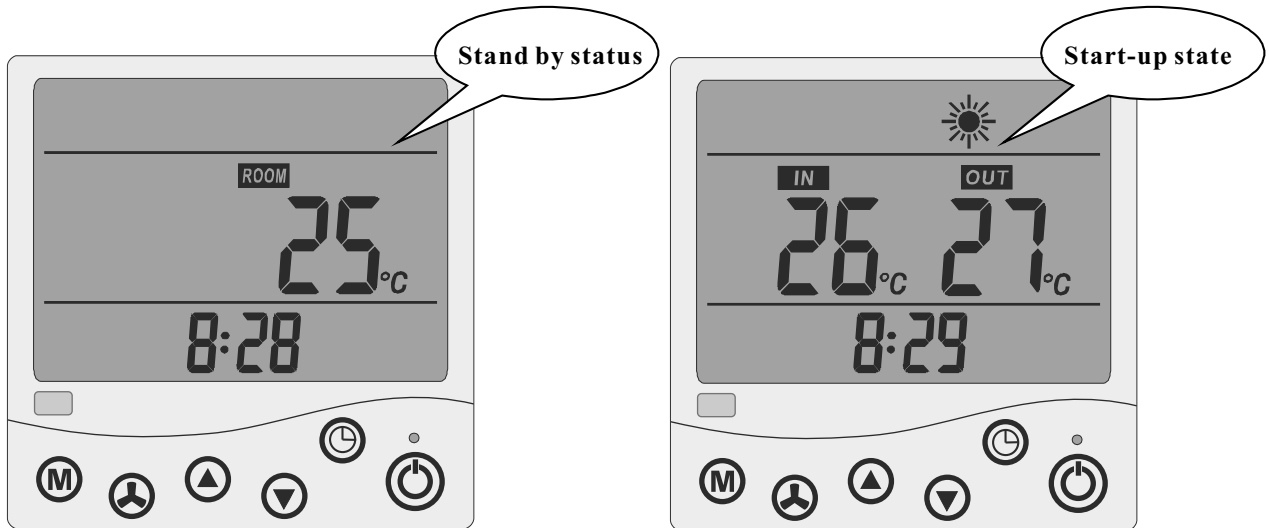
| Display position | Content | Display position | Content |
|------------------|---------------------|------------------|------------------------------------|
| P2 | Cooling mode | P24 | Minute |
| P5 | Heating mode | P26 | Celsius Degree / Fahrenheit degree |
| P10 | Sequence | P36 | "1" |
| P13 | Data value | P37 | "2" |
| SEG1,2 | Temperature display | P21 | Celsius Degree / Fahrenheit degree |
| SEG3,4 | Temperature display | P33 | Clock display |
| SEG5,6 | Hour | P38 | Timing on |
| SEG7,8 | Minute | P39 | Timing off |

Remark: For the icons, that are not used for this heat pump will not display in the setting.

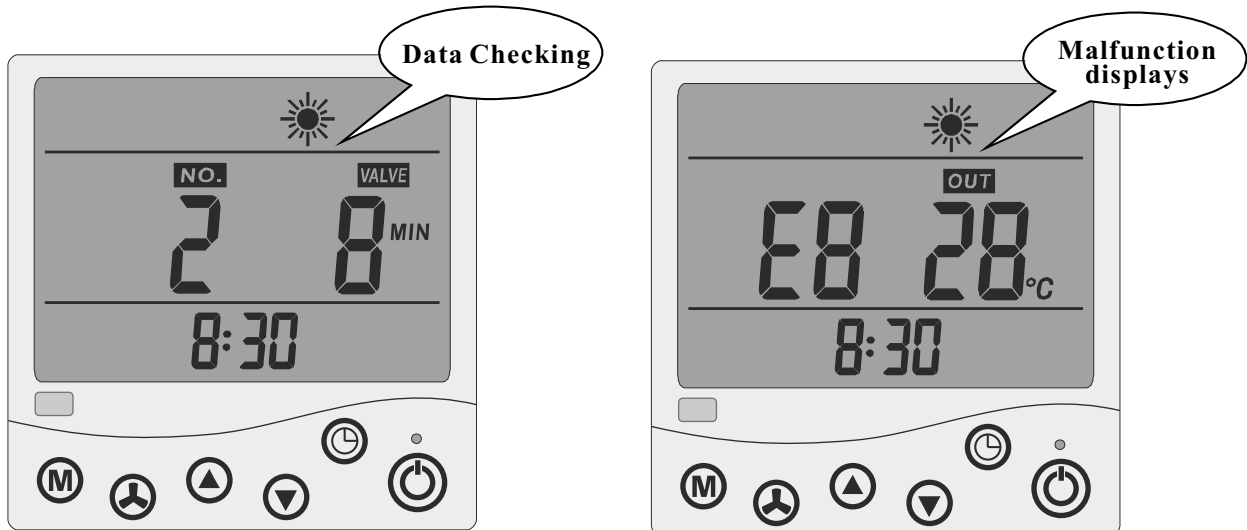
1.2 "7" as indicating light, shows off when heat pump shut off, shows on and green when heat pump turn on, flashing in red when heat pump is malfunctioning

4. WIRE CONTROLLER SETTING INSTRUCTION

1.4 When heat pump is working under start-up state, SEG1、SEG2 display as water in temperature , SEG3、SEG4 display as water out temperature; when the heat pump is off under Stand by status, SEG1、SEG2 do not display and SEG3、SEG4 display as ambient temperature.



1.5 When checking data , P10 & P13 shows on, SEG1 & SEG2 shows data number, SEG3 & SEG 4 display data content; data for temperature value in Celsius degree and P26 shows on ; data for time in minute and P24 shows on.



1.6 When malfunction displays, SEG1 & SEG2 displays malfunction /defect code.

2. Button Operation

2.1 Change Mode

When the heat pump is working under start-up state, press "Mode" will change the setting mode, P2 shows on in cooling mode, P5 shows on in heating mode. Press "Clear" once may change between Celsius degree and Fahrenheit degree .

4. WIRE CONTROLLER SETTING INSTRUCTION

2.2 Temperature Setting

- 2.2.1 When heat pump is working under start-up state, press "up" or "down" to enter temperature setting.
- 2.2.2 During your setting, P8 flash, SEG1& SEG2 display water in temperature, P21 shows on all the time.
- 2.2.3 When stop pressing "up" or "down", setting finished, P8 shows off, SEG1 & SEG2 return the displaying of water in temperature.

2.3 Clock Regulating

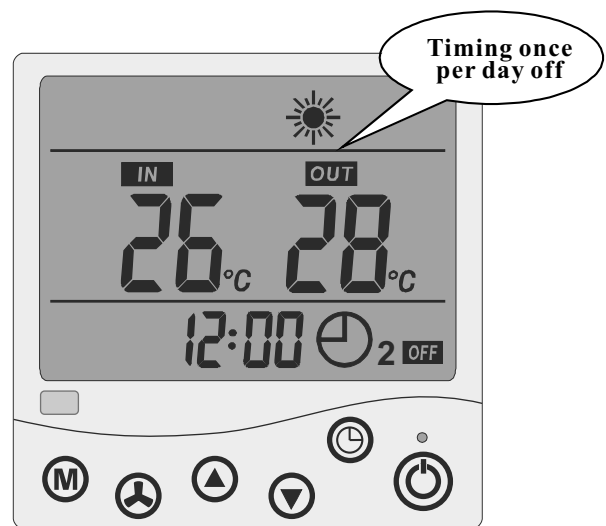
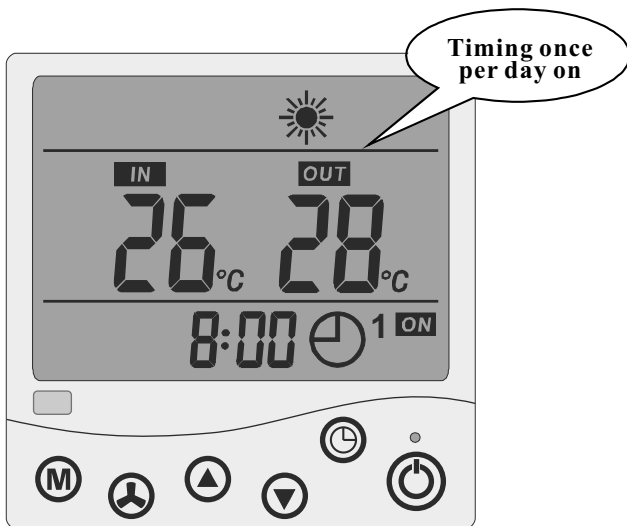
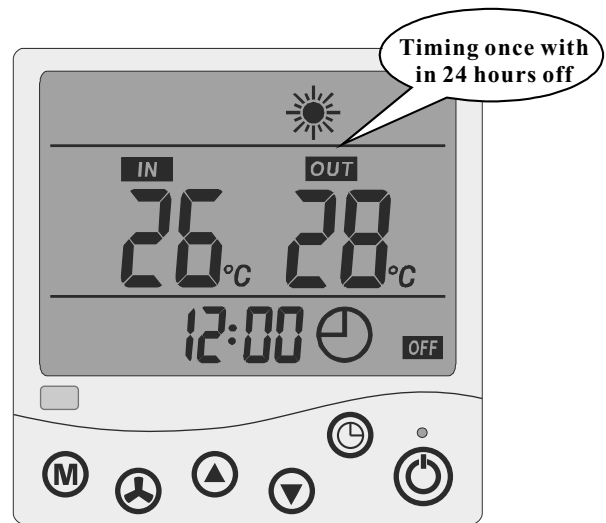
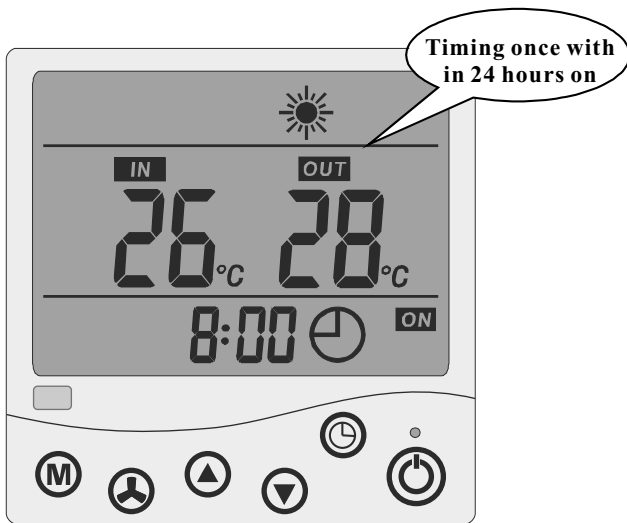
- 2.3.1 Press "Clear" for 3 seconds to enter clock regulating mode, SEG5 to SEG8 & P33 start flashing, you may adjust the clock by pressing "up" or "down"; press "clear", will finish the clock regulating and exit this setting.
- 2.3.2 If not pressing any buttons, you will exit the clock regulating and clock remain no changed.



2.4 Timing Setting

- 2.4.1 Press "Confirm" for 5 seconds to enter timing setting mode, hour area is lightened and P38 flashes, enter timing on setting, you may adjust the time for turning on the heat pump by pressing "up" & "down". After setting finished, press "confirm", P38 stop flashing, P39 flashes, enter timing off setting, setting method is same as timing on.
- 2.4.2 Press "confirm" can enter to timing on setting or timing off setting.
- 2.4.3 In the setting of timing on and press "clear" may choose to set the heat pump on timing "only for once with in 24 hours", display P38, or to set the heat pump timing on "once per day", display "P36, P38"; In the setting of timing off, and press "clear" to choose to set the heat pump on timing "only for once", display P39, or to set the heat pump timing off "once per day" "P37, P39";
- 2.4.4 After setting the timing on or timing off, press "confirm" button to confirm the setting, and save the setting value.
- 2.4.5 Press "Confirm" button for 5 seconds to enter timing on setting, re-press the "Confirm" button may cancel the timing off and exit.
- 2.4.6 If not pressing any buttons within 30 seconds, you will auto exit in 30 seconds.

4. WIRE CONTROLLER SETTING INSTRUCTION



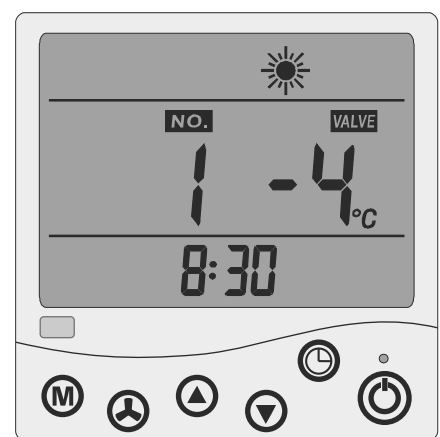
2.5 Data Checking

2.5.1 Press "up" & "down" AT THE SAME TIME for 5 seconds, enter "data checking" mode; At this moment, the LCD panel will display "NO." on the left side, "1" means number 1 data, "VALUE" on the right side means the value of this data.

2.5.2 You may change the data number by pressing either "up" or "down" button to check the relevant data value.

2.5.3 Press "Clear" may exit data checking; if not pressing any buttons within 30 seconds, you will exit Data Checking in 30 seconds.

2.5.4 You may check the data whenever the heat pump is on or off.



4. WIRE CONTROLLER SETTING INSTRUCTION

2.6 Data Adjusting

- 2.6.1** Press "up" & "down" AT THE SAME TIME for 5 seconds constantly, to enter "Data Adjusting".
- 2.6.2** If LCD panel flash on the left side, you may change the data number by pressing "up" or "down".
- 2.6.3** Press "confirm" button, you may change the data value by pressing "up" or "down", press "confirm" button again to save changed value, and return to data number choosing.
- 2.6.4** When you are changing the data, you can exit Data Adjusting by pressing "clear" button.
- 2.6.5** If not pressing any buttons within 30 seconds, you may auto exit Data Adjusting and return normal display mode.
- 2.6.6** Data Adjusting can only be operated under "heat pump off" state.
- 2.6.7 Parameter table:**

| NO. | Content | Range | Duration | Default |
|-----|---|--|----------|-----------|
| 0 | Compressor continuously running time for entering to defrost | 30 ~ 90min | 1min | 45min |
| 1 | Temperature for entering to defrost | -17 ~ 0°C/1~32°F | 1°C/1°F | -4°C/25°F |
| 2 | Defrost time | 1 ~ 12min | 1min | 8min |
| 3 | Temperature to exit defrost | 8 ~ 30°C/46~86°F | 1°C/1°F | 16°C/61°F |
| 4 | Return difference value for starting the compressor | 3 ~ 10°C/33~50°F | 1°C/1°F | 5°C |
| 5 | Energy saving frequency | 40-55Hz | 1Hz | 45Hz |
| 6 | Hot water temp setting | 26 ~ 45°C | 1°C/1°F | 40°C |
| 7 | Cold water temp setting | 12 ~ 25°C | 1°C/1°F | 18°C |
| 8 | Temp.Differential protection range | 0 ~ 30°C/32~86°F | 1°C/1°F | 12°C/54°F |
| 9 | Working mode of water pump | 0: water pump keep working 1: water pump ON/OFF | 0 | 0 |
| 10 | LO: When the unit is on, when power suddenly cut off, whether to restart or not after power resumption. 1 means yes | 0~1 | 1 | 1 |
| 11 | Reservation | — | — | — |

Note: Among the temperature display, A~H means 10~17.
Fox example -A means -9 °C, H9 means 179°C.

4. WIRE CONTROLLER SETTING INSTRUCTION

2.7 Operational Status Checking

- 2.7.1 Press "M" for 5 seconds, enter "Operational Status checking" mode.
- 2.7.2 At the moment, screen alternately display status "C0" and its relevant data.
- 2.7.3 Press "up" or "down" to adjust the status and its relevant data change accordingly.
- 2.7.4 Press "Clear" once, to enter "Operational Status Checking" mode.
- 2.7.5 Operational Status checking table.



| Status | Content | Measure |
|--------|-----------------------------------|---------------------|
| C0 | Water in temperature | °C |
| C1 | Water out temperature | °C |
| C2 | Ambient temperature | °C |
| C3 | Outside Coil temperature | °C |
| C4 | Air exhaust temperature | °C |
| C5 | Compressor operational frequency | Hz |
| C6 | Compressor current(Once for side) | A/D transform value |
| C7 | Radiator temperature | °C |

Frost Protection Program:

When the heat pump is off, you may detect the water in temperature and outdoor temperature.

| | |
|-------------------------|--|
| First Frost-protection | When $2^{\circ}\text{C} < \text{water in temperature} \leq 4^{\circ}\text{C}$, AND outdoor ambient temperature $\leq 0^{\circ}\text{C}$, enter to First Frost-protection state, the system will auto run the water pump mode. |
| Second Frost-protection | When water in temperature $\leq 2^{\circ}\text{C}$, AND outdoor ambient temperature $\leq 0^{\circ}\text{C}$, enter to Second-protection state, the system will auto start to run in heating mode, until water in temperature $\geq 15^{\circ}\text{C}$, OR outdoor ambient temperature $> 1^{\circ}\text{C}$, exit frost protection. |
| Remark | If outdoor ambient temperature sensor failure, the water in temperature will decide whether to start the frost protection or not. If water in temperature sensor failure, outdoor ambient temperature will decide whether to start the frost protection or not(and only have First Frost- protection) If both outdoor ambient temperature and water in temperature failure, the system will not start frost protection. If the compressor is not working because of system malfunction, enter to First Frost-protection. |

4. WIRE CONTROLLER SETTING INSTRUCTION

2.8 S1 Switch---Second set point

S2 Switch---Long distance demand for heating

S3 Switch---Long distance demand for cooling

Please refer to the wiring diagram for the location of above S1, S2 & S3 switch.

1) Heat pump turns on when S2 or S3 switch has well connected.

While S2 or S3 has connected, suddenly press the off button on the LCD controller. Heat pump will stop for 3 minutes. However, heat pump continues to trun on if S2 or S3 still has been connected after 3 minutes.

2) The Timer function is out of validity either S2 or S3 switch has connected.

3) Heat pump turns off when S2 or S3 switch is disconnected. Meanwhile, need to use LCD controller to turn on/off the heat pump.

4) Second set point available when S1 switch has well connected.

At the same time, water temp set point setting decided by ambient temp, Parameter 6 and Parameter 7. (Both 6 & 7 parameter could be adjusted).

Parameter 6 (maximum setting range 50-60 °C)

Parameter 7 (minimum setting range 20-40°C)

A. When ambient temp < 5°C, set point temp refer to the data of Parameter 6.

B. When ambient temp >15°C, set point temp refer to the data of Parameter 7.

C. When < ambient temp < 15°C, set point temp = Data of Parameter 6-(Data of parameter6- data of parameter 7)/(15-5)*(ambient temp -5).

For example, when ambient temp is 18 deg c, Parameter 6 is 60 deg c, Parameter 7 is 20 deg c.

Then set point temp=60-(60-20)/(15-5)*(18-5)

5)When S1 disconnected, set point temp control by LCD controller.

(Refer to the setting of Parameter 6 (default setting 55° C)

3. Malfunction table

[Note: sensor failure range (≤-50°C or ≥90°C)]

| NO. | Subject | Indoor unit LED Display | Malfunction | Explanation |
|-----|---|-------------------------|---------------------------|---|
| 1 | Wire controller communication failure | E0 | | Problem with the communication between wire controller and indoor unit |
| 2 | Outdoor power failure | E1 | Wait for power resumption | Outdoor power voltage failure |
| 3 | Water inlet temperature sensor | E2 | Unit do not run | Water inlet temperature the thermistor shorted or opened. |
| 4 | Water outlet temperature sensor | E3 | Unit still runs | Water outlet temperature thermistor shorted or opened |
| 5 | Outdoor coil temperature sensor | E4 | Unit do not run | Outdoor coil thermistor shorted or opened |
| 6 | Outdoor high/low pressure protection | E5 | Unit do not run | |
| 7 | Outdoor mould sensor failure/high temp protection | E6 | Unit do not run | Outdoor radiator temperature sensor shorted or opened |
| 8 | Water flow failure | E7 | Unit do not run | When the water pump is running, flow switch continuously off for 10 seconds |
| 9 | Communication failure | E8 | Outdoor unit do not run | Connect to power supply, communication signal will stop for 30 seconds. |
| 10 | Compressor start or operation failure | E9 | Outdoor unit do not run | |
| 11 | Outdoor unit over-current | EA | Outdoor unit do not run | Outdoor unit frequently current protection |
| 12 | Compressor air exhaust temperature sensor | EB | Unit do not run | Compressor air exhaust thermistor shorted or opened |
| 13 | Ambient temperature sensor | EC | Unit do not run | Ambient temperature thermistor shorted or opened |
| 14 | Outdoor module over-heating, over-current | ED | Outdoor unit do not run | |
| 15 | Outdoor air exhaust over-heating protection or compressor over heating protection | EE | | |
| 16 | Outdoor coil over heating | EF | | |

4.WIRE CONTROLLER SETTING INSTRUCTION

4. Malfunction & Solutions

4.1 Temperature Sensor failure

4.1.1 Once any of the temperature sensor failure happened (excluded the water outlet sensor), please stop the unit.

4.1.2 After temperature sensor working normal, unit resume for operation.

4.2 Water flow failure

4.2.1 When water pump works and the flow switch continuously off for 10 seconds, it shall be water flow failure.

4.2.2 Once water flow failure happened, compressor and water pump stopped at once and malfunction code appears, malfunction code will be cleared after power resumption.

5.Indicating lights on electric control board.

5.1 For convenient maintenance, there are 2 LED lights on outdoor board.

5.2 LED1 is communication and defrost indicating light.

Normally, when outdoor unit receive signal from indoor unit, LED1 will flash regularly, when the system is performing defrost function, LED1 will be on for long time.

5.3 LED2 is malfunction indicating light . For normal operation, LED2 is off. If there is any malfunction, different malfunction will make LED2 flash differently.

5.4 LED3 is power indicating light. When it is on, then storage capacitor is electrified. When the unit cut off power, the electric charge from storage capacitor will take some time for discharge, maintenance shall not begin until the LED3 is off !

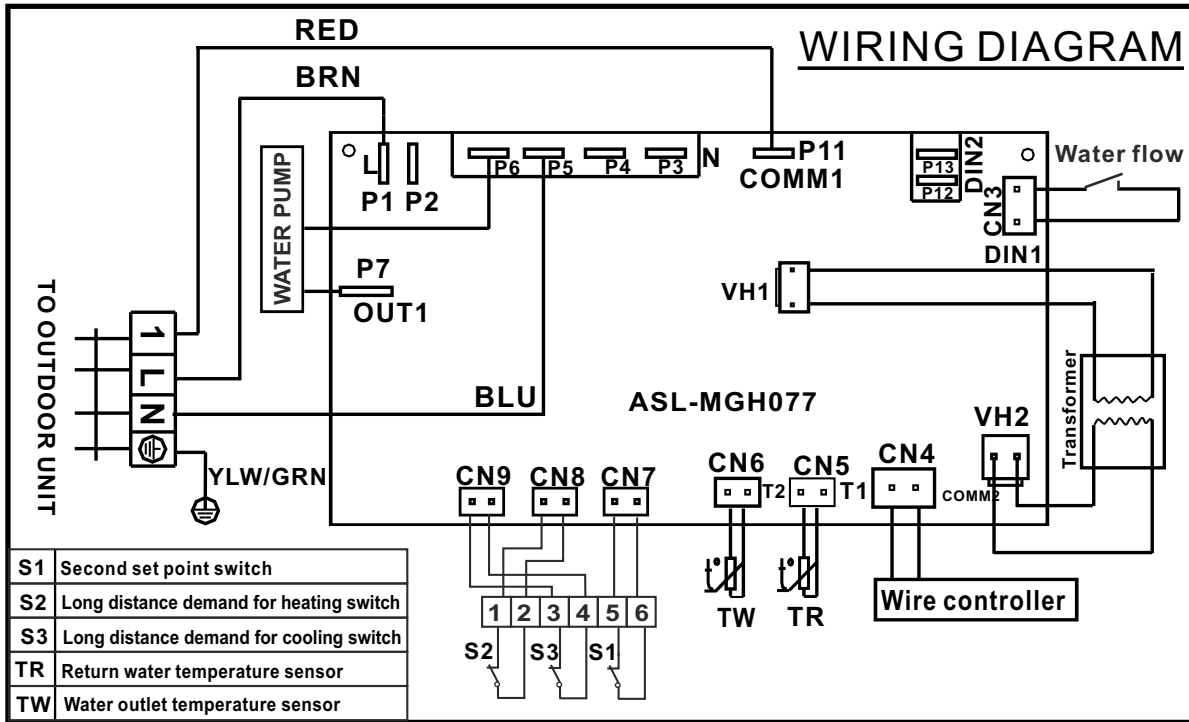
4. WIRE CONTROLLER SETTING INSTRUCTION

| NO. | Malfunction reason | LED2 display | Malfunction symptom | Detecting Method |
|-----|---|--------------|---|--|
| 1 | Voltage protection | 1 flash | Compressor stop | When DC voltage is lower than 226/175V(compressor: stop/run) , stop the compressor; after voltage return to normal , restart the unit. |
| 2 | High voltage protection | 2 flash(es) | Compressor stopped for 3 minutes and then restart | |
| 3 | Ambient temperature sensor | 3 flash(es) | Unit stop | Ambient thermistor is shorted or opened. |
| 4 | Reservation | 4 flash(es) | | |
| 5 | Reservation | 5 flash(es) | | |
| 6 | System coil A or air exhaust temperature sensor failure | 6 flash(es) | Unit stop | System coil A or air exhaust thermistor is shorted or opened. |
| 7 | System coil B or air exhaust temperature sensor failure | 7 flash(es) | Unit stop | System coil B or air exhaust thermistor is shorted or opened. |
| 8 | Electricity sensor failure | 8 flash(es) | Unit stop | Electricity sensor damaged or not inserted to detecting wire |
| 9 | Low voltage protection | 9 flash(es) | Compressor stopped for 3 minutes and then restart | Cut off power to protect the switch ; after voltage return to normal, resume operation. |
| 10 | Air exhausting temperature over heating protection | 10 flash(es) | Compressor stopped for 3 minutes and then restart | When air exhaust temperature is over 109°C and last for 10 seconds, compressor stop running ; after 3 minutes(temperature is lower than 90°C) restart. |
| 11 | Unit electricity protection | 11 flash(es) | Compressor stopped for 3 minutes and then restart | If this happened 4 times within 30 minutes, the unit will stop running. |
| 12 | System driver module over-current ,over-heating or undervoltage protection | 12 flash(es) | Compressor stopped for 3 minutes and then restart | If this happened 4 times within 30 minutes, the unit will stop running. |
| 13 | System B drive module over-current ,over-heating or undervoltage protection | 13 flash(es) | Compressor stopped for 3 minutes and then restart | If this happened 4 times within 30 minutes, the unit will stop running. |
| 14 | System drive module A failure | 14 flash(es) | Unit stop | System drive module A or PCB damaged. |
| 15 | System drive module B failure | 15 flash(es) | Unit stop | System drive module B or PCB damaged. |

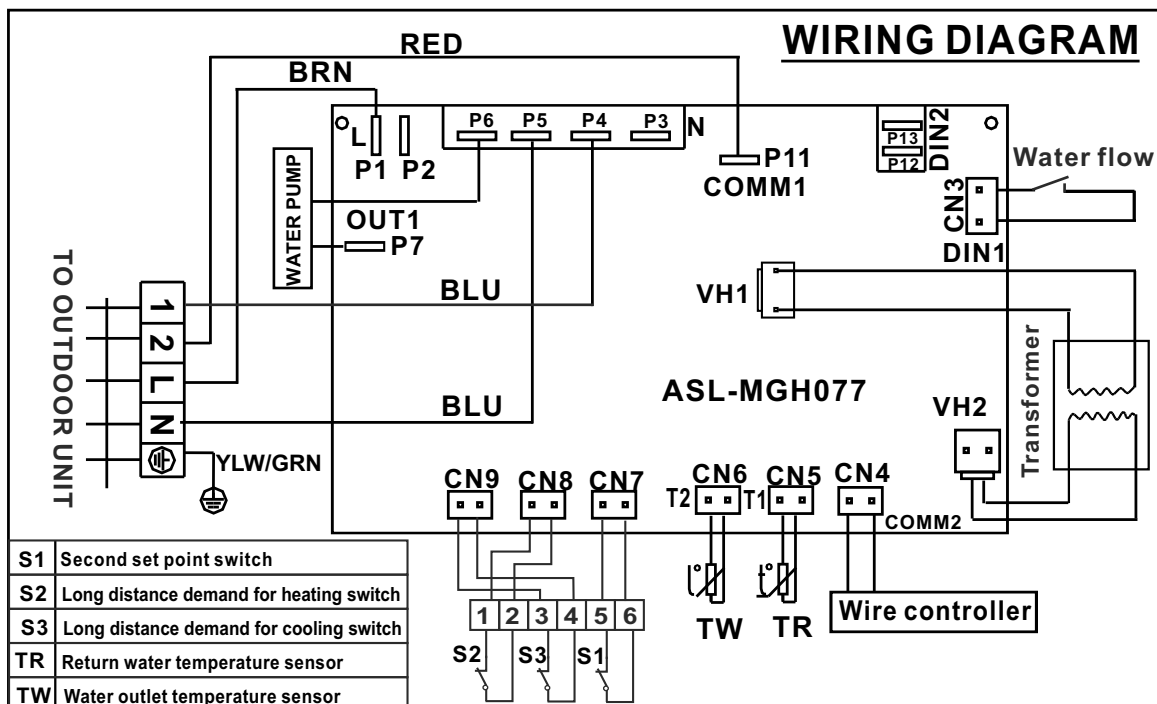
5. WIRING DIAGRAM

Indoor unit

Model: SBYN024/A/B SBYN036/A/B



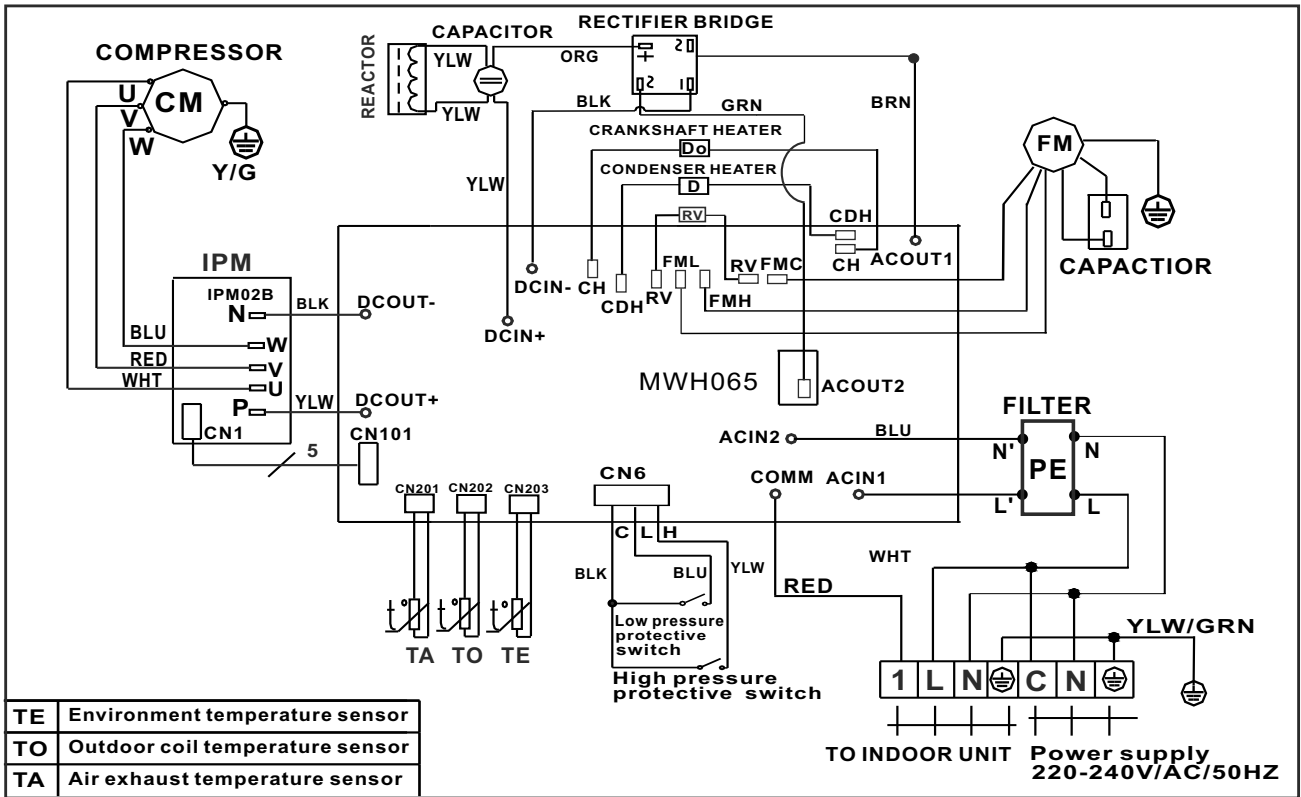
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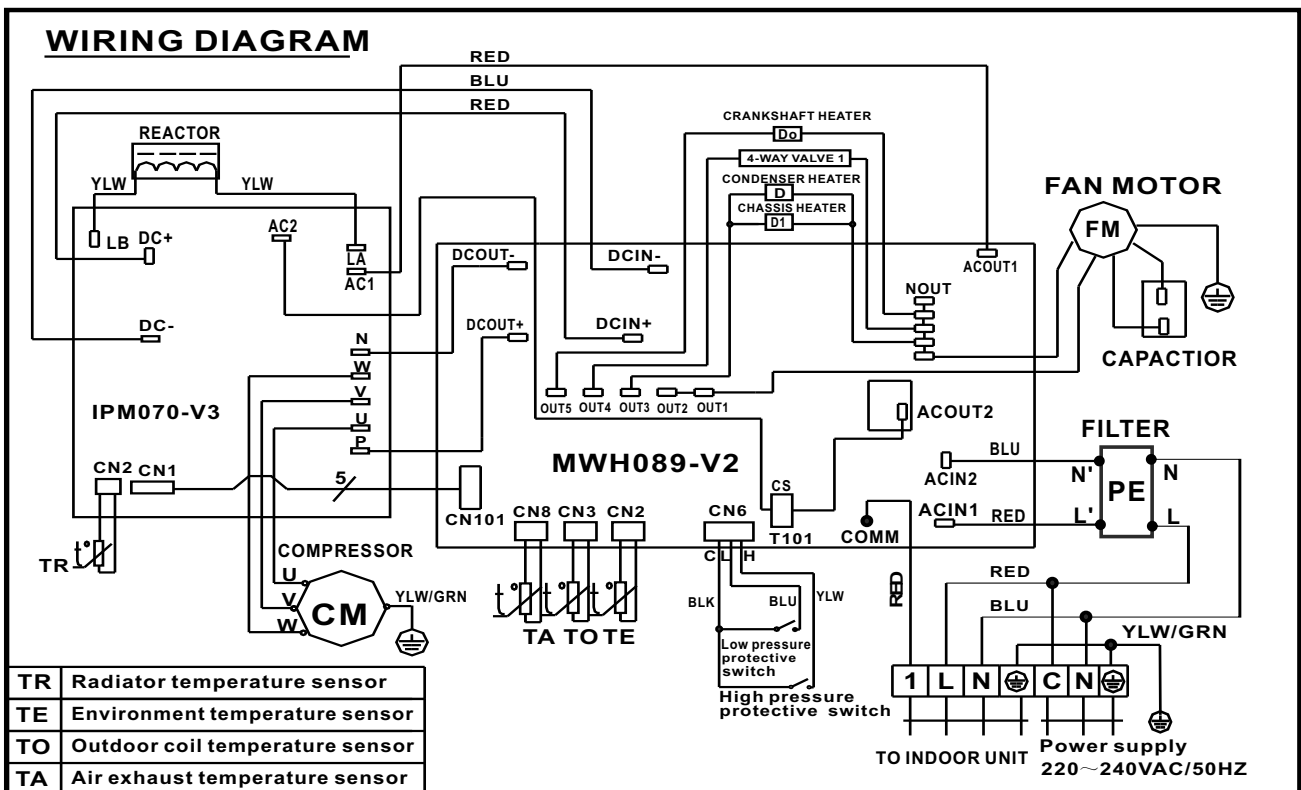
5. WIRING DIAGRAM

Outdoor unit

Model: SBYN024/A/B



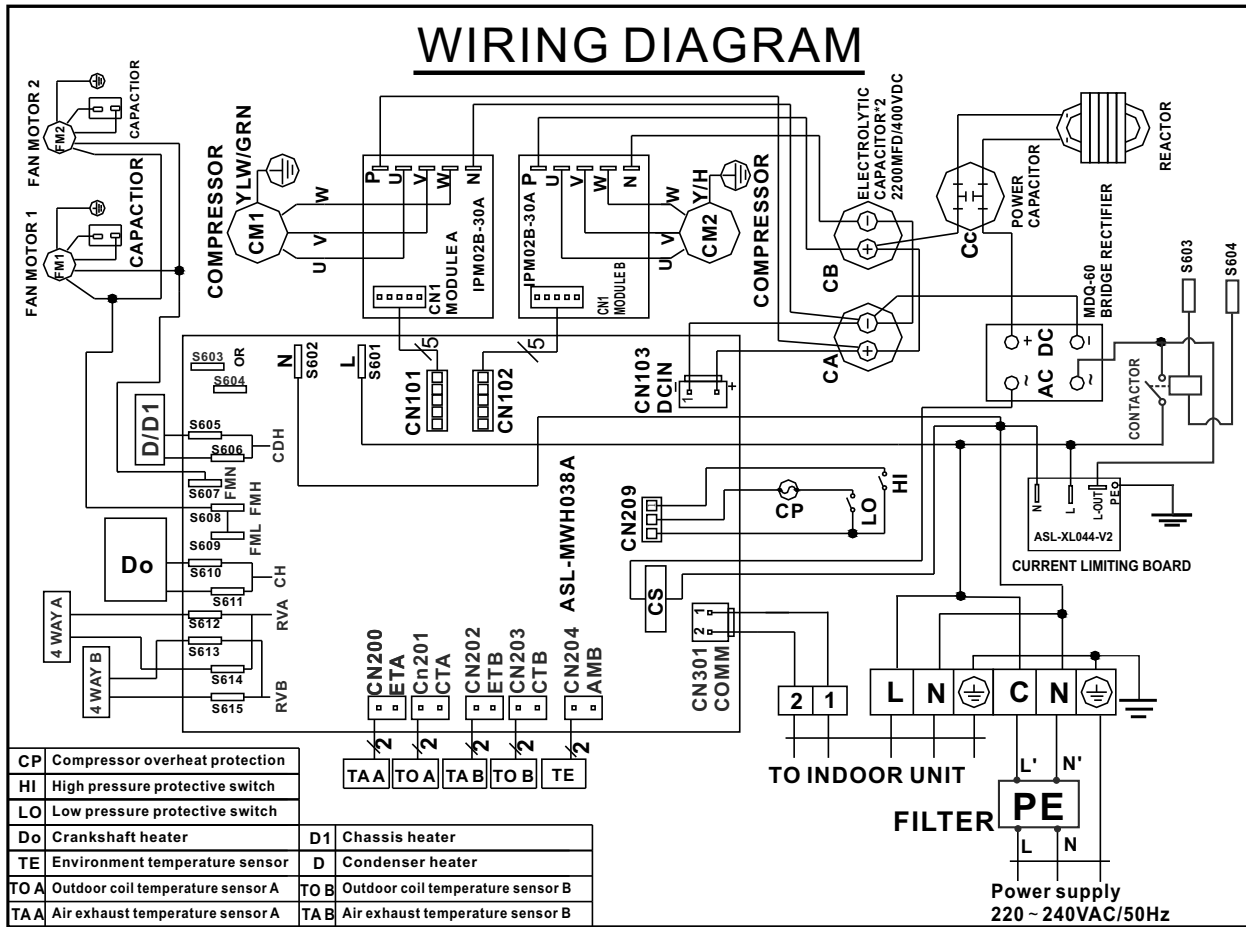
Model: SBYN036/A/B



5. WIRING DIAGRAM

Outdoor unit

Model: SBYN048/A/B SBYN068/A/B



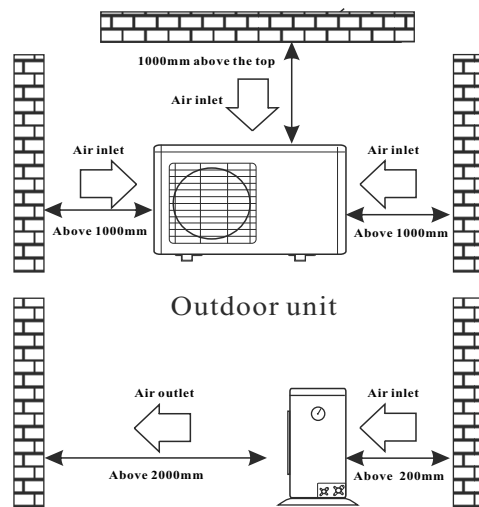
6. INSTALLATION INSTRUCTIONS

Installation instructions

1. Unit installation

1). Installation location Outdoor unit

- ²The outdoor unit installation shall be conform to the same requirement as air conditioner outdoor unit .
- ²Should be installed in a larger & well-ventilated place.
- ²Installation location should ensure unhindered and no access to air outlet (Installation dimension refer to the right pic).
- ²The installation base or bracket should be solid, to ensure the stable operation.
- ²Make sure the unit is vertical after installation, and no incline.
- ²Make sure not to install the outdoor unit in any condition of pollution, corrosive gases, dust and sand , and fallen leaves, etc.
- ²Installation location shall not next to place where is flammable or explosive or have fire.



6.INSTALLATION INSTRUCTIONS

Indoor unit

- ² The installation site shall be connected to the water gutter or waterspout so the unit can drain water easily.
- ² Indoor unit can be installed in the indoor and outdoor walls (based on the size of the indoor unit and the load-bearing capacity of the building, etc.).
- ² Installing base shall be solid to ensure a stable running for the unit.
- ² Do not install the water tank next to pollution or corrosive gas.

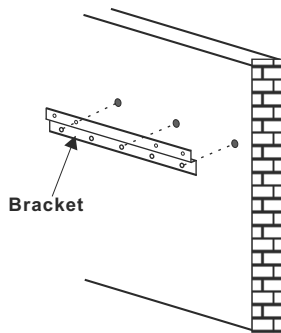
Pressure tank(Note: only an option for customer to buy if necessary.)

- ²Water tank shall be installed in outdoor such as balcony, roof and floor, also can be installed indoor .
- ²Water tank shall be installed vertically, installation site shall be solid and able to bear 500KG weight. Can NOT be hung on the wall.
- ²Valves shall be added around water tank and the connections on return water and hot water supply .
- ²Do not have water tanks installed in the pollution, corrosive gases place.

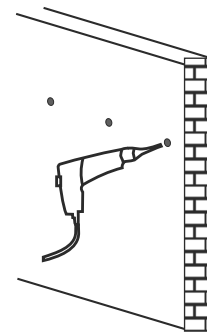
2).Unit installation

- ²Units base can be installed as cement concrete structures, steel brackets can also be used, add the shockproof rubber pads , make the base surface flat.
- ²Units can be designed based on the working performance.(See Table of technical performance parameters)
- ²Fix the unit by bolts at the bottom of unit.
- ²There shall have Draining gutter or waterspout on the floor .
- ²Normally required to install in the place where setted cement concrete base.

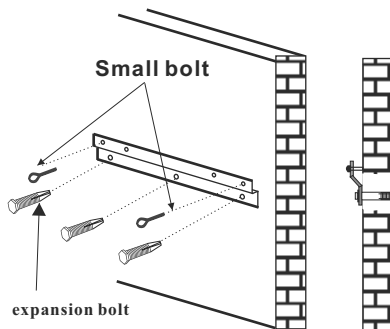
★ Indoor unit installation



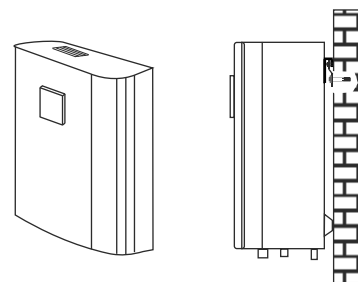
1. Use the bracket to mark the position of the indoor unit on the wall.



2. Drill the holes on the wall.



3. Insert the expansion bolts (3pcs, M8) into the holes. Then fix 2 small bolts on the above small holes.



4. Hang the indoor unit on the bracket.

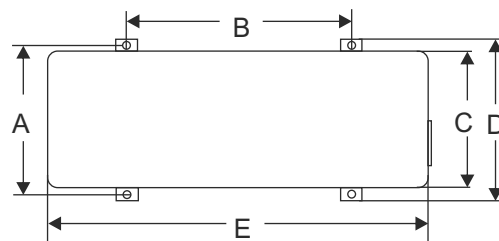
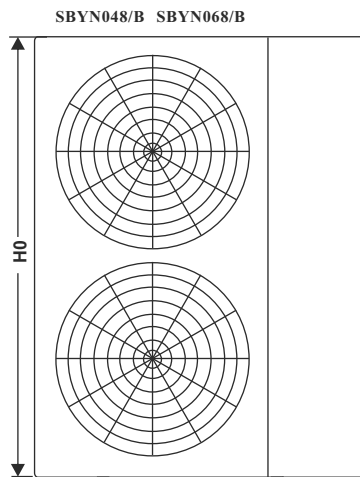
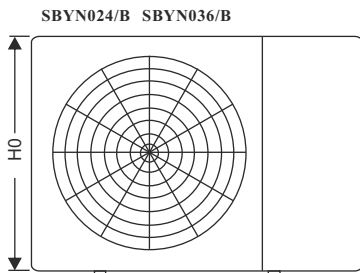
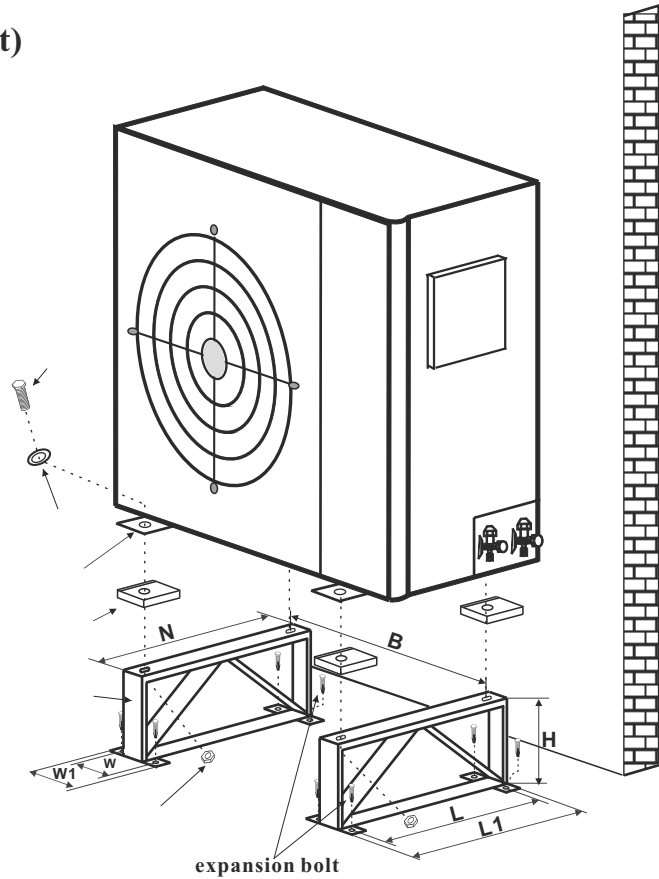
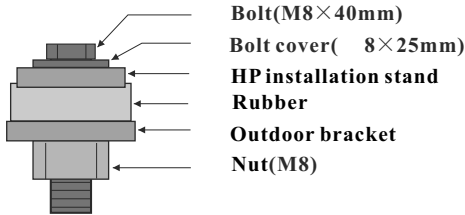
6.INSTALLATION INSTRUCTIONS

★ Outdoor unit installation

1. Mark the location of brackets as per model size. (Reference to size B).
2. Make sure the 2 stainless steel brackets are well fixed.(Fix 8 screws on the floor.)
3. Let the rubber cover the HP installation stand.(4 pcs rubber for each unit)
4. Carry the hp outdoor unit on the brackets,and insert the bolt. (4 pcs bolts for each unit)
5. Fasten the nut. (4 pcs nuts for each unit)

Dimension of outdoor bracket Measure: mm

| Model Size | SBYN024/B SBYN036/B | SBYN048/B SBYN068/B |
|---------------|------------------------|------------------------|
| L | 400 | 460 |
| L1 | 430 | 490 |
| H | 300 | 300 |
| W | 85 | 85 |
| W1 | 110 | 110 |
| N | 380 | 440 |
| B | 541 | 760 |



Dimension of outdoor unit Measure: mm

| Model Size | SBYN024/B SBYN036/B | SBYN048/B SBYN068/B |
|---------------|------------------------|------------------------|
| A | 380 | 440 |
| B | 541 | 760 |
| C | 366 | 427 |
| D | 410 | 470 |
| E | 897 | 1117 |
| H0 | 800 | 1250 |

6.INSTALLATION INSTRUCTIONS

2.System Copper tubing connections.

Note: NOT to twist the copper tubing, MUST NOT have fractures.

- 1).Drill a ϕ 70 hole through the wall between indoor unit and outdoor unit .
- 2).Take off the indoor connecting pipe caps and connect them to the indoor pipes.
- 3).Take off the outdoor unit high and low pressure pausing valve caps(picture 3) and connect the relevant pipes .

3.System pipeline evacuation.

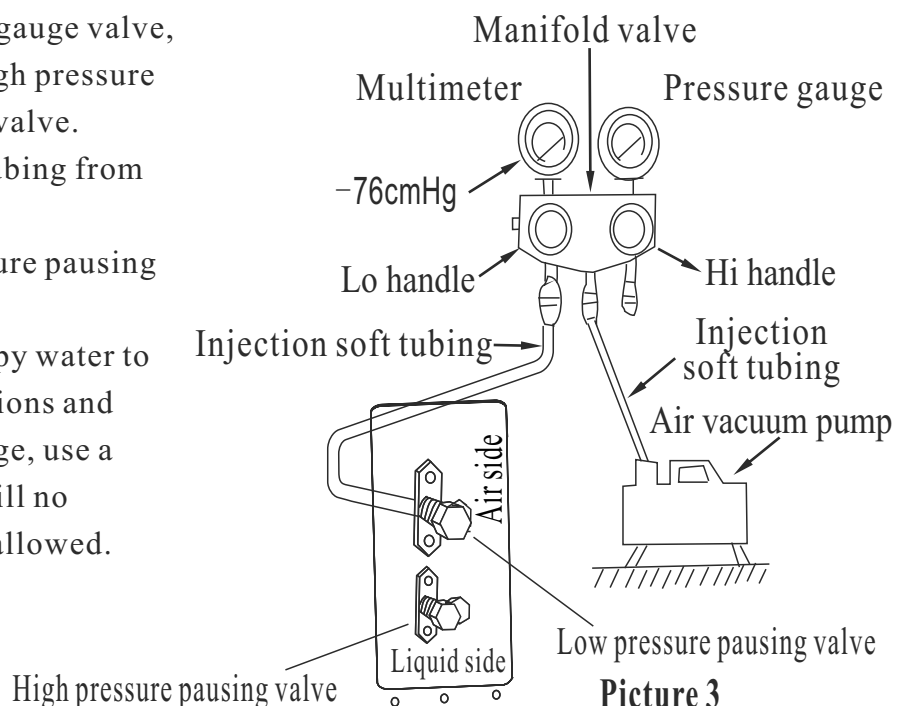
Note: after the connections for indoor and outdoor units, indoor units and connecting pipes SHALL be emptied by a air vacuum pump. Otherwise the air that contains water will enter into system and cause abnormal for the compressor.

When using the vacuum pump(each low pressure pausing valve shall perform below actions)

- 1) Inject the manifold valve with soft tubing and connect to low pressure pausing valve injection hole.
- 2) Connect the injection soft tubing and the vacuum pump .
- 3) Completely open the manifold valve lo(low pressure) handler.
- 4) Start the vacuum pump for air vacuuming. At the beginning, slightly loose the low pressure pausing valve screw , check if any air go inside(the vacuum pump noise will change , millimeter indicator change from minus to 0. and then tightly screw the nut.
- 5) After the air vacuuming finished, completely close the manifold valve lo low pressure) handler, stop the air vacuuming pump .

(Air vacuuming shall last at least 15 minutes, and make sure that the millimeter indicates -1.0×10^5 Pa(-76 cmHg).

- 6) Thightly close the pressure gauge valve, and completely open the high pressure and low pressure pausing valve.
- 7) Remove the injection soft tubing from the low pressure pausing
- 8) Thightly screw the low pressure pausing valve cap.
- 9) Leakage check: Use the soapy water to check each tubing connections and screws, if there is any leakage, use a spanner to tight it closed utill no leakage. NO LEAKAGE is allowed.



6.INSTALLATION INSTRUCTIONS

4. Water pipe connections

Installation note.

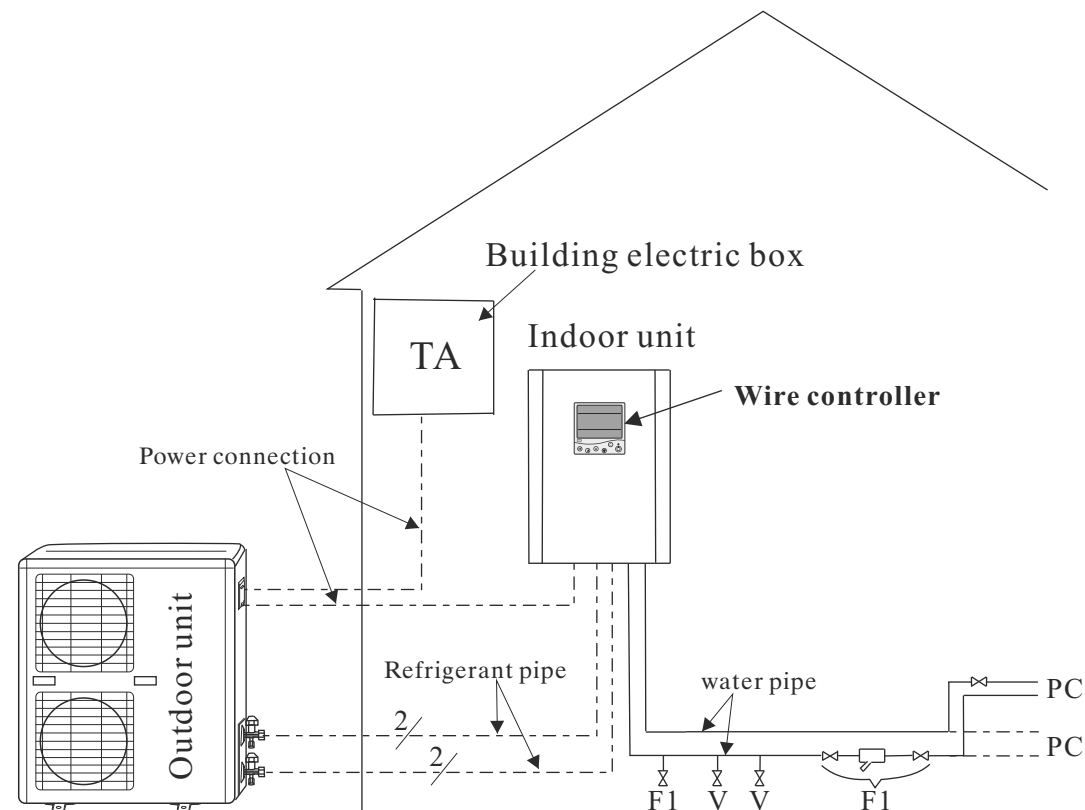
- ⊙ All water connections shall be conveniently for water draining . Drainage valve shall be installed on indoor unit water outlet
- ⊙ User's water pressure shall lower than 0.6Mpa.
- ⊙ All pipelines should choose metal pipe (such as stainless steel, with Lining Plastic and lining stainless steel and thin-walled copper pipe or, etc.). The use of plastic pipe (such as the PP-R, ABS, etc.) should consider the pipeline expansion between the host unit and water tanks .
- ⊙ All system pipelines need to keep warm in the winter (according to the local winter temperature) to avoid the broken of water supply and pause valve.

Water system installation

- ⊙ All the pipeline tubing should be matched as shown on the manual, and in accordance with national corresponding construction standards.
- ⊙ Installation of water pipes should be straight and flat, pipeline collocation should be rational, ensure to minimize bending; reduce the resistance loss of the water system.
- ⊙ Pipeline and connecting parts are not allowed a leakage phenomenon.
- ⊙ After the installation of circulating pipe between tap water pipes, host unit and water tanks ,should carry out water leakage testing, and eject the sewage to ensure the sy stem's cleanness.
- ⊙ If no water leakage, keep the hot water pipe warm.

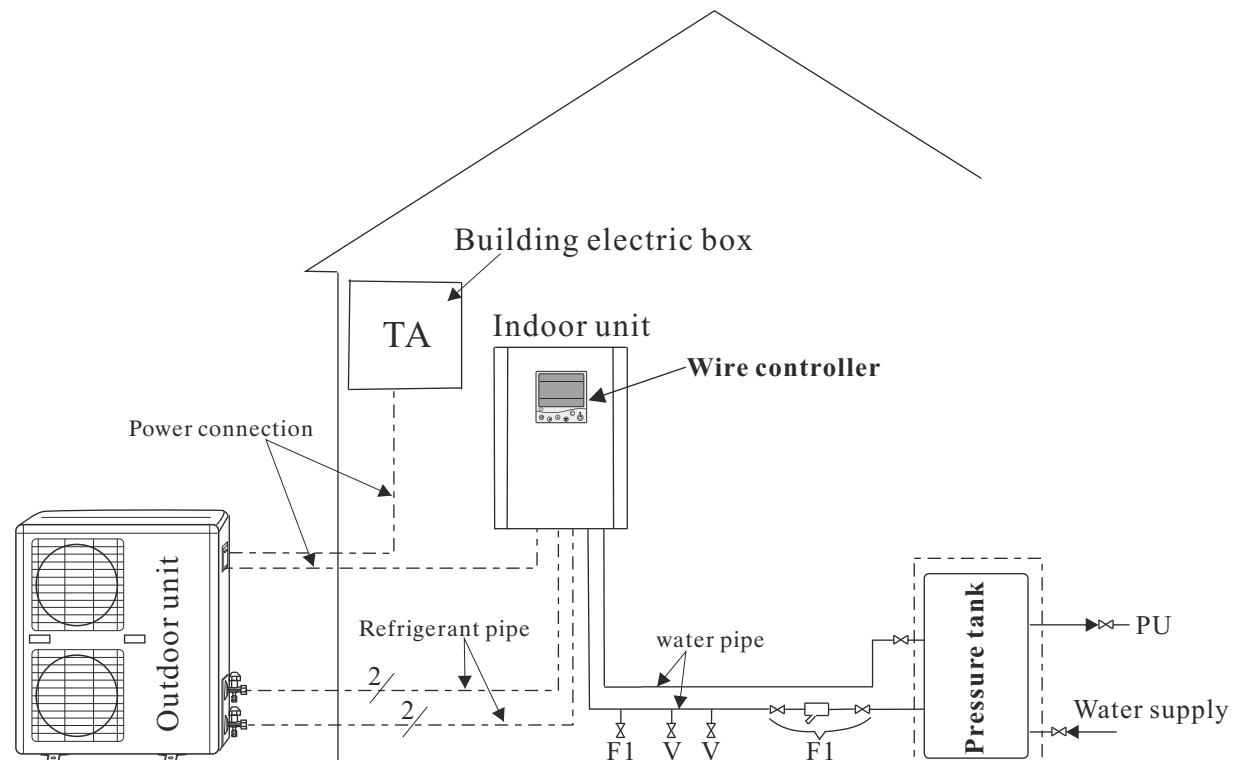
5.Project example:

Application of heat pump water heater engineering systems have different forms. Here are two kinds of stand-alone group water heating system, only for your reference.



6.INSTALLATION INSTRUCTIONS

| Label | Element | Supplied | Observations |
|-------|---|----------|--------------|
| CD | Remote control | Y | |
| F1 | 800 v m fillter with 2 isolation valves | N | |
| PC | Heating floor pipe | N | |
| R | filling | N | |
| TA | Building electric box | N | |
| V | Water draining | N | |
| PU | User (Daily Hot Water,Radiator.....) | | |



Running Test and operation

1. Preparatory work before the running test.

a) Inspection of heat pump water heater units:

- ⊙ Check if the unit appearance and the pipeline system were damaged during transport.
- ⊙ Check if there is air exist in the water pipes, if yes, should empty all the air inside by the manual exhaust valve and the exhaust valve on the water pumps.
- ⊙ Check if the fan motor interference the fan fixing board and fan protection net.

b) Check the electricity distribution System

- ⊙ Check if the power supply same as shown on manual and rating label.
- ⊙ Check if all the power supply and control wiring are all well connected, check if the wiring is connected as wiring diagram and reliability of earth wiring.

c) Check Pipeline system

- ⊙ Check the pipeline system, make sure the water supply pipes, water return pipes, pressure gauges, valves are installed correctly.
- ⊙ Check if having opened all the valves that should be opened, and having closed all valves that should be closed.
- ⊙ Check if all necessary warm preservation are good.

6.INSTALLATION INSTRUCTIONS

2. Running test

The running test must be performed by professional technicians!

Overall test can be run if the entire system inspection is conformed to regulations.

Connected to power, start the heat pump, host unit delays three minutes then auto-start.

For three-phase power supply unit, first check whether the fans and pumps' rotary direction correct or not, if not, immediately shut down the power and adjust phase sequence. Measure the compressor operation current, and if any abnormal noise.

Check whether the unit conform to the requirements, run for a period of time (general 3 days), after that, the unit can be used normally.

3.Normal operation

⊙ Heating process: start up - water pumps runs --fan motor runs-compressor runs

⊙ Operation Control:

1)Compressor running control

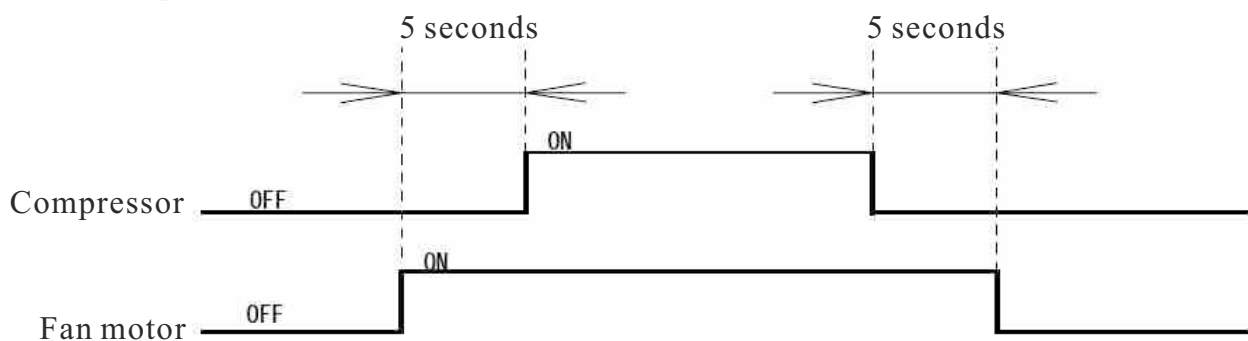
a. Unit will adjust the target frequency according to the ambient temperature, setting temperature and protection function , and to determine to compressor running frequency.

b. Once compressor starts, it is necessary to run at least 1 minutes before you shut it off. (except power cut off)

2)Fan motor control

a. The operation of the fan motor have a connection with the compressor on/off.(time sequence see below)

b. Fan motor starts by 5 seconds earlier than the compressor and turn off by 5 seconds later than compressor.



3) Water pump control

a. The water pump runs as soon as the unit is on; when the unit is off, water pump will not stop running after 10 seconds .

b. Water pump runs when defrosting .

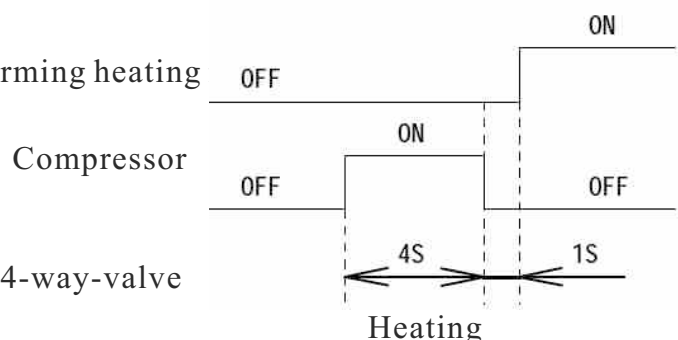
4) 4-way-valve control

a. 4-way-valve is not electrified when performing heating

b. 4-way-valve change direction for 4 seconds before compressor starts.

c. 4-way-valve is electrified when defrosting.

d. When the unit off, if 4-way-valve is still 4-way-valve electrified, then it will delay for 3 minutes before shutting off.



7.MAINTENANCE

Maintenance

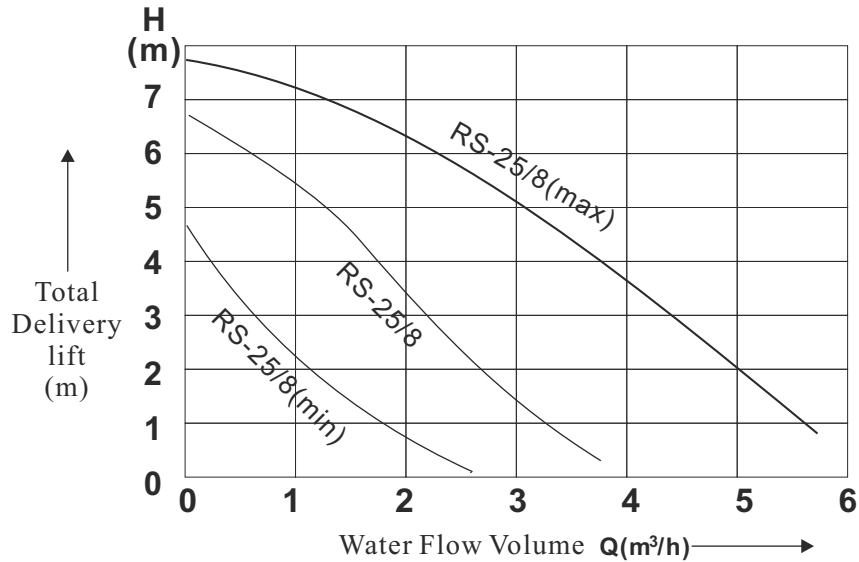
DC inverter split heat pump units are hi-automatic equipments, please perform regular inspection termly . If the unit can be **maintained efficiently** in a long-term , the operating reliability and service life will have an unexpected increase.

- 1.The extra water filters should be cleaned regularly to ensure clean water quality of the system, and to avoid damage caused by dirty water filter blocking.
- 2.Users should pay attention for usage and maintenance to below : all units' protection devices are set up before leaving factory, do not make any adjustment by yourself.
- 3.Frequently check the power supply and electrical wiring system is solid or not, whether electrical components are abnormally working, if yes, should timely **maintained** and change for a new one.
- 4.Perform regular checks of the water supply system, check whether the tank safety valve, liquid level controller and exhaust devices work properly, so as to avoid air into the system, and reduce the water cycle volume, thus affect the heating function and operation reliability.
- 5.Check whether pumps and water valves are **normally** working or not, whether water tubing and water pipes connector are leakage or not.
- 6.The unit and around should remain clean, well-ventilated. Regularly clean (1-2 month)the side air heat exchanger to maintain a good effect of heat exchange.
- 7.Frequently check whether each part of the unit work normal or not, check whether there is oil on the pipeline joints and charging valve to ensure that no refrigerant leakage.
- 8.Do not piling up debris around the unit, so as not to block from air inlet and outlet, the unit around should be kept clean the dry, well-ventilated.
- 9.If the unit stops for a longer time, should drain all the water in the pipeline, cut off power supply, and put on the protective cover. When re-run the unit, complete inspection is a must before reboot.
- 10.When unit failure, and the user can not resolve the problem, please call our Company in local maintenance department, in order to promptly send people for maintenance.
- 11.Host condenser cleaning. We propose to use 50°C-60°C, and 15% hot phosphoric acid for condenser cleaning, launch the circulating pump of the host unit for three hours' cleaning, finally rinse with water three times. (Propose to back up a 3-way connector when installing the pipeline, block one joint),in order to clear the connection pipe. Do not use corrosive cleaning fluid for condenser cleaning.
- 12.Water tanks need to remove the Water scale after some time (normally two months, according to the water quality of local place).

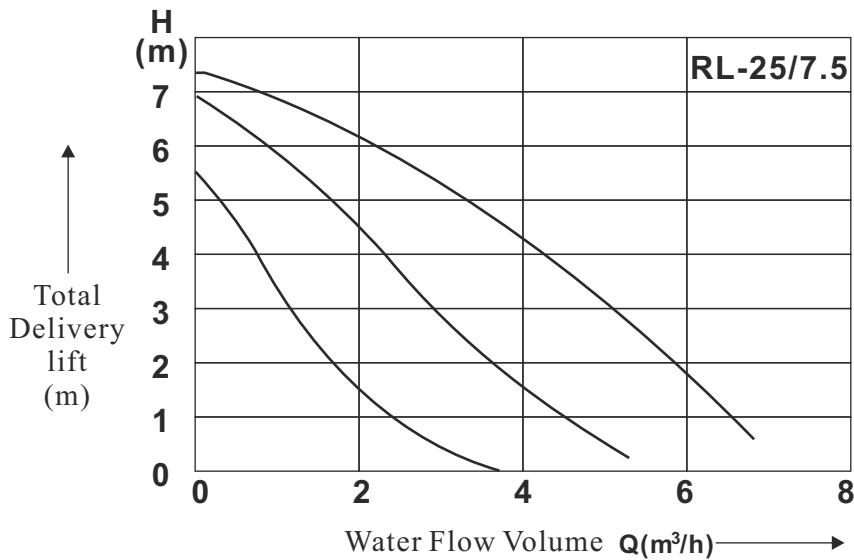
8. ATTACHED SHEET

1. Indoor water pump performance curve

● SBYN024/A/B, SBYN036/A/B



● SBYN048/A/B, SBYN068/A/B



2. Water pump and piping installation notice

| Suction Height | Horizontal piping length |
|----------------|--------------------------|
| 6m | 26m |
| 5m | 37.5m |
| 4m | 49m |
| 3m | 50.5m |

- ※ All the product information has been carefully checked, our company will be free from printing error.
- ※ The actual products may be slightly different from those images shown in this manual.
- ※ Specifications are subject to change without notice for further improvement. Please refer to the name plate on the unit for the updated specifications.