



# Evo Control 17 & 25

## Installation & Operation Manual



Contents

1. Introduction 2

2. Unit Specifications 2

    2.1 Unit Structure 2

    2.2 Dimensions 3

    2.3 Technical Data 4

3. Safety Instructions 5

4. Installation 6

    4.1 Application for Air-Con 6

    4.2 Application for Air-Con and Super Heater (for Hot Water) 6

    4.3 Location of Install & Minimum Clearances 7

    4.4 Plumbing Component 7

    4.5 Electrical Component 7

    4.6 Transit 8

    4.7 Trial Operation 8

5. Operation 9

    5.1 Main Controller Interface 9

    5.2 Functions of the Controller 9

        5.2.1 Using the HELP Button 9

        5.2.2 Starting & Shutting Down 9

        5.2.3 Switching Modes 10

        5.2.4 System State Checking 10

        5.2.5 Changing Temperature 10

        5.2.6 Clock Setting 10

        5.2.7 Timer Settings 11

        5.2.8 Keyboard Lock 12

        5.2.9 Malfunction Display 12

6. Troubleshooting 13

7. Appendix 16

    7.1 Install Sketch Map 16

    7.2 Installation of Automatic Filled-Water 17

    7.3 Installation of Leakage Pressure Valve 17

    7.4 Assistant Heat Source Connection 18

    7.5 Unit Parameters 18

    7.6 PCB Connection 19

    7.7 Cable Specifications 21

8. Maintenance 22

9. Warranty 23



1. Introduction

This manual contains all the necessary information in regard to the installation, troubleshooting, operation and maintenance of this unit. Ensure instructions in this manual are adhered to at all times. Failing to comply with these recommendations will invalidate the warranty. This manual and all others are available for download on our website.

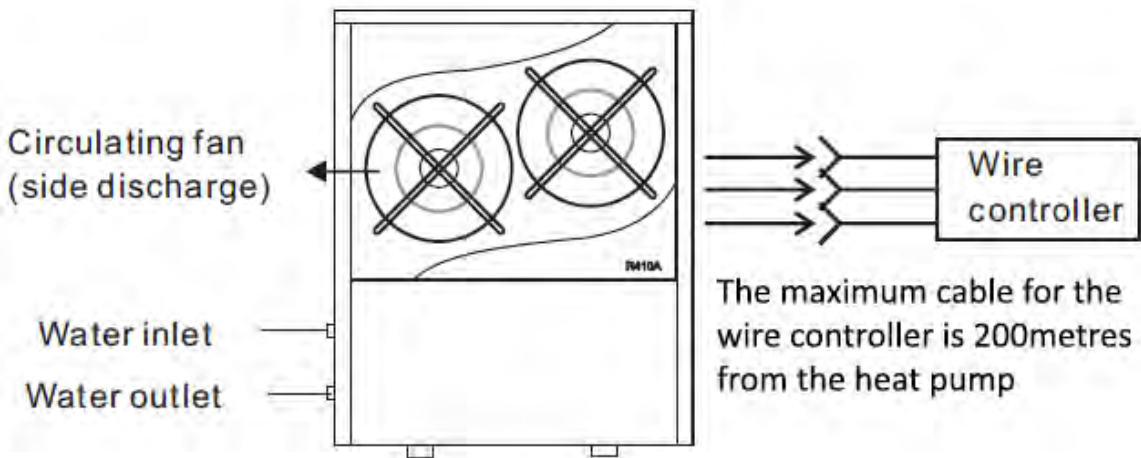


The Evo Control Series air to water heat pump is designed for multiple-use household heating requirements. The Evo Control provides energy efficient space heating/cooling and floor heating - ALL IN THE ONE UNIT!

The Evo Control Series is ideal for domestic space heating/cooling and floor heating.

2. Unit Specifications

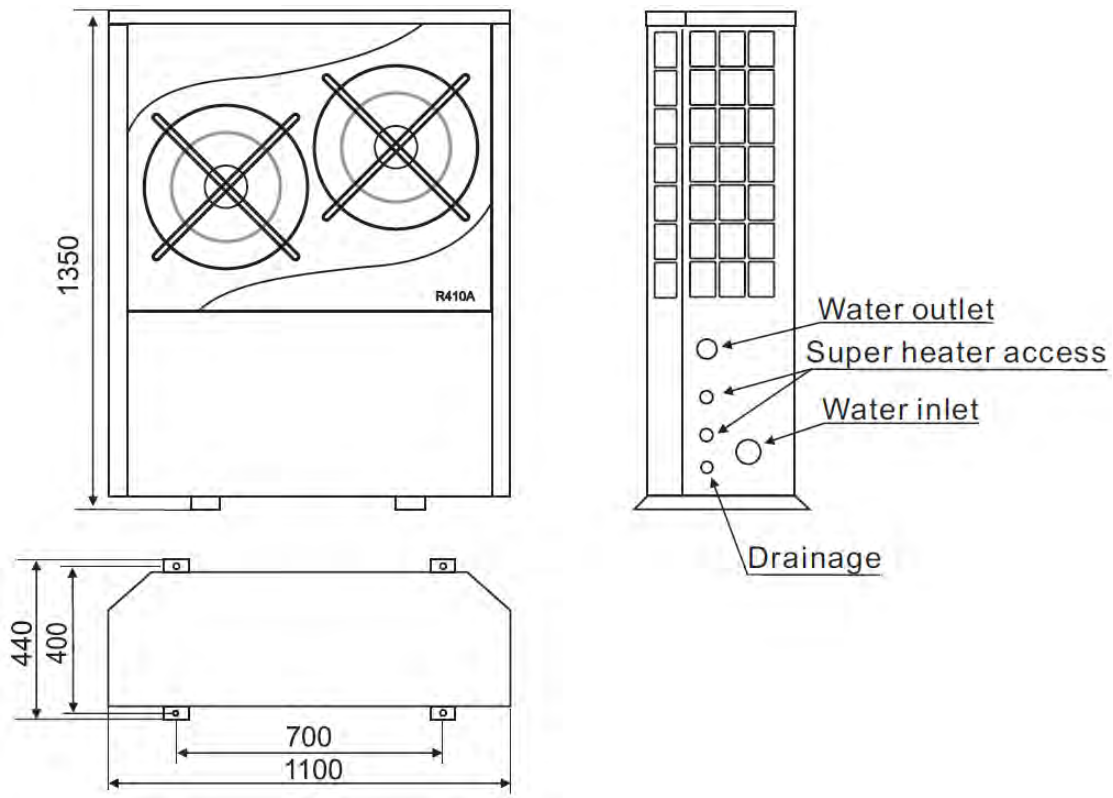
2.1 Unit Structure



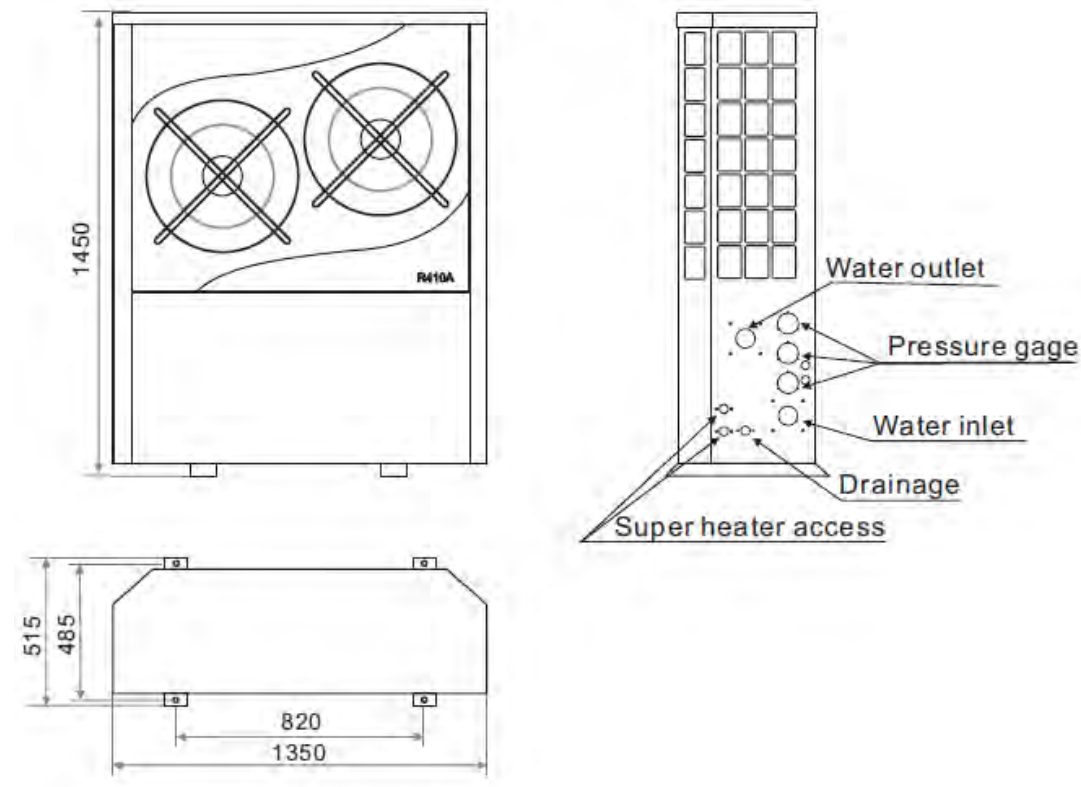


2.2 Dimensions

Evo Control 17



Evo Control 25



## 2.3 Technical Data

|                                   | <b>Evo Control 17</b> |                     | <b>Evo Control 25</b> |
|-----------------------------------|-----------------------|---------------------|-----------------------|
| Cooling Capacity                  | kW                    | 13.5                | 19.5                  |
|                                   | Btu/h                 | 46000               | 67000                 |
| Heating Capacity                  | kW                    | 17.0                | 25.0                  |
|                                   | Btu/h                 | 58000               | 85000                 |
| Cooling Power Input               | kW                    | 4.7                 | 7.0                   |
| Heating Power Input               | kW                    | 4.1                 | 6.0                   |
| Running Current (Cooling/Heating) | A                     | 20.4/17.8           | 12.1/10.3             |
| Power Supply                      |                       | 220-240V~/50Hz      | 400V/3N~/50Hz         |
| Compressor Quantity               |                       | 2                   | 3                     |
| Compressor                        |                       | Rotary              |                       |
| Fan Quantity                      |                       | 2                   |                       |
| Fan Power Input                   | W                     | 120x2               | 200x2                 |
| Fan Rotate Speed                  | RPM                   | 850                 | 750                   |
| Noise                             | dB(A)                 | 56                  | 59                    |
| Hot water volume                  | L/h                   |                     | 57                    |
| Water Pump Input                  | kW                    | 0.2                 | 0.75                  |
| Water Head                        | m                     | 13.5                | 24                    |
| Water Connection                  | Inch                  | 1                   | 1.5                   |
| Water Flow Volume                 | m <sup>3</sup> /h     | 2.8                 | 3.8                   |
| Water Pressure Drop               | kPa                   | 34                  | 36                    |
| Unit Net Dimensions (L/W/H)       | mm                    | See unit drawing    |                       |
| Unit Shipping Dimensions          | mm                    | See package label   |                       |
| Net Weight                        | kg                    | See nameplate label |                       |
| Shipping Weight                   | kg                    | See package label   |                       |

Cooling: Ambient temperature 35°C / 24°C, inter/outlet water temperature: 12°C / 7°C

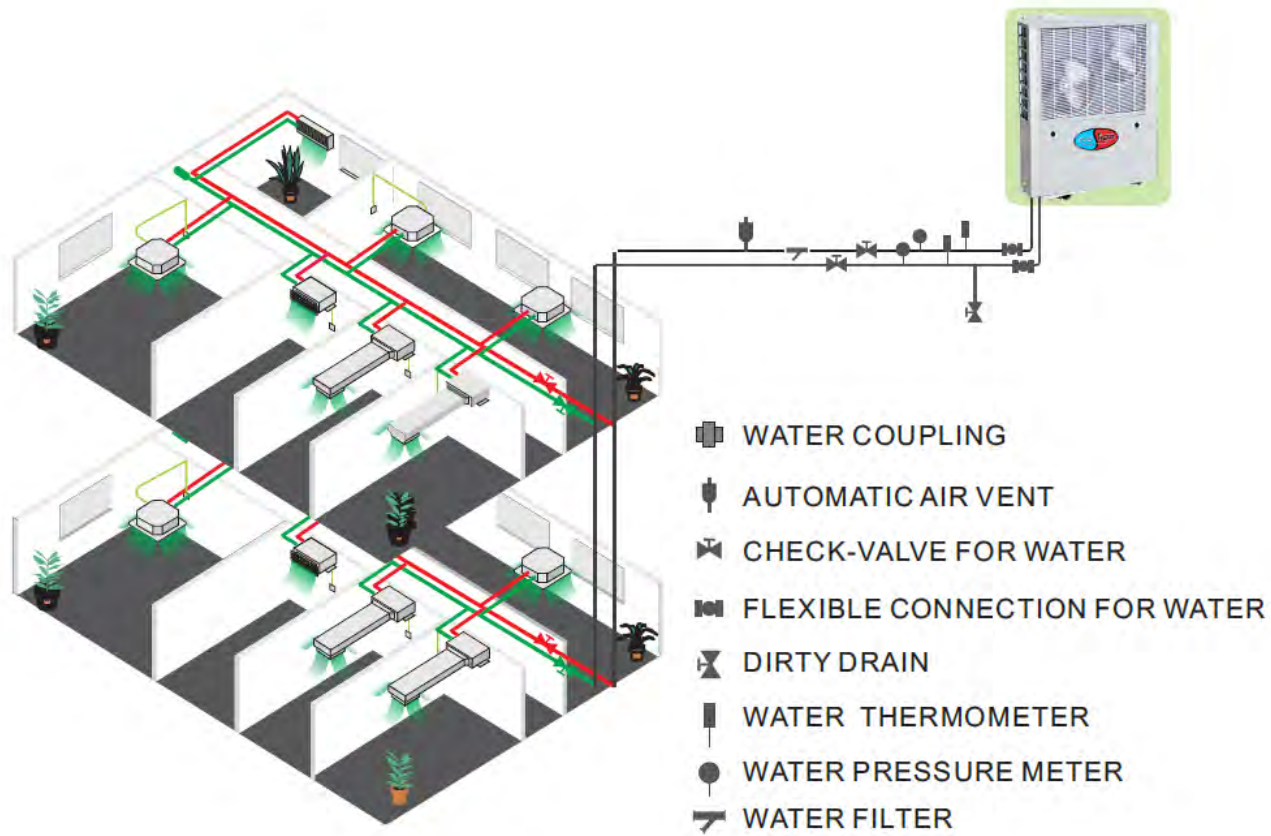
Heating: Ambient temperature 7°C / 6°C, inter/outlet water temperature: 30°C / 35°C

### 3. Safety Instructions

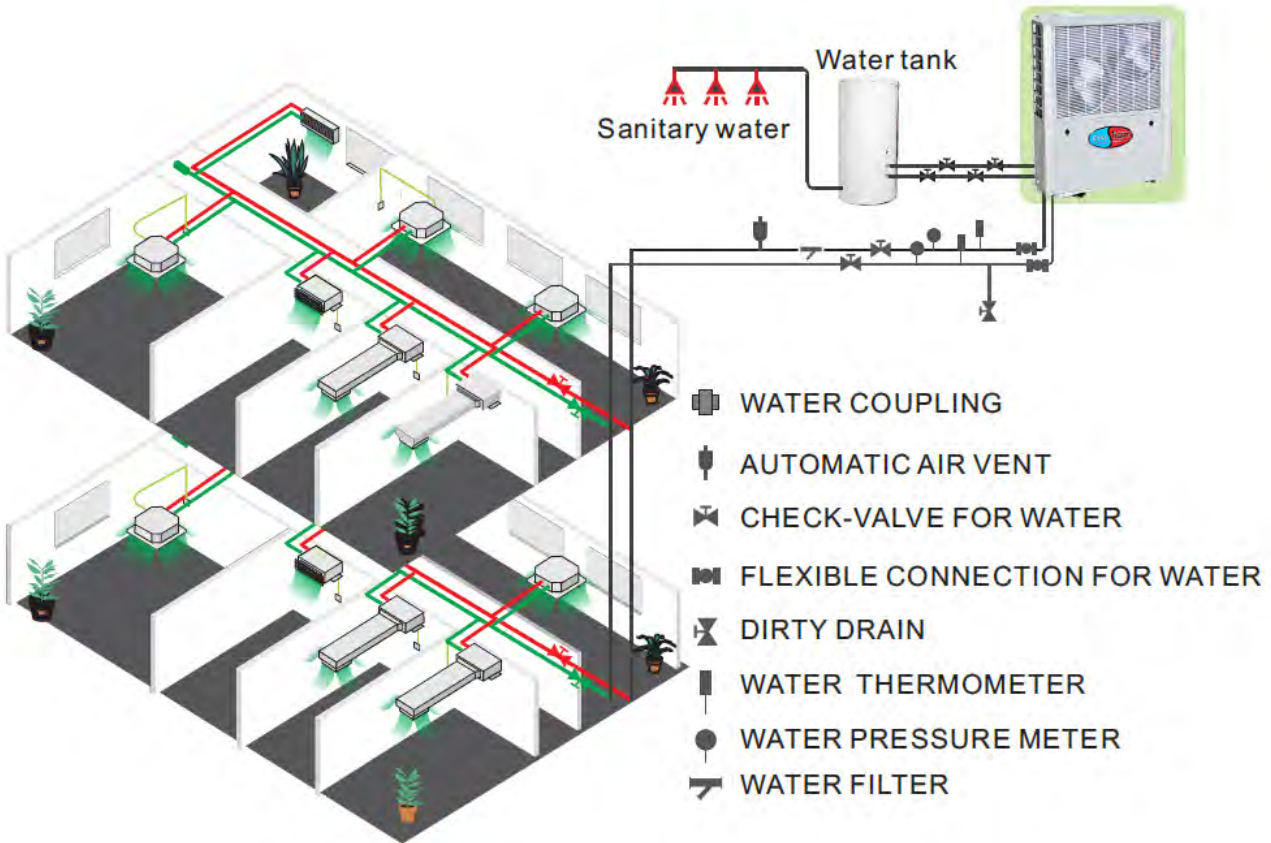
- Installation, repairs and maintenance of this unit must be performed by a qualified technician.
- Any wiring must comply with local electrical regulations.
- Ensure that the electrical supply corresponds to the specification indicated on the unit's makers plate before proceeding with the connection in accordance with the wiring diagram supplied.
- The unit must be earthed to avoid any risk caused by insulation defects.
- No wiring must come into contact with the heat source or the rotating fan parts.
- The unit must be handled and lifted with appropriate equipment in correlation with the unit's size and weight.
- Electrical power must be switched off before any work is started on the unit.
- Do not work on the electrical components if water or high humidity is present on site.
- When the unit is being connected, ensure that no impurities are introduced into the pipework and water circuits. A mesh filter must be provided on the hydraulic pump and in exchanger water inlets.
- If the supply cord is damaged, it must be replaced by the manufacturer.
- Do not expose the unit to or install near any flammable gases.
- Ensure there is a circuit breaker for this unit.
- The unit is equipped with an over-load protection system. After a previous stoppage, the unit will not start for at least 3 minutes.
- At the end of the unit's useful life, the unit must be taken to a recycling centre appropriate for electronic devices and not domestic waste.
- Use supply wires suitable for 75°C
- Caution: Single wall heat exchanger, not suitable for potable water connection.

4. Installation

4.1 Application for Air-Con



4.2 Application for Air-Con and Super Heater (for Hot Water)

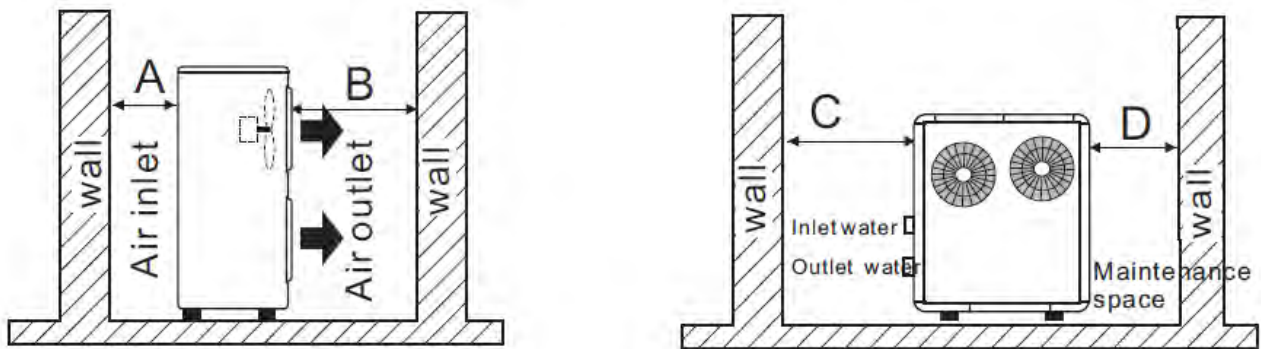




### 4.3 Location of Install & Minimum Clearances

The heat pump can be installed onto a concrete basement by using expansion screws, or onto a steel frame with rubber feet which can be placed on the ground or the roof. Ensure that the unit is placed horizontally.

- The unit can be installed in any place outdoors which will be able to support the weight of a heavy unit such as a terrace, roof, the ground and any other places deemed suitable.
- The location must have good ventilation.
- The location must be free from heat radiation and other fire hazards.
- In cold climates, a pall is needed in winter to protect the unit from snow.
- There must be no obstacles near the inlet and outlet of the unit.
- The installation location must be protected from strong winds or air.
- There must be a water channel around the heat pump to drain condensing water.
- Leave enough space around the unit for maintenance.



**A>500mm B>1500mm C>1000mm D>500mm**

### 4.4 Plumbing Component

Please pay attention to the below matters when the water pipe is connected.

- Try to reduce the resistance to the water from the piping.
- The piping must be clear and free from dirt and blockage. A water leakage test must be carried out to ensure that there is no water leaking before the installation can be made.
- The pipe must be tested by pressure separately. DO NOT test it together with the unit.
- There must be an expansion tank on the top point of the water loop, and the water level inside the tank must be at least 0.5meters higher than the top point of the water loop.
- The flow switch is installed inside of the heat pump, check to ensure that the wiring and action of the switch is normal and controlled by the controller.
- Try to avoid any air from being trapped inside the water pipe, there must be an air vent on the top point of the water loop.
- There must be a thermometer and pressure meter at the water inlet and outlet for easy inspection during running.

### 4.5 Electrical Component

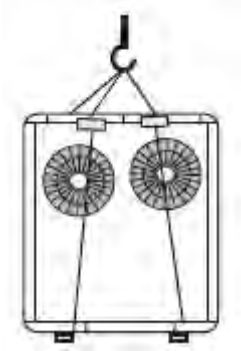
- Open the front panel and open the power supply access.
- The power supply must go through the wire access and be connected to the power supply terminals in the controlling box. Then connect the 3-signal wire plugs of the wire controller and main controller.
- If an external water pump is required, please insert the power supply wire into the wire access and connect it to the water pump terminals.
- If an additional auxiliary heater is needed to be controlled by the heat pump controller, the relay (or power) of the aux-heater must be connected to the relevant output of the controller.



#### 4.6 Transit

If the unit needs to be hung up during installation, an 8-metre cable is required. There must be a soft material between the cable and the unit to prevent damage to the heat pump cabinet

**WARNING:** Do not touch the heat exchanger of the unit with fingers or objects.



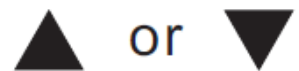
#### 4.7 Trial Operation

##### **INSPECTION BEFORE TRIAL OPERATION:**

- Check the indoor unit, make sure that the pipe connection is done correctly, and the relevant valves are open.
- Check the water loop to ensure that the water inside of the expansion tank is filled to an appropriate level, and the water supply is working, and the water loop is full of water and free of trapped air. Make sure there is good insulation for the water pipe.
- Check the electrical wiring. Make sure that the power voltage is normal, the screws are fastened, the wiring is made in line with the diagram and that the earthing is connected.
- Check that the heat pump includes all the screws and components, and that they are in good order. When powering the unit on, review the indicator on the controller to see if there is any indication of failure. The gas gauge can be connected to the check valve to see the high pressure (or low pressure) of the system during trial running.

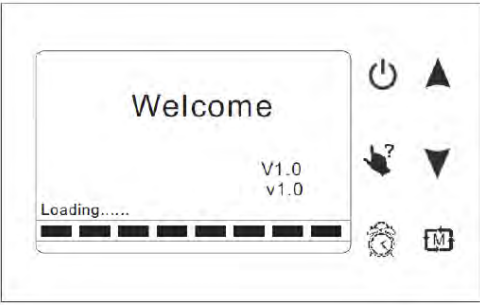
##### **TRIAL OPERATION:**

- Start the heat pump by pressing the 'UP' or 'DOWN' arrow key on the controller. Check whether the water pump is running, if it runs normally there will be 0.2MPa on the water pressure meter.
- When the water pump has ran for a minute, the compressor will start. Listen for any strange sounds from the compressor, if an abnormal sound occurs please stop the unit and check the compressor. If the compressor runs well please look for the pressure meter of the refrigerant.
- Check whether the power input and running current is in line with the manual. If not please stop and check.
- Adjust the valved on the water loop to make sure that the hot (cool) water supply to each door is good and meets the requirements of heating (or cooling).
- Review whether the outlet water temperature is stable.
- The parameters of the controller are set by the factory, the user cannot change these themselves.



5. Operation

5.1 Main Controller Interface



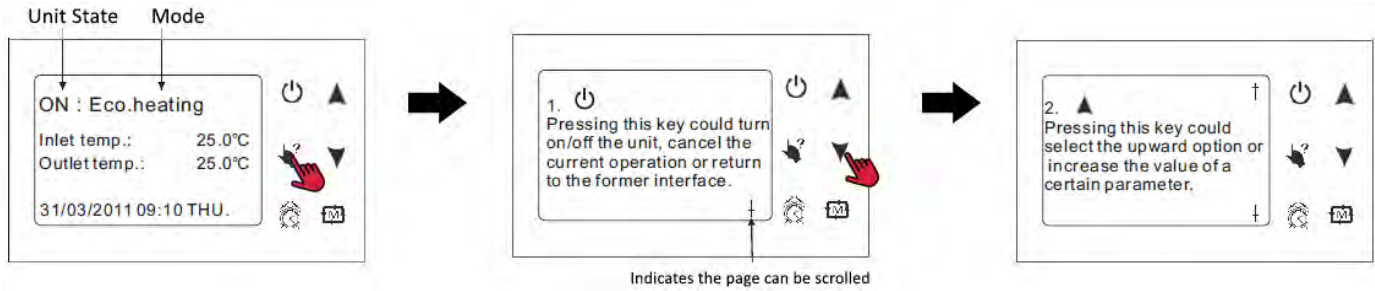
| Button | Name   | Function  |
|--------|--------|---|
|        | ON/OFF | Press this button to start up/shut off the unit, cancel current operation or go back to previous interface. |
|        | HELP   | Press this button to check button function of system state.   |
|        | MODE   | Press this button to change the current mode, page up or confirm current operation.                         |
|        | CLOCK  | Press this button to set the clock or turn the timer on/off.  |
|        | UP     | Press this key to select the upwards option or increase the parameter value.                                |
|        | DOWN   | Press this key to select the downwards option or decrease the parameter value.                              |

5.2 Functions of the Controller

5.2.1 Using the HELP Button

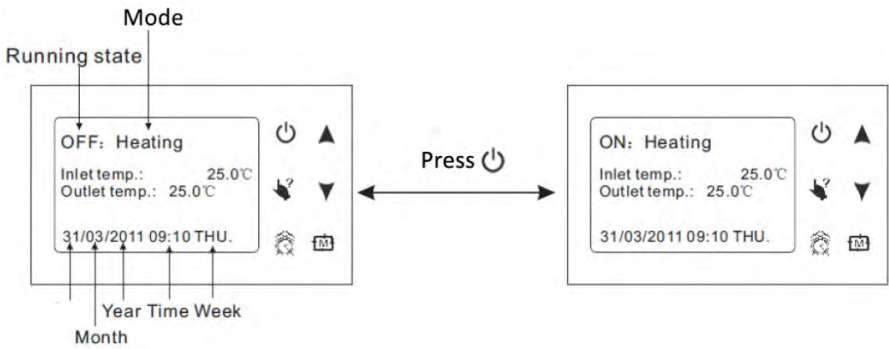
You can use at any interface and it will explain the buttons & functions of the current interface. To exit the help interface, simply press the ON/OFF button.

EXAMPLE: Press HELP at the Main Interface




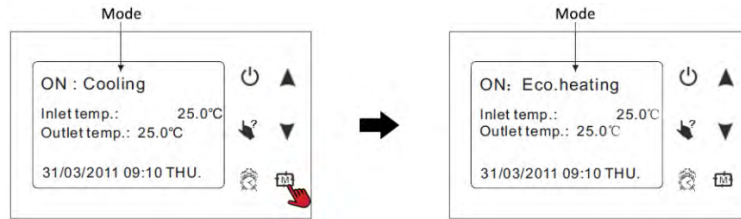
5.2.2 Starting & Shutting Down

To turn on/off the unit, press the ON/OFF button for 1 second. The screen will display as following for each state:





### 5.2.3 Switching Modes

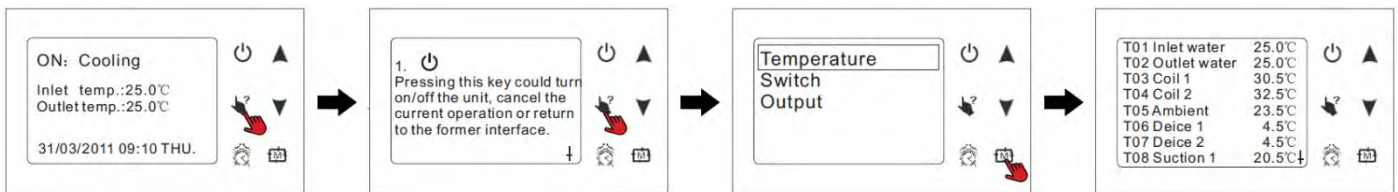
At the main interface, you can switch between the modes of cooling, economic heating, heating & rapid heating by pressing . Example: Switch from Cooling mode to Economic Heating




*Note: The operation of mode is invalid if the unit you purchase is heating only or cooling only.*

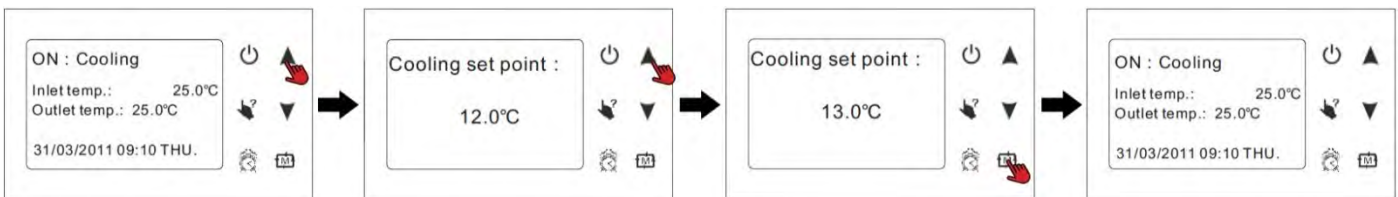
### 5.2.4 System State Checking

At any interface you can enter the system working state by pressing  TWICE, then using the UP and Down arrow keys to highlight the required parameter, then press  to enter. To exit, press the ON/OFF button






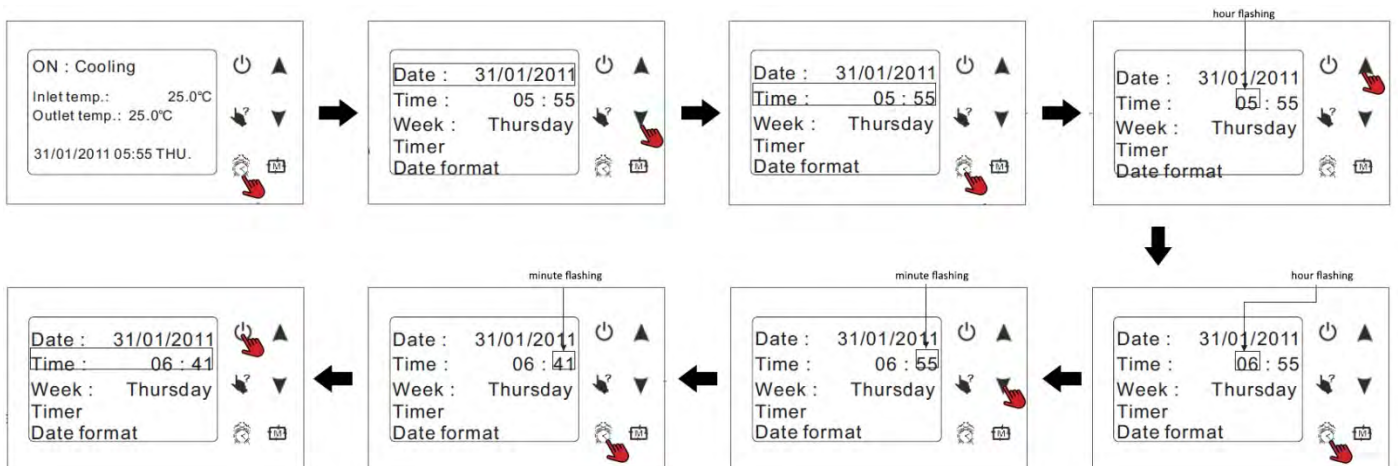
### 5.2.5 Changing Temperature

At the main interface, press the UP or DOWN key to adjust the temperature setting as desired. Once complete, press the  button to save the settings and exit. Press the ON/OFF button to exit without saving settings. Refer to the Parameter Table to set relevant temperature.



### 5.2.6 Clock Setting

At the main interface press  to enter the clock setting interface. Select the parameter you wish to change and press  to make the parameter begin flashing which indicates it can be changed. Press the UP or DOWN keys to change the parameter value, then press  to save. Press the ON/OFF button to return to the main menu.





*Note: If there is no operation after 10 seconds, it will return to the main menu and changes will automatically be saved.*

To change the date, the same process is followed.

### 5.2.7 Timer Settings

Four timer periods can be set according to your needs.

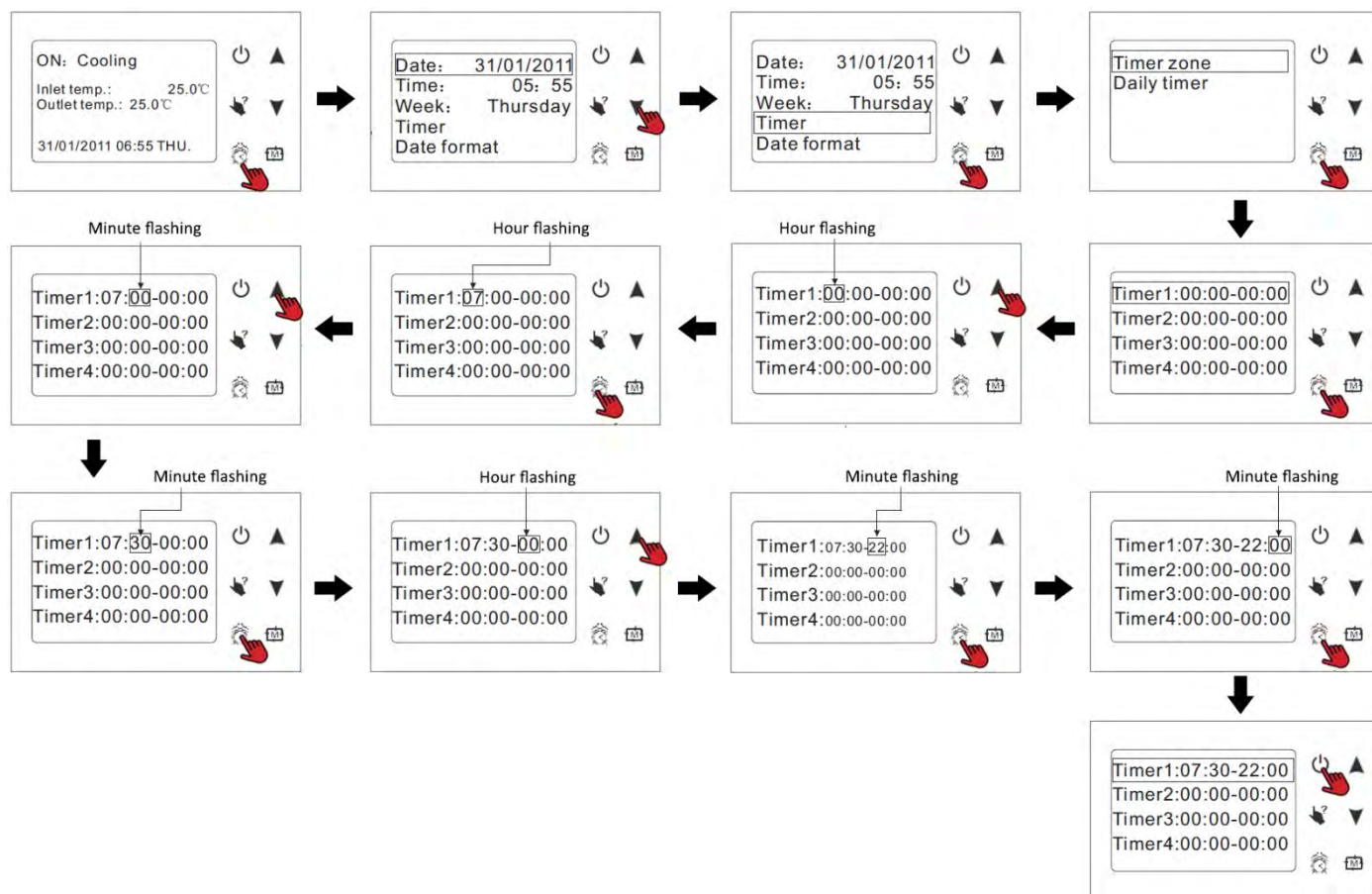
From the main interface, press  to enter the timer setting, press DOWN to select Timer, then press  to enter the timer setting interface. The process is much the same as adjusting the Clock settings. To cancel and return to the previous menu, press the ON/OFF button.

#### 5.2.7.1 Timer

Each timer has an ON value when the unit will turn on an OFF value when the unit will turn off (00:00-00:00).

**These timers are required for the Daily Timers to work.**

*Example: TIMER1 Unit is on at 7:30am – and off at 10pm*





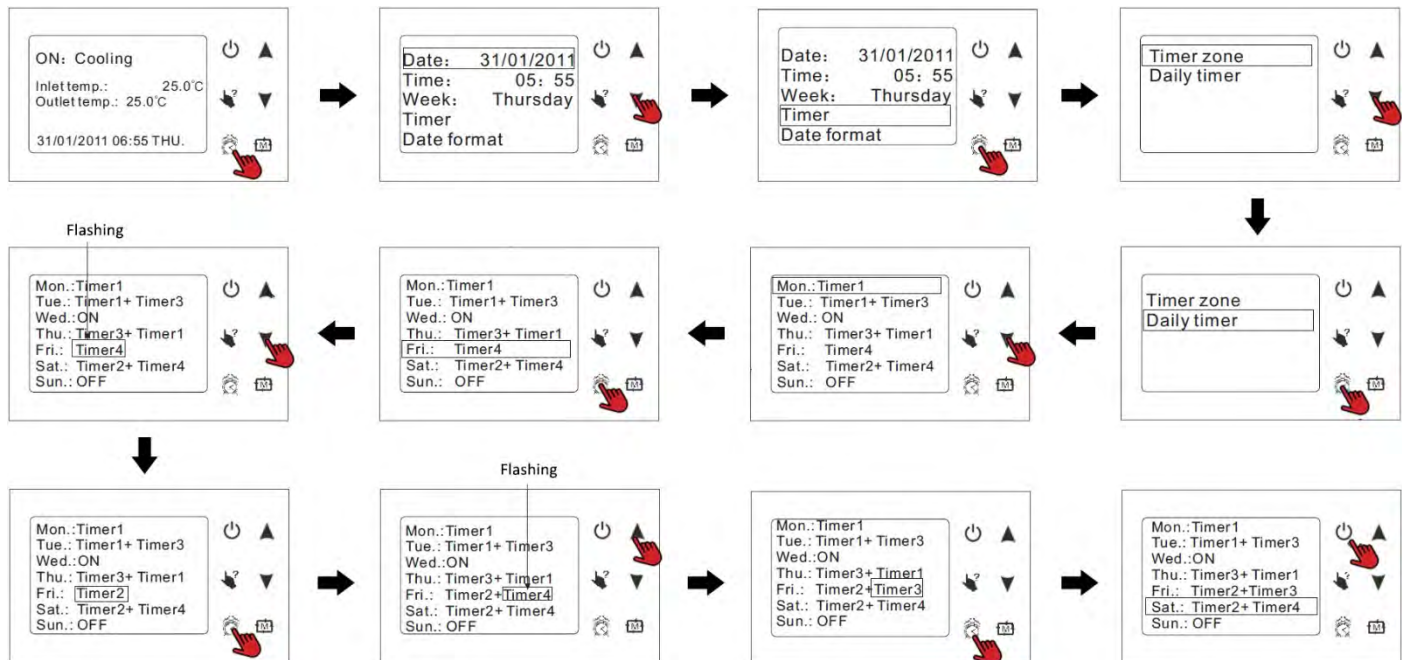
### 5.2.7.2 Daily Timer

The Daily Timer allows you to apply your timers to particular days of the week.

- OFF means that the unit will not run on that day.
- ON means the system will be running for a whole day.
- Applying one timer will have the unit run from A-B.
- Applying two timers will mean the unit runs from A-B, then C-D.

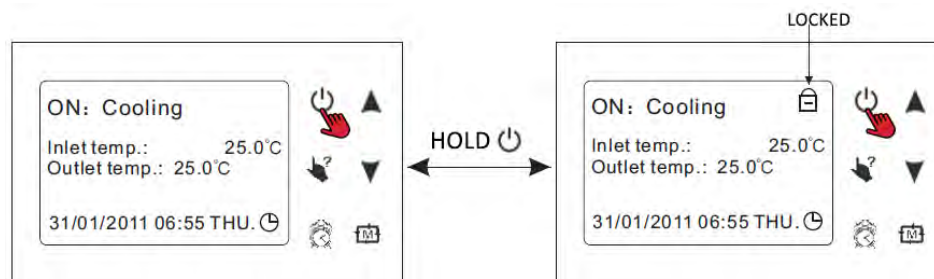
*Example: Setting the operation on Friday to run two different timers.*

*If the Timer2 were 8am-10am & Timer 3 were 1pm-5pm, the unit would operate or stop accordingly.*



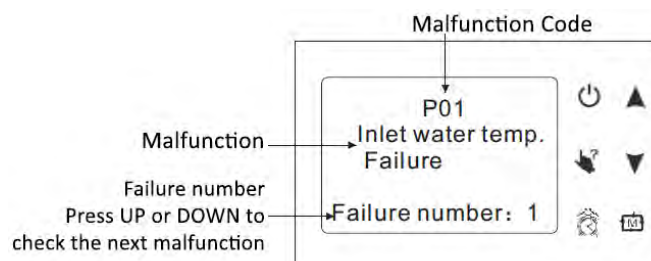
### 5.2.8 Keyboard Lock

To lock the controller after adjusting settings, at the main interface hold the ON/OFF button for 5 seconds. The keyboard will be locked and display a lock symbol on the screen. To unlock the screen, hold the ON/OFF button for 5 seconds. *Note: If the unit is in alarm state, the keyboard lock is automatically removed.*



### 5.2.9 Malfunction Display

If a fault occurs, there will be a malfunction code showing on the controller screen. Refer to the Failure Codes of the Controller (6. Troubleshooting) to find out the failure cause and solutions.



## 6. Troubleshooting

### 6.1 Failure Codes of the Controller – Evo Control 17

| Malfunction   | Display | Indicator   | Reason  | Resolution  |
|---|---------|-------------|---|---|
| Power on  |         | Off         |   |   |
| Normal working  |         | On          |   |   |
| Inlet temp. sensor failure                            | P01     | 1 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Outlet temp. sensor failure                           | P02     | 2 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Recovery temp. sensor failure                         | P033    | 3 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Ambient temp. sensor failure                          | P04     | 4 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Coil 1 temp. sensor failure                           | P15     | 5 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Coil 2 temp. sensor failure                           | P25     | 5 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Suction 1 temp. sensor failure                        | P17     | 7 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Suction 1 temp. sensor failure                        | P27     | 7 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Discharge 1 temp. sensor failure                      | P181    | 8 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Discharge 2 temp. sensor failure                      | P281    | 8 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Antifreezing 1 temp. sensor failure                   | P19     | 9 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| Antifreezing 2 temp. sensor failure                   | P29     | 9 on 1 off  | The temp. sensor is broken or short circuit         | Check or change the temp. sensor                        |
| High pressure 1 protection                            | E11     | 11 on 1 off | The high-pressure switch is broken                  | Check the pressure switch and cold circuit              |
| High pressure 2 protection                            | E21     | 11 on 1 off | The high-pressure switch is broken                  | Check the pressure switch and cold circuit              |
| Low pressure 1 protection                             | E12     | 12 on 1 off | The low-pressure switch is broken                   | Check the pressure switch and cold circuit              |
| Low pressure 2 protection                             | E22     | 12 on 1 off | The low-pressure switch is broken                   | Check the pressure switch and cold circuit              |
| Heat source side water flow failure                   | E031    | 13 on 1 off | Little or no water in water system                  | Check the pipe water flow and water pump                |
| The use side water flow failure                       | E032    | 13 on 1 off | Little or no water in water system                  | Check the pipe water flow and water pump                |
| Water flow over-low failure                           | E035    | 13 on 1 off | Little or no water in water system                  | Check the pipe water flow and water pump                |
| Electrical-heat over heat failure                     | E04     | 14 on 1 off | Electrical-heat is over heat                        | Check or change electrical-heat                         |
| Compressor 1 overload failure                         | E101    | 21 on 1 off | The compressor is overload                          | Check the compressor functionality                      |
| Compressor 2 overload failure                         | E201    | 21 on 1 off | The compressor is overload                          | Check the compressor functionality                      |
| Water inlet and outlet temp. difference               | E06     | 16 on 1 off | Not enough water flow and low differential pressure | Check the pipe water flow and if water system is jammed |
| The system 1 use side antifreezing protection         | E171    | 17 on 1 off | Not enough water flow                               | Check the pipe water flow and if water system is jammed |
| The system 2 use side antifreezing protection         | E271    | 17 on 1 off | Not enough water flow                               | Check the pipe water flow and if water system is jammed |
| The system 1 heat source side antifreezing protection | E172    | 17 on 1 off | Not enough water flow                               | Check the pipe water flow and if water system is jammed |
| The system 2 heat source side antifreezing protection | E272    | 17 on 1 off | Not enough water flow                               | Check the pipe water flow and if water system is jammed |
| The primary anti freezing protection                  | E19     | 19 on 1 off | The ambient temp. is low                            |   |
| The secondary antifreezing protection                 | E29     | 19 on 1 off | The ambient temp. is low                            |   |
| Discharge Temp. of system 1 is too high               | P182    | 8 on 1 off  | The compressor is overload                          | Check the compressor functionality                      |
| Discharge Temp. of system 2 is too high               | P282    | 8 on 1 off  | The compressor is overload                          | Check the compressor functionality                      |
| System protection                                     | E05     | 8 on 1 off  | The protection system is failing                    | Check each protection point of the system               |
| Defrosting  |         | Flashing    |   |   |

|                       |     |  |  |   |
|-----------------------|-----|--|--|---|
| Communication Failure | E08 |  | Communication failure between wire controller and main board | Check the wire connection between remote wire controller and main board |
|-----------------------|-----|--|--|---|

## 6.2 Failure Codes of the Controller – Evo Control 25

| Malfunction  | Display  | Reason   | Resolution  |
|--|--|--|---|
| Power on   |  |  |   |
| Normal working                                       |  |  |   |
| Inlet temp. sensor failure                           | P01  | The temp. sensor is broken or short circuit                  | Check or change the temp. sensor  |
| Outlet temp. sensor failure                          | P02  | The temp. sensor is broken or short circuit                  | Check or change the temp. sensor  |
| Ambient temp. failure                                | P04  | The temp. sensor is broken or short circuit                  | Check or change the temp. sensor  |
| System 1/2/3/4 Coil temp. Failure                    | P15(system1),P25(system2)<br>P35(system3),P45(system4)     | The temp. sensor is broken or short circuit                  | Check or change the temp. sensor  |
| System 1/2/3/4 absorb Temp. Failure                  | P17(system1),P27(system2)<br>P37(system3),P47(system4)     | The temp. sensor is broken or short circuit                  | Check or change the temp. sensor  |
| System 1/2/3/4 anti-freeze Temp. Failure             | P19(system1),P29(system2)<br>P39(system3),P49(system4)     | The temp. sensor is broken or short circuit                  | Check or change the temp. sensor  |
| System 1 /2/3/4 using side anti-freeze temp. failure | P191(system1),P291(system2)<br>P391(system3),P491(system4) | The temp. sensor is broken or short circuit                  | Check or change the temp. sensor  |
| System 1/2/3/4 coil inlet Temp. Failure              | P151(system1),P251(system2)<br>P351(system3),P451(system4) | The temp. sensor is broken or short circuit                  | Check or change the temp. sensor  |
| System 1/2/3/4 high Pressure protection              | E11(system1),E21(system2)<br>E31(system3),E41(system4)     | The high pressure switch is broken                           | Check the pressure switch and cold circuit                              |
| System 1/2/3/4 low Pressure protection               | E12(system1),E22(system2)<br>E32(system3),E42(system4)     | The low pressure switch is broken                            | Check the pressure switch and cold circuit                              |
| Water flow failure                                   | E03  | Little or no water in water system                           | Check the pipe water flow and water pump                                |
| Electric-heater overheat protection                  | E04  | Electrical-heat is over heat                                 | Check or change electrical-heat   |
| Water inlet and outlet temp. too big                 | E06  | Not enough water flow and low differential pressure          | Check the pipe water flow and if water system is jammed                 |
| System 1/2/3/4 anti-freeze protection                | E17(system1),E27(system2)<br>E37(system3),E47(system4)     | Not enough water flow and low differential pressure          | Check the pipe water flow and if water system is jammed                 |
| System 1/2/3/4 source side anti-freeze protection    | E172(system1),E272(system2)<br>E372(system3),E472(system4) | Not enough water flow  | Check the pipe water flow and if water system is jammed                 |
| System 1/2/3/4 using side anti-freeze protection     | E171(system1),E271(system2)<br>E371(system3),E471(system4) | Not enough water flow  | Check the pipe water flow and if water system is jammed                 |
| Anti-freeze protect level 1                          | E19  | The ambient temp. is low                                     |   |
| Anti-freeze protect level 2                          | E29  | The ambient temp. is low                                     |   |
| System protection                                    | E05  | The protection system has failed                             | Check each protection point of the system                               |
| Communication failure                                | E08  | Communication failure between wire controller and main board | Check the wire connection between remote wire controller and main board |

## 6.3 System Failures (Both Models)

| FAILURE  | POSSIBLE CAUSES                              | SOLUTIONS   |
|--|--|---|
| Heat pump cannot be started  | Wrong power supply                           | Shut off the power and check power supply                             |
|  | Power supply cable loose                     | Check power cable and correct the connection                          |
|  | Circuit breaker open                         | Check for the cause and replace the fuse or circuit breaker           |
| Water pump is running with high Noise or without water               | Lack of water in the piping                  | Check the water supply and charge water to the piping                 |
|  | Too much air in the water loop               | Discharge the air in the water loop                                   |
|  | Water valves closed                          | Open the valves in water loop   |
|  | Dirt and block on the water filter           | Clean the water filter  |
| Heat pump capacity is low, compressor does not stop                  | Lack of refrigerant                          | Check for the gas leakage and Recharge the Refrigerant                |
|  | Bad insulation on water pipe                 | Make good insulation on water pipe                                    |
|  | Low heat exchange rate on air Side exchanger | Clean the air side heat exchanger                                     |
|  | Lack of water flow                           | Clean the water filter  |
| High compressor exhaust  | Too much refrigerant                         | Discharge the redundant gas   |
|  | Low heat exchange rate on air side exchanger | Clean the air side heat exchanger                                     |
| Low pressure problem of the system                                   | Lack of gas                                  | Check the gas leakage and recharge freon                              |
|  | Block on filter or capillary                 | Replace filter or capillary   |
|  | Lack of water flow                           | Clean the water filter and discharge the air in water loop            |
| Compressor does not run  | Power supply failure                         | Check off the power supply  |
|  | Compressor contactor broken                  | Replace compressor contactor  |
|  | Power cable loose                            | Tighten the power cable   |
|  | Protection on compressor                     | Check the compressor exhaust temp.                                    |
|  | Wrong setting on return water Temp.          | Reset the return water temp   |
|  | Lack of water flow                           | Clean the water filter and discharge the air in water loop            |
| High noise of compressor   | Liquid refrigerant goes into Compressor      | Bad evaporation check the cause for bad evaporation and get rid of it |
|  | Compressor failure                           | Use new compressor  |
| Fan does not run   | Failure on fan relay                         | Replace the fan relay   |
|  | Fan motor broken                             | Replace fan motor   |
| The compressor runs but heat Pump has no heating or cooling capacity | No gas in the heat pump                      | Check system leakage and recharge refrigerant                         |
|  | Heat exchanger broken                        | Find out the cause and replace the heat exchanger                     |
|  | Compressor failure.                          | Replace compressor  |
| Low outlet water temperature   | Low water flow rate                          | Clean the water filter and discharge the air in water loop            |
|  | Low setting for the desired water temp       | Reset the desired water temperature                                   |
| Low water flow protection  | Lack of water in the system                  | Clean the water filter and discharge the air in water loop            |
|  | Failure on flow switch                       | Replace the flow switch   |



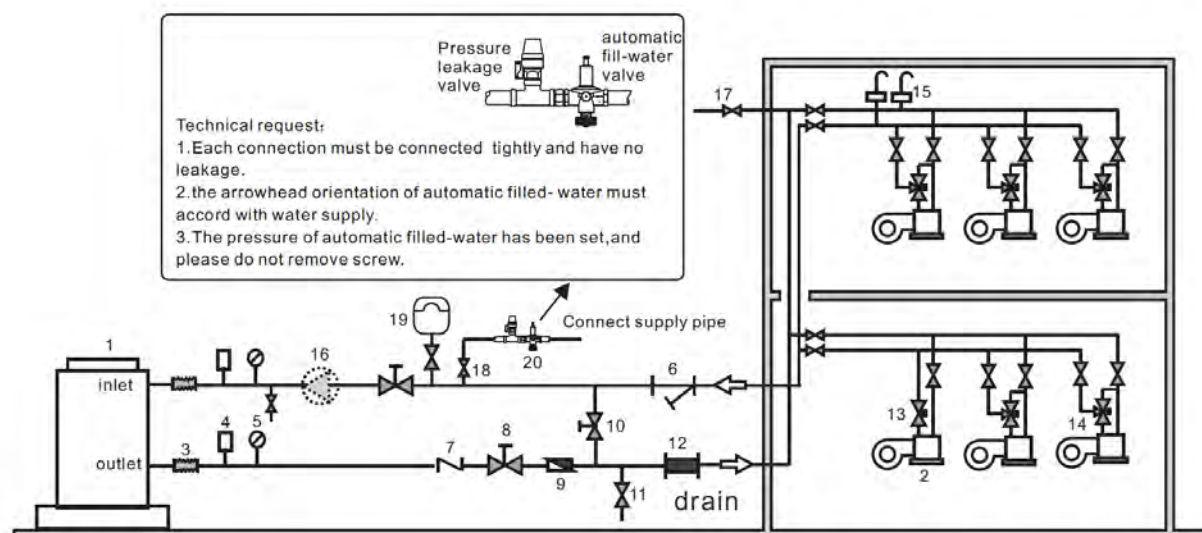
## 7. Appendix

### 7.1 Install Sketch Map

Especial Installation (expandable water tank)

Legend explanation

|                               |   |
|-------------------------------|---|
| 1. Main Unit                  | 11. Drain                               |
| 2. Fan Coil                   | 12. Filter                              |
| 3. Rubber Flexible Connection | 13. Two-way Valve                       |
| 4. Thermometer                | 14. Three-way Valve                     |
| 5. Pressure Meter             | 15. Automatic Ventilation               |
| 6. Filter Similar as 'Y'      | 16. Water Pump                          |
| 7. Check Valve                | 17. Ball Valve                          |
| 8. Ball Valve                 | 18. Ball Valve                          |
| 9. Flow Meter                 | 19. The close and expandable water tank |
| 10. Bypass Valve              | 20. Automatically filled-water          |



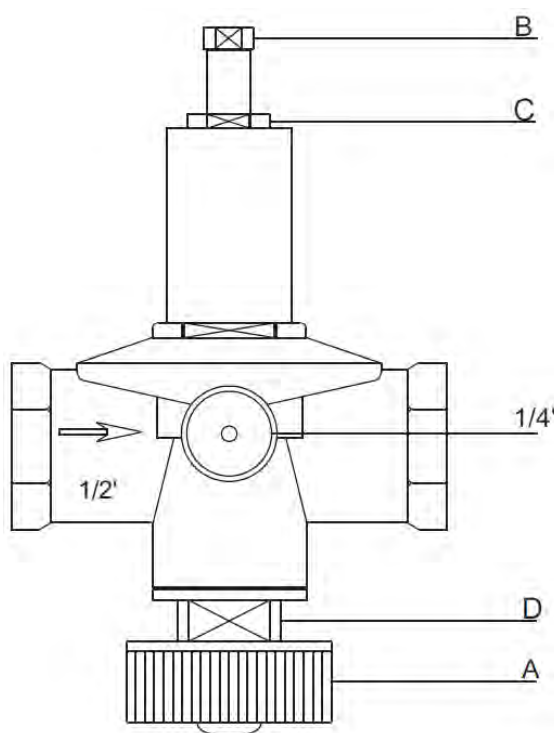
Installation Requests:

1. The Factory only offers main unit in the legend, the other modules which are indispensable fittings are to be provided by the user or installation company.
2. The unit of which code contains the letter "B" has a water pump inside and an external water pump is not needed.
3. Automatic ventilation (15) is installed on the top point of the water system.
4. The quantity proportion of the two-way valve (13) and the three-way valve (14) is referred to the technical regulation, and there is a three-way valve installed on the farthest place of water system.
5. The ball valve (17) is used when it is swashed, and the water in the water system is filled.

## 7.2 Installation of Automatic Filled-Water

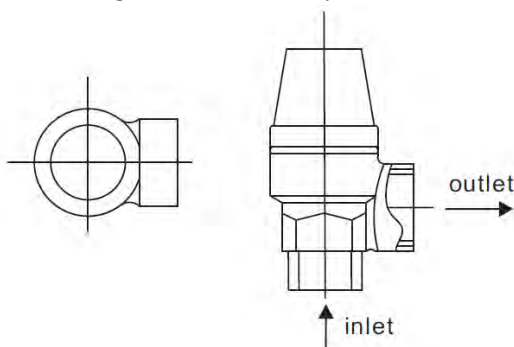
1. When the automatic filled-water valve is installed, the arrowhead orientation of inlet water must accord with the orientation of the valve
2. Automatically filled-water has been adjusted in advance to 1.5bar
3. If readjusting the pressure of inlet water, please operate as follows:
  - a. Open the screw cap (C)
  - b. If reducing the pressure of water supply, please screw down the pressure to adjust the screw (B)
  - c. If increasing the pressure of water supply, please screw down the pressure to adjust the screw (B)
4. When the system needs the water filled first, rest the handle (A) of filled water. Then the handle (A) can return (close) when the system is full of water.
5. Automatic filled-water valve needs cleaning in a periodic time and then you must close the tap, unscrew the plug (D) and remove the inside filter net. Please reassemble them again after cleaning.

NOTE: There are two connections for the water pressure meter in the central section of automatic filled-water, where the water pressure meter can be connected directly and display the set pressure. The screw cap ( C ) must be tweaked after adjusting the filled-water pressure.



## 7.3 Installation of Leakage Pressure Valve

1. The action pressure of the leakage pressure valve is more than 3 bar (valve is open) but the pressure cannot be adjusted.
2. The valve will open automatically to make sure that the water loop of the air-con system is safe when the water pressure in the backwater side is higher than the set pressure.

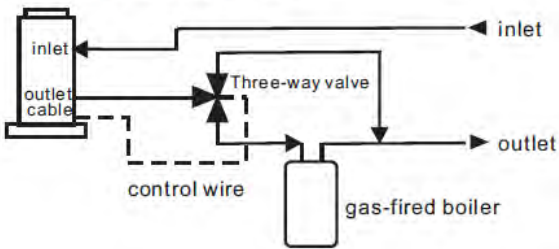


7.4 Assistant Heat Source Connection

Unit provides the connection of assistant heat source which is not only for the gas-fired boiler, but also the electronic boiler or warm-net pipe for city accordingly.

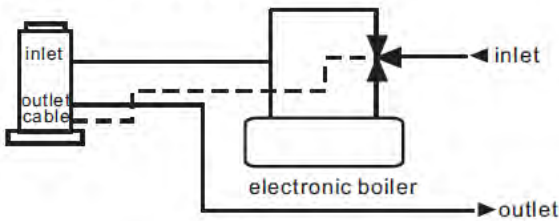
- 1. Water chiller and heat pump + assistant gas-fired boiler

water chiller and heat pump



- 2. Water chiller and heat pump + assistant electronic boiler

water chiller and heat pump

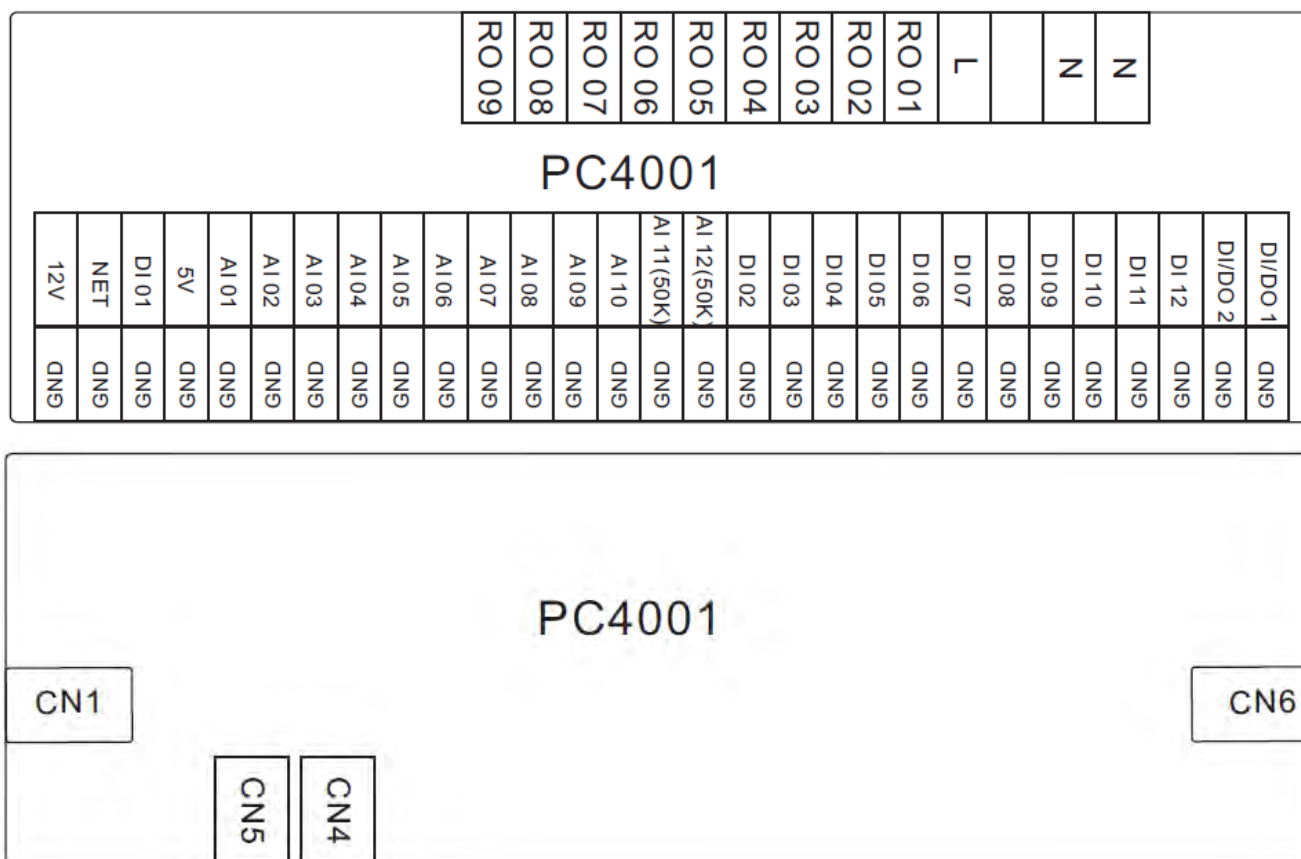


7.5 Unit Parameters

| Meaning                             | Default | Remarks    |
|-------------------------------------|---------|------------|
| Set point of cooling target temp.   | 12°C    | Adjustable |
| Set point of heating target temp.   | 40°C    | Adjustable |
| Set point of auto mode target temp. | 27°C    | Adjustable |

## 7.6 PCB Connection

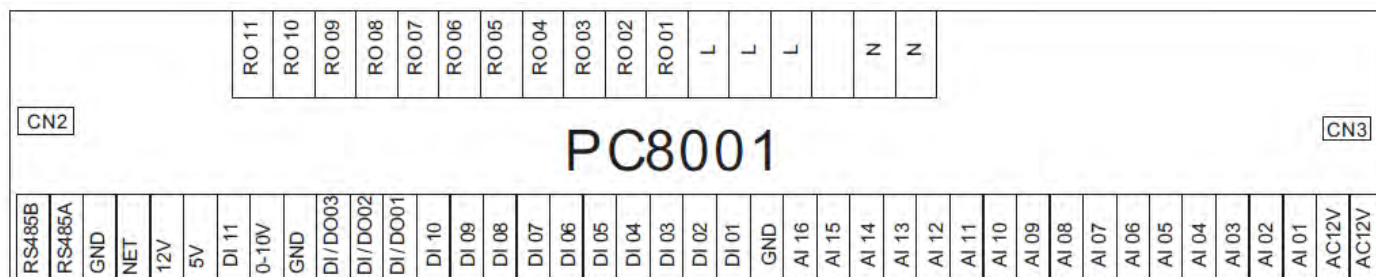
### 7.6.1 PCB Connection of Evo Control 17



| No. | Symbol      | Meaning                                 | No. | Symbol      | Meaning                                   |
|-----|-------------|---|-----|-------------|---|
| 1   | AC-L        | Live line                               | 22  | DI 08       | Electric heater overload protection input |
| 2   | AC-N        | Null line                               | 23  | DI 09       | Compressor 1 overload protection input    |
| 3   | RO 01       | Compressor 1 output(220VAC)             | 24  | DI 10       | Compressor 2 overload protection input    |
| 4   | RO 02       | Compressor 2 output(220VAC)             | 25  | DI 11       | System protection input                   |
| 5   | RO 03       | High speed of fan output(220VAC)        | 26  | DI 12       | Emergency switch input                    |
| 6   | RO 04       | Low speed of fan output(220VAC)         | 27  | AI 01       | Water input temperature input             |
| 7   | RO 05       | Water pump output(220VAC)               | 28  | AI 02       | Water output temperature output           |
| 8   | RO 06       | 4-way valve output(220VAC)              | 29  | AI 03       | System 1 fan coil temperature input       |
| 9   | RO 07       | Electric heater output(250VAC)          | 30  | AI 04       | System 2 fan coil temperature input       |
| 10  | RO 08       | Spray valve output(220VAC)              | 31  | AI 05       | Ambient temperature input                 |
| 11  | RO 09       | Alarm system output(220VAC)             | 32  | AI 06       | System 1 antifreeze temperature input     |
| 12  | DI/DO 1     | Mode indicator output                   | 33  | AI 07       | System 1 antifreeze temperature input     |
| 13  | DI/DO 2     | Emergency switch output                 | 34  | AI 08       | System 1 suction temperature input        |
| 14  | DI 01       | Flow rate input                         | 35  | AI 09       | System 2 suction temperature input        |
| 15  | DI 02       | System 1 high pressure protection input | 36  | AI 10       | No use                                    |
| 16  | DI 03       | System 1 low pressure protection input  | 37  | AI 11(50K)  | System 1 discharging temperature input    |
| 17  | DI 04       | System 2 high pressure protection input | 38  | AI 12 (50K) | System 2 discharging temperature input    |
| 18  | DI 05       | System 2 low pressure protection input  | 39  | CN1         | System 2 electric expansion valve output  |
| 19  | NET GND 12V | Connecting to the remote controller     | 40  | CN6         | System 1 electric expansion valve output  |
| 20  | DI 06       | Phase sequence protection               | 41  | CN4         | Burning program interface                 |
| 21  | DI 07       | Water flow switch protection input      | 42  | CN5         | RS485 interface                           |



## 7.6.2 PCB Connection of Evo Control 25



| No. | Symbol  | Meaning                                   | No. | Symbol | Meaning                                  |
|-----|---------|---|-----|--------|--|
| 1   | L       | Live line                                 | 27  | DI 11  | System protection signal                 |
| 2   | N       | Null line                                 | 28  | AI 01  | Water input temperature input            |
| 3   | RO 01   | Compressor 1 output(220VAC)               | 29  | AI 02  | Water output temperature output          |
| 4   | RO 02   | Compressor 2 output(220VAC)               | 30  | AI 03  | System 1 fan coil temperature input      |
| 5   | RO 03   | Compressor 3 output(220VAC)               | 31  | AI 04  | System 2 fan coil temperature input      |
| 6   | RO 04   | Compressor 4 output(220VAC)               | 32  | AI 05  | System 3 fan coil temperature input      |
| 7   | RO 05   | High speed /source pump output(220VAC)    | 33  | AI 06  | System 4 fan coil temperature input      |
| 8   | RO 06   | Low speed output (220VAC)                 | 34  | AI 07  | Ambient temperature input                |
| 9   | RO 07   | Water pump output(220VAC)                 | 35  | AI 08  | System 1 antifreeze temperature input    |
| 10  | RO 08   | 4-way valve output(220VAC)                | 36  | AI 09  | System 2 antifreeze temperature input    |
| 11  | RO 09   | Electric heater output(250VAC)            | 37  | AI 10  | System 3 antifreeze temperature input    |
| 12  | RO 10   | Spray valve output(220VAC)                | 38  | AI 11  | System 4 antifreeze temperature input    |
| 13  | RO 11   | Alarm system output(220VAC)               | 39  | AI 12  | System 1 suction temperature input       |
| 14  | DI/DO 1 | Emergency switch output                   | 40  | AI 13  | System 2 suction temperature input       |
| 15  | DI/DO 2 | Mode indicator output                     | 41  | AI 14  | System 3 suction temperature input       |
| 16  | DI/DO 3 | Emergency switch input                    | 42  | AI 15  | System 4 suction temperature input       |
| 17  | DI 01   | System 1 high pressure protection input   | 43  | AI 16  | No use                                   |
| 18  | DI 02   | System 2 high pressure protection input   | 44  | GND    | Connecting to the remote controller      |
| 19  | DI 03   | System 3 high pressure protection input   | 45  | NET    |  |
| 20  | DI 04   | System 4 high pressure protection input   | 46  | 12V    |  |
| 21  | DI 05   | System 1 low pressure protection input    | 47  | RS485A | 485 connection                           |
| 22  | DI 06   | System 2 low pressure protection input    | 48  | RS485B |  |
| 23  | DI 07   | System 3 low pressure protection input    | 49  | AC12V  | 12V power input                          |
| 24  | DI 08   | System 4 low pressure protection input    | 50  | AC12V  |  |
| 25  | DI 09   | Water flow switch protection input        | 51  | CN2    | System 1 electric expansion valve output |
| 26  | DI 10   | Electric heater overload protection input | 52  | CN3    | System 2 electric expansion valve output |

## 7.7 Cable Specifications

### Single Phase Unit

| Nameplate maximum current | Phase Line             | Earth Line         | MCB  | Creepage Protector     | Signal Line            |
|---------------------------|------------------------|--------------------|------|------------------------|------------------------|
| No more than 10A          | 2 x 1.5mm <sup>2</sup> | 1.5mm <sup>2</sup> | 20A  | 30mA less than 0.1 sec | n x 0.5mm <sup>2</sup> |
| 10 ~ 16A                  | 2 x 2.5mm <sup>2</sup> | 2.5mm <sup>2</sup> | 32A  |                        |                        |
| 16 ~ 25A                  | 2 x 4mm <sup>2</sup>   | 4mm <sup>2</sup>   | 40A  |                        |                        |
| 25 ~ 32A                  | 2 x 6mm <sup>2</sup>   | 6mm <sup>2</sup>   | 40A  |                        |                        |
| 32 ~ 40A                  | 2 x 10mm <sup>2</sup>  | 10mm <sup>2</sup>  | 63A  |                        |                        |
| 40 ~ 63A                  | 2 x 16mm <sup>2</sup>  | 16mm <sup>2</sup>  | 80A  |                        |                        |
| 63 ~ 75A                  | 2 x 25mm <sup>2</sup>  | 25mm <sup>2</sup>  | 100A |                        |                        |
| 75 ~ 101A                 | 2 x 25mm <sup>2</sup>  | 25mm <sup>2</sup>  | 125A |                        |                        |
| 101 ~ 123A                | 2 x 35mm <sup>2</sup>  | 35mm <sup>2</sup>  | 160A |                        |                        |
| 123 ~ 148A                | 2 x 50mm <sup>2</sup>  | 50mm <sup>2</sup>  | 225A |                        |                        |
| 148 ~ 186A                | 2 x 70mm <sup>2</sup>  | 70mm <sup>2</sup>  | 250A |                        |                        |
| 186 ~ 224A                | 2 x 95mm <sup>2</sup>  | 95mm <sup>2</sup>  | 280A |                        |                        |

### Three Phase Unit

| Nameplate maximum current | Phase Line             | Earth Line         | MCB  | Creepage Protector     | Signal Line            |
|---------------------------|------------------------|--------------------|------|------------------------|------------------------|
| No more than 10A          | 3 x 1.5mm <sup>2</sup> | 1.5mm <sup>2</sup> | 20A  | 30mA less than 0.1 sec | n x 0.5mm <sup>2</sup> |
| 10 ~ 16A                  | 3 x 2.5mm <sup>2</sup> | 2.5mm <sup>2</sup> | 32A  |                        |                        |
| 16 ~ 25A                  | 3 x 4mm <sup>2</sup>   | 4mm <sup>2</sup>   | 40A  |                        |                        |
| 25 ~ 32A                  | 3 x 6mm <sup>2</sup>   | 6mm <sup>2</sup>   | 40A  |                        |                        |
| 32 ~ 40A                  | 3 x 10mm <sup>2</sup>  | 10mm <sup>2</sup>  | 63A  |                        |                        |
| 40 ~ 63A                  | 3 x 16mm <sup>2</sup>  | 16mm <sup>2</sup>  | 80A  |                        |                        |
| 63 ~ 75A                  | 3 x 25mm <sup>2</sup>  | 25mm <sup>2</sup>  | 100A |                        |                        |
| 75 ~ 101A                 | 3 x 25mm <sup>2</sup>  | 25mm <sup>2</sup>  | 125A |                        |                        |
| 101 ~ 123A                | 3 x 35mm <sup>2</sup>  | 35mm <sup>2</sup>  | 160A |                        |                        |
| 123 ~ 148A                | 3 x 50mm <sup>2</sup>  | 50mm <sup>2</sup>  | 225A |                        |                        |
| 148 ~ 186A                | 3 x 70mm <sup>2</sup>  | 70mm <sup>2</sup>  | 250A |                        |                        |
| 186 ~ 224A                | 3 x 95mm <sup>2</sup>  | 95mm <sup>2</sup>  | 280A |                        |                        |

If the unit is to be installed outdoors, ensure a UV resistant cable is used.

## 8. Maintenance

Check the water supply and air vent frequently to avoid any lack of water, or air in the water Loop. Clean the water filter according to a schedule to keep good water quality. Lack of water and dirty water can damage the unit. The heat pump will start the water pump every 72 hours when it is not running to keep it from freezing.

Keep the unit in a place which is dry, clean and has good ventilation. Clean the heat exchanger according to a schedule to keep a good heat exchange rate and save energy.

Check each part of the unit and the pressure of the system. Replace the failing part if there is any and recharge the refrigerant if it is needed.

Check the power supply and the electrical system, make sure the electrical components are good and that the wiring is correct. If there is any part failing with incorrect actions or smell, please replace.

If the heat pump is not used for a long time, please drain out all the water in the unit and seal the unit to keep it good. Please drain the water from the lowest point of the heat exchanger to avoid freezing in winter. Water recharge and full inspection on the heat pump is needed before it is restarted.

Please drain out the water in the super heater of the heat pump unit in winter when the super heater is not used.

The water loop of the heat pump **MUST** be protected from freezing in winter time. Please pay attention to below suggestions. Non-observance on below suggestions will invalidate the warranty for the heat pump.

1. Please do not shut off the power supply to the heat pump in winter. When the air temperature is below 0°C, if the inlet water temperature is above 2°C and below 4°C, the water pump will start the freezing protection function, if the inlet water is lower than 2°C, the heat pump will begin heating.
2. Use anti-freezing liquid (glycol water)
  1. Look for below table for the volume of the glycol water
  2. The glycol water can be added into the system from the expansion tank of the water loop.

| Glycol Percentage (%)                | 10    | 20    | 30    | 40    | 50    |
|--------------------------------------|-------|-------|-------|-------|-------|
| Ambient Temperature (Celsius)        | -3.0  | -8.0  | 14.0  | -22.0 | -33.0 |
| Cooling/Heating Capacity Fluctuation | 0.991 | 0.982 | 0.972 | 0.961 | 0.946 |
| Power Input Fluctuation              | 0.996 | 0.992 | 0.986 | 0.976 | 0.966 |
| Water Flow Fluctuation               | 1.013 | 1.040 | 1.074 | 1.121 | 1.178 |
| Water Drop Fluctuation               | 1.070 | 1.129 | 1.181 | 1.263 | 1.308 |

Note: If there is too much glycol water, the water flow and water pump will be influenced, and the heat exchange rate will decrease. This table is for reference, please use anti-freezing water according to the real conditions of the local climate.

## 9. Warranty



**Please refer to the EvoHeat website for warranty details**

- Australia: [www.evoheat.com.au](http://www.evoheat.com.au)
- South East Asia: [www.evoheat.com.sg](http://www.evoheat.com.sg)

1. Warranty terms are from date of purchase.
2. This warranty excludes any defect or injury caused by or resulting from misuse, abuse, neglect, accidental damage, improper voltage, vermin infestation, incompetent installation, any fault not attributable to faulty manufacture or parts, any modifications which affect the reliability or performance of the unit.
3. This warranty does not cover the following:
  - a. Natural Disasters (hail, lightening, flood, fire etc.)
  - b. Rust or damage to paintwork caused by a corrosive atmosphere
  - c. When serviced by an unauthorized person without the permission of Evo Industries
  - d. When a unit is installed by an unqualified person
  - e. Where a unit is incorrectly installed
  - f. When failure occurs due to improper or faulty installation
  - g. Failure due to improper maintenance (refer Operating Instructions)
  - h. 'No Fault Found' service calls where the perceived problem is explained within the
  - i. Costs associated with delivery, handling, freighting, or damage to the product in transit.
4. If warranty service is required you should:
  - a. contact Evo Industries Australia on 1300 859 933 or via our Contact page on our web site
  - b. provide a copy of your receipt as proof of purchase
  - c. have completed the online warranty registration or provide a completed warranty card.
5. Onsite technical service is available within the normal operating area of your Evo Industries authorized Service Centre. Service outside this area will incur a traveling fee.
6. Unless otherwise specified to the purchaser, the benefits conferred by this express warranty and additional to all other conditions, warranties, rights and remedies expressed or implied by the Trade Practices Act 1974 and similar consumer protection provisions contained in legislation of the States and Territories and all other obligations and liabilities on the part of the manufacturer or supplier and nothing contained herein shall restrict or modify such rights, remedies, obligations or liabilities.

## Warranty Registration

EvoHeat highly recommend customers to complete their warranty details online to ensure efficient warranty claim processing.

To register your warranty, scan our QR Code or head to our website and fill in the Warranty Registration Form: <https://evoheat.com.au/warranty-registration/>



Updated 25/08/21