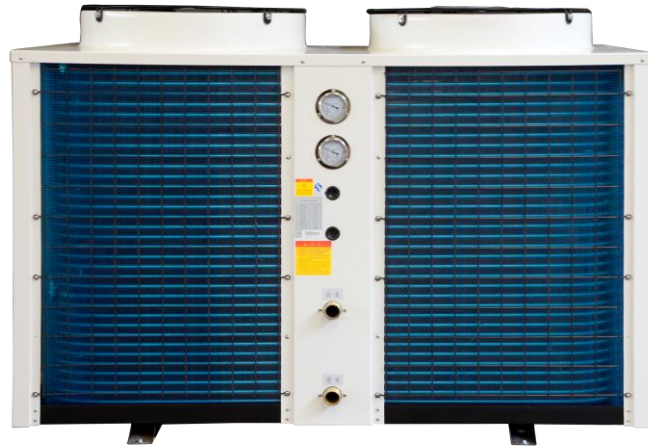


# EVI Hot water heat pumps



## Installation and User's Guide

**IMPORTANT SAFETY INSTRUCTIONS  
READ AND FOLLOW ALL INSTRUCTIONS  
SAVE THESE INSTRUCTIONS**



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## To Users:

1. respected user:

Before installing and using this product, please read this manual carefully. Improper operation may cause damage to the equipment or injury to the operator and property loss.

2. As technology continues to advance, product series and specifications will be adjusted accordingly, so stay tuned for the latest product information.

3. When reading this manual, if you need any technical consultation, please contact the company or local agent.

### 4. ⚠Precautions:

- 4.1 When selecting and installing a heat pump hot water unit, please check whether the corresponding power supply capacity meets the power requirements of the heat pump hot water unit. For details, please refer to the nameplate or installation manual on the unit.
- 4.2 Please be sure to install a leakage protection device. Please be sure to install an all-pole disconnect device with a contact distance of at least 3mm (commonly known as an air switch, which corresponds to the maximum current on the nameplate of the unit).
- 4.3 The hot water unit must be grounded reliably, and it is strictly forbidden to use the unit without reliable grounding. It is strictly forbidden to connect the ground wire to the neutral wire or the water pipe.
- 4.4 The electrician must refer to the wiring diagram when wiring, and the electrician must refer to the wiring diagram when wiring; for safety of use, please do not modify or repair the heat pump hot water unit privately; do not use the hot water unit with the grid or sheet metal removed, In order to avoid accidents or abnormal operation of the unit.
- 4.5 For the sake of safety, please do not modify or repair the heat pump hot water unit privately.
- 4.6 The maximum temperature of the unit can reach 55-85°C. Hot water above 52°C can cause burns. The hot water in the water tank can be used after mixing with cold water.
- 4.7 It is strictly forbidden to insert any tools into the heat pump unit, so as to avoid damage to the unit or accidents caused by touching the fan (children should not be allowed).
- 4.8 Do not use the hot water unit with the grid or sheet metal removed, so as to avoid accidents or abnormal operation of the unit.
- 4.9 When the unit is immersed in water, please contact the factory or its maintenance department immediately, and the unit can only be used again after the technicians have checked and dealt with it.
- 4.10 Unqualified technicians are not allowed to adjust the internal switches, valves, controllers and other components of the unit.
- 4.11 Air source heat pump water heaters are hot water heating equipment and have specific requirements for water quality. Refer to the following:

Ph value	total hardness	Conductivity	Sulfide	Chloride	Ammonia
6.5-8.0	<200 $\mu$ V/cm(25°C)	<50ppm	NA	<50ppm	NA
Sulfate ion	silicon	Iron	Sodium ion	Calcium	
<50ppm	<30ppm	<0.3ppm	Not required	<50ppm	

If the water source is untreated water such as ground water, well water, river water, sea water, mineral water and industrial water, special attention should be paid to the water quality. Water quality that does not meet the requirements must be treated before it can be used.

- 4.12** If the unit or water tank is installed in a place prone to lightning strikes such as the roof of a building, please be sure to take and implement lightning protection measures.
- 4.13** When the ambient temperature is below 0°C, it is strictly forbidden to cut off the power supply. Under this condition, in case of unexpected power failure or power failure for maintenance, please open the drain valve of the unit in time to drain the water in the unit to avoid freezing the internal components of the unit. After draining, please close the drain valve tightly.
- 4.14** The unit is installed under the ambient temperature of 0°C and used below 0°C. Please take effective anti-freezing measures for the inlet and outlet water pipelines and circulating water pipelines during installation to prevent the pipelines from freezing and cracking.
- 4.15** The air source heat pump unit described in this manual is designed according to the following temperature, and the unit should operate within the following range: (product implementation standard: GB/T 21362-2008 GB/T 2531-2010)

Series	Ambient Temperature	Outlet water temperature
Commercial circulating hot water unit	-7~43°C	30~55°C
High temperature hot water unit	5~43°C	80°C
Pool heat pumps	-7~43°C	27~35°C
Low temperature hot water unit	-15~43°C	30~55°C
<b>EVI Hot water heat pumps</b>	<b>-25~43°C</b>	<b>30~55°C</b>

- 4.16** The company's air source heat pump hot water series units have been filled with refrigerant, and the saturated vapor pressure of the refrigerant corresponds to the temperature. The higher the temperature, the higher the corresponding saturated steam pressure. To ensure the safety of the unit, the ambient temperature around the unit during operation should not exceed 45°C, otherwise the unit will be in danger of high-pressure alarm. When the unit has refrigerant, it is strictly forbidden to flame cutting or welding on the

pipes of the heating system of the unit. It is strictly forbidden to tighten bolts or nuts when the unit is running or under pressure; if leakage is found on the connecting surface, the bolts and nuts must be tightened after the pressure is relieved. Avoid refrigerant leakage during unit commissioning and use. The human body's acceptable refrigerant vapor concentration (AEL) in the air is 1000ppm, and the operator working under this concentration has no adverse effects on the body. However, if a large number of spills or leaks occur, the refrigerant vapor will be concentrated in low places close to the ground, causing the human body to lack oxygen and become unsuitable. At this time, ventilation should be strengthened, and a fan can be used to ventilate the air close to the ground. Before the refrigerant vapor is removed, do not enter the contaminated area to avoid adverse effects on the human body. Do not let the liquid refrigerant contact the skin and eyes to avoid frostbite of the skin and eyes.

**4.17** Upon receipt of the unit, check immediately according to the packing list and carefully check whether all items are complete and whether the unit has any damage caused by transportation. If the unit is obviously damaged, it should be noted on the shipping company's freight bill, and the shipping agent should be asked in writing to inspect it immediately. The company will not be liable for compensation for any damage that occurs after the arrival of the goods is qualified.

- **Warning:**

- ① When installing, be sure to install a Y-type filter at the water inlet.
- ② When the ambient temperature is lower than 0°C, drain the water in the pipe when the unit is not used for a long time.
- ③ Regularly clean the fin evaporator, otherwise it will affect the heat absorption effect of the unit. The power must be turned off when cleaning.
- ④ Do not use it to heat ground water, mountain spring water, reservoir water, sea water, etc. with high hardness, otherwise it will affect the heat exchange effect of the unit and damage the heat exchanger and compressor. If necessary, it is recommended to install a silicon-phosphorus crystal device for water quality treatment.

Failure to follow the above operations is not covered by the warranty.

# Section 1 Introduction

## Product Overview

Air source heat pump water heater (machine) is one of the best equipment in the world to exploit new energy. It is a new generation of hot water production device after boiler, gas water heater, electric water heater and solar water heater. In today's increasingly tight energy supply, air-source heat pump water heaters are quickly being promoted in the market by virtue of their high efficiency, energy saving, environmental protection, safety and many other advantages.

Our heat pumps are not only highly efficient, but also easy and safe to operate.

## General Features

- **Safe and reliable**

A heat pump water heater is a bathing device that uses electricity but does not use electricity for heating. Because electric heating is not used, the electric current is completely isolated from the shower water, and the safety factor is further improved. It does not have the safety problems of electric water heaters, gas water heaters, such as easy electric shock, flammability, explosiveness, and easy poisoning. It is a relatively safe and reliable hot water supply equipment today.

- **Efficient power saving**

The heat pump water heater obtains a large amount of free heat energy from the air, and the electric energy consumed is only the energy required by the compressor to carry air and sunlight energy. Therefore, to provide the same amount of hot water, its electricity consumption is only about a quarter of that of a traditional electric water heater, which can save users a large amount of electricity bills.

- **Environmental protection**

The heat pump water heater uses three clean energy sources: solar energy, air heat energy and electric energy, without the environmental pollution caused by the use of oil, coal, gas and other fossil fuels. It does not emit harmful gases during the working process, and users do not have to worry about human health problems even if they bathe in a confined space.

- **Used around the clock**

Heat pump water heaters are not adversely affected by bad weather such as overcast and rain, and can be used 24 hours a day. This makes up for the general solar energy that is affected by the weather and cannot guarantee the supply of hot water at any time 365 days a year. And an accurate water temperature control system is installed to ensure a constant water temperature during the bathing process.

- **Long lasting**

The main spare parts such as compressors and four-way valves used in heat pump water heaters are made of high-quality products produced by world-renowned

factories, and the outer shell is made of corrosion-resistant, ultra-thick coated steel plate, thus ensuring product quality, and its service life is more than ten years. It is much longer than the service life of other types of water heaters.

- **Easy to install**

The heat pump water heater is easy to install and is not restricted by the environment. It can be installed on the roof, balcony, garage, kitchen, storage room, basement, etc., without special supervision or setting up a dedicated computer room.

- **Widely used**

Heat pump water heaters have a series of products with different capacities, which can meet the needs of ordinary families, factories, schools, hotels, restaurants, hospitals, beauty salons, laundry shops, bathing centers and other units, and provide users with a steady stream of hot water for life and production.

## Section 2 Installation

The following general information describes how to install the Commercial air source heat pump.

**Note: Before installing this product, read and follow all warning notices and instructions. Only a qualified service person should install the heat pump.**

### Materials needed for Installation

The following items are needed and are to be supplied by the installer for *all* heat pump installations:

1. Plumbing fittings.
2. Level surface for proper drainage.
3. Ensure that a suitable electrical supply line is provided. See the rating plate on the heat pump for electrical specifications. Please take a note of the specified current rating. No junction box is needed at the heat pump; Connections are made inside of the heat pump electrical compartment. Conduit may be attached directly to the heat pump jacket.
4. It is advised to use PVC conduit for the electrical supply line.
5. Use a booster pump for pumping water in case of low water pressure.
6. A filter on the water inlet is needed.
7. The plumbing should be insulated to reduce its heat loss.

Note: We recommend installing shut-off valves on the inlet and outlet water connections for ease of serviceability.



Model No.		VM-0MC3210018-P	VM-0MC3210036-P	VM-0MC3210053-P	
Heating Capacity (20°C)	<b>kW</b>	17.8	35.5	52.5	
Nominal Heating Capacity (7°C)	<b>kW</b>	12	24	34.5	
<b>COP</b>	<b>W/W</b>	3.9	3.9	4.1	
Nominal Heated Water Output	<b>L/h</b>	383	763	1129	
Rated Hot Water Temp	<b>°C</b>	55	55	55	
<b>Power Supply</b>		380V 3N~/50Hz			
<b>Anti-electric Shock Rate</b>		I			
<b>IP Grade (Level of Protection)</b>		IPX4			
<b>Compressor Brand</b>		Copeland			
<b>Compressor Qty</b>		1	2	1	
<b>Refrigerant</b>		R410A			
<b>Working Ambient Temp</b>	<b>°C</b>	-25~43			
<b>Noise</b>	<b>dB(A)</b>	≅ 56	≅ 60	≅ 60	
<b>Rated Water Circulation</b>	<b>m<sup>3</sup>/h</b>	3.06	6.11	9.03	
<b>Diameter of Pipe</b>		G1"(female thread)	G1-1/2"(female thread)	G1-1/4"(male thread)	
<b>Product Size</b>	<b>Length</b>	<b>mm</b>	750	1480	1020
	<b>Width</b>	<b>mm</b>	805	917	980
	<b>Height</b>	<b>mm</b>	1165	1070	1870
<b>Nominal Working Condition:</b>					
<b>Dry bulb temperature 7°C, Wet bulb temperature 6°C, Inlet water temperature 9°C, Outlet water temperature 55°C.</b>					

Model No.			VM-1MC3210053-P	VM-0MC3210086-P	VM-0MC3210108-P
Heating Capacity (20°C)	kW		52.5	86	108
Nominal Heating Capacity (7°C)	kW		34.5	53	63
COP	W/W		4.1	4.1	4.1
Nominal Heated Water Output	L/h		1129	1849	2322
Rated Hot Water Temp	°C		55	55	55
Power Supply			380V 3N~/50Hz		
Anti-electric Shock Rate			I		
IP Grade (Level of Protection)			IPX4		
Compressor Brand			Danfoss	Copeland	
Compressor Qty			1	2	2
Refrigerant			R410A		
Working Ambient Temp	°C		-25~43		
Noise	dB(A)		≦ 60	≦ 62	≦ 62
Rated Water Circulation	m <sup>3</sup> /h		9.03	14.79	18.58
Diameter of Pipe			G1-1/4"(male thread)	DN65(flange)	DN65(flange)
Product Size	Length	mm	1020	2080	2080
	Width	mm	980	1000	1000
	Height	mm	1870	1900	1900
Nominal Working Condition: Dry bulb temperature 7°C, Wet bulb temperature 6°C, Inlet water temperature 9°C, Outlet water temperature 55°C.					

Correct installation is required to ensure safe operation. The requirements for heat pumps include the following:

1. Dimensions for critical connections.
2. Field assembly (if required).
3. Appropriate site location and clearances.
4. Proper electrical wiring.
5. Adequate water flow.

**This manual provides the information needed to meet these requirements. Review all application and installation procedures completely before continuing the installation.**

### **Installation Location**

#### **CAUTION!**

1. DO NOT install the heat pump near to hazardous materials and places
2. DO NOT install the heat pump under deep sloping roofs without gutters which will allow rain water, mixed with debris, to be forced through the unit.
3. Place the heat pump on a flat slightly pitched surface, such as concrete or fabricated slab. This will allow proper drainage of condensation and rain water from the base of the unit. If possible, the slab should be placed at the same level or slightly higher than the filter system/equipment.

### **Installation details**

All criteria given in the following sections reflect minimum clearances. However, each installation must also be evaluated, taking into account the prevailing local conditions such as proximity and height of walls, and proximity to public access areas. The heat pump must be placed to provide clearances on all sides for maintenance and inspection.

1. The installation area must have good ventilation and the air inlet/outlet must not be hindered.
2. The installation area must have good drainage and be built on a solid foundation.
3. Do not install the unit in areas accumulated with pollutions like aggressive gas (chlorine or acidic), dust, sand and leaves etc.
4. For easier and better maintenance and troubleshooting, no obstacles around the unit should be closer than 500mm. And no obstructions within 2m, vertically, from the unit for air ventilation. (See Figure 1)

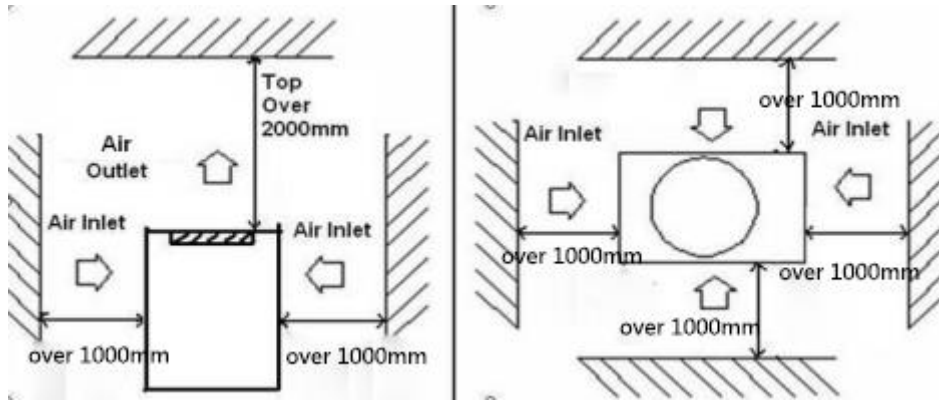


Figure 1

5. The heat pump must be installed with shockproof bushes to prevent vibration and/or imbalance.
6. Even though the controller is waterproof, care should be taken to avoid direct sunlight and high temperature. In addition, the heat pump should be placed to ensure quality viewing of the controller.
7. The plumbing pipes must be installed with proper support to prevent possible damage due to vibration.

Running water pressure should be kept over 196kpa. Otherwise, booster pump should be installed.

8. The acceptable operating voltage range should be within  $\pm 10\%$  of the rated voltage. When heat pump units are installed in parallel, ensure that the voltage differences, between these units, are within  $\pm 2\%$ .

- The heat pump unit must be grounded /earthed for safety purposes.

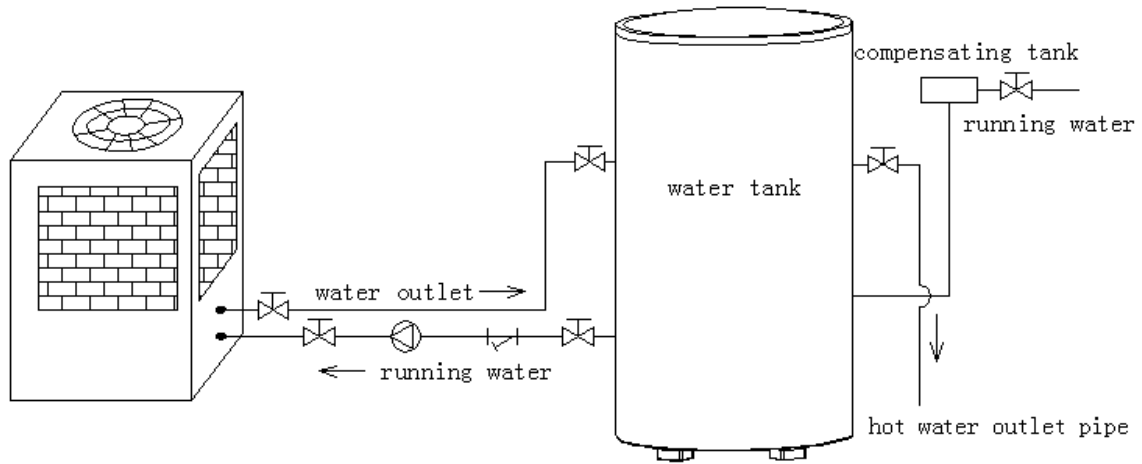
9. The water tank should be placed in a place where the ambient temperature is above  $0^{\circ}\text{C}$ .






### Drainage and Condensation

Condensation will occur from the evaporator when the unit is running and drain at a steady rate, depending upon ambient air temperature and humidity. The more humid the ambient conditions, the more condensation will occur. The bottom of the unit acts as a tray to catch rainwater and condensation. Keep the drain holes, located on the bottom pan of the unit base, clear from debris at all times.

### Commercial air source heat pump Installation Diagram (See Figure 2)

## Cycle heating heatpump Installation Diagram



Magnetic valve  water flow direction   
ball valve  Y style filter  one-way valve 

**Figure 2**

## Water Connections

### Water Connections at the Heat Pump

Quick Connect fittings are recommended to be installed on the water inlet and outlet connections. (See Figure 3)



**Figure 3**

Tap water is plumbed to the inlet, located on the right side of the heat pump unit. Heated water flows through the outlet, located on the right side of the heat pump to the water tank.

It is recommended to use stainless steel and PVC/PPR pipes for the heat pump plumbing. The water inlet and outlet connection to the heat pump (40mm or threaded

entry female) accepts stainless steel or PVC/PPR pipe fittings.

**⚠ CAUTION** — Make sure that flow requirements and tap water turnover rates can be maintained with the installation of additional heat pumps and plumbing restrictions.

### **Plumbing installation requirements**

1. The user's water pressure should be less than 0.6MPa. Each part connected to unit needs to be connected with method of loose joint and installed with intermediate valve.
2. Ensure that all plumbing has been properly completed and then proceed to do a water leakage and pressure test.
3. All the pipelines and pipe fittings must be insulated to prevent heat loss.
4. Install a drain valve at the lowest point of the system to enable the system to be drained during freezing conditions (winterizing).
5. Install a check valve on the water outlet connection in order to prevent back siphoning when water pump stops.
6. In order to reduce the back pressure, the pipes should be installed horizontally
7. And minimize the elbows (90 degrees connections). If a higher flow rate is required, install a bypass valve.

### **Electrical Connections**

**⚠ WARNING** —Risk of electrical shock or electrocution.



Ensure that all high voltage circuits are disconnected before commencing heat pump installation. Contact with these circuits could result in death or serious injury to users, installers or others, due to electrical shock and may also cause damage to property.

**⚠ CAUTION** — Label all wires prior to disconnection when servicing the heat pump. Wiring errors can cause improper and dangerous operation. Check and ensure proper operation after servicing.

### **General Information**

Wiring connections must be done according to the wiring diagram found on the inside of the heat pump access panel or see addendum A for reference.

The heat pump must be grounded / earthed. A ground lug is provided on the inside of the heat pump electrical compartment.

### **Power supply**

1. If the supply voltage is too low or too high, it can cause damage and/or result in unstable operation of the heat pump unit, due to high inrush currents on start up.
2. The minimum starting voltage should be above 90% of rated voltage. The acceptable operating voltage range should be within  $\pm 10\%$  of the rated voltage. When heat pump units are installed in parallel, ensure that the voltage difference, between these units, is within  $\pm 2\%$  of each other. The voltage difference between phases of a three phase power supply should be within  $\pm 2\%$ .
3. Ensure the cable specifications meet the correct requirements for the specific installation. The distance between the installation site and mains power supply will affect the cable thickness. Follow the local electrical standards to select the cables, circuit breakers and isolator breakers.

### **Grounding and Over Current Protection**

In order to prevent electrical shock in case of leakage from unit, install the heat pump according to local electrical standard.

1. Do not interrupt the voltage supply to the heat pump frequently as this may result in a shorter life expectancy of the heat pump.
2. When installing over current protection, ensure that the correct current rating is met for this specific installation.
3. The Compressor, fan coil unit and heat pump water pump all have AC-contactor and thermo relay protection. Therefore, in the process of installation and debugging, firstly measure each of the aforementioned components' current, and then adjust the current protection range of the thermo relays.

### **Controller PCB board Settings**

The Controller PCB has a pin selectable toggle switch which must be set according to the specific installation requirement.

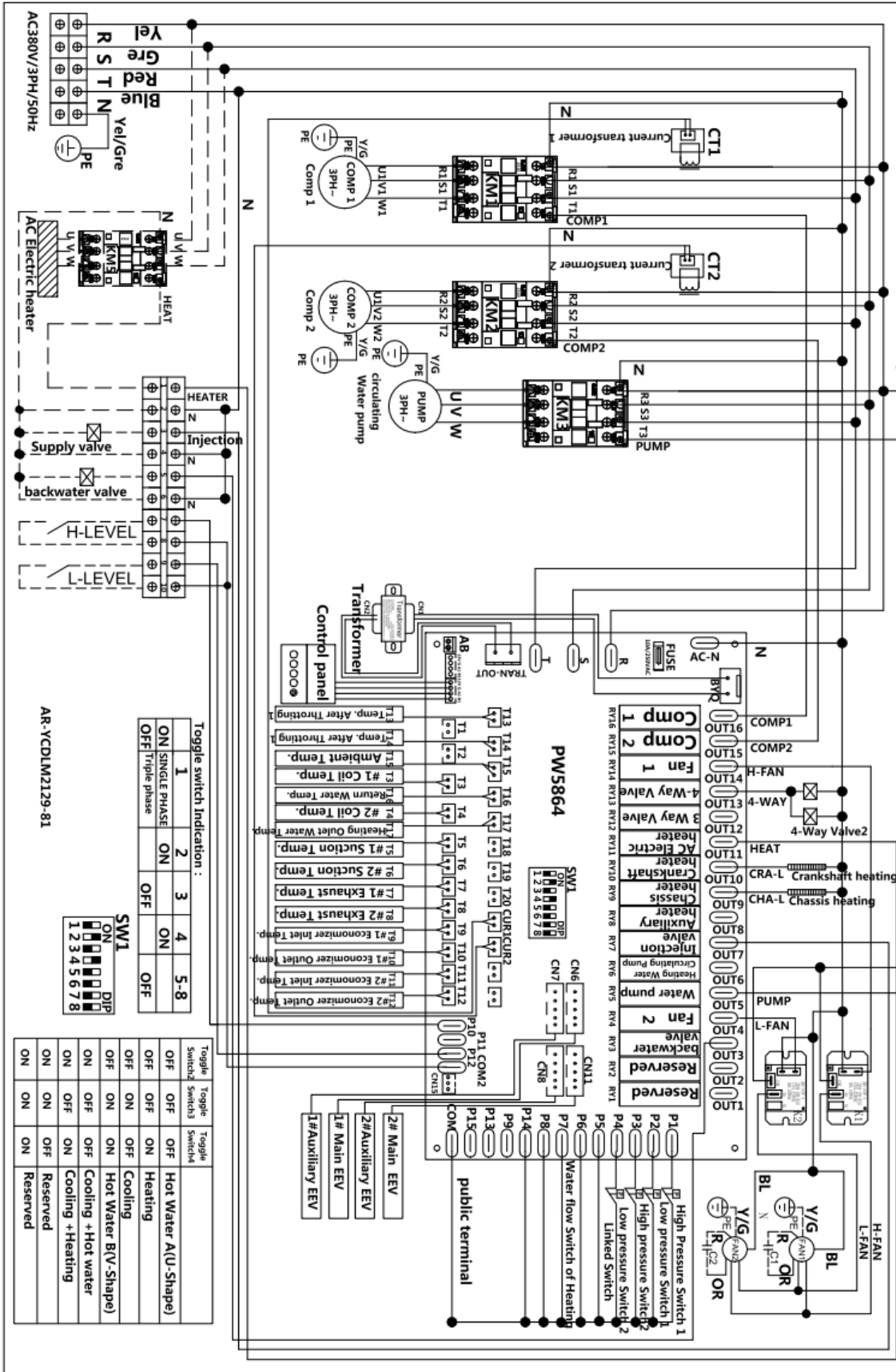
### **NOTE:**

Before any changes are made to the pin settings, ensure that the mains supply power is OFF at the circuit breaker or physically disconnected from the mains supply.

Electric wiring diagram  
VM-0MC3210036-P

Electrical wiring diagram of dual system EVI Low Temp. HEAT PUMP

Attention  
: - - - Dotted line is stand for end user  
—— Solid line is stand for factory



Toggle switch Indication :

1	2	3	4	5-8
ON SINGLE PHASE	ON	OFF	ON	OFF
OFF Triple phase	OFF	OFF	OFF	OFF

SW1

ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
1	2	3	4	5	6	7	8	9	10

Toggle Switch3	Toggle Switch4	Toggle Switch1	Toggle Switch2
OFF	OFF	OFF	OFF
OFF	OFF	ON	ON
OFF	ON	OFF	OFF
OFF	ON	OFF	OFF
ON	ON	ON	ON
ON	ON	OFF	OFF
ON	ON	ON	ON
ON	ON	OFF	OFF
ON	ON	ON	ON
ON	ON	OFF	OFF
ON	ON	ON	ON

AR-YCDLM2129-81

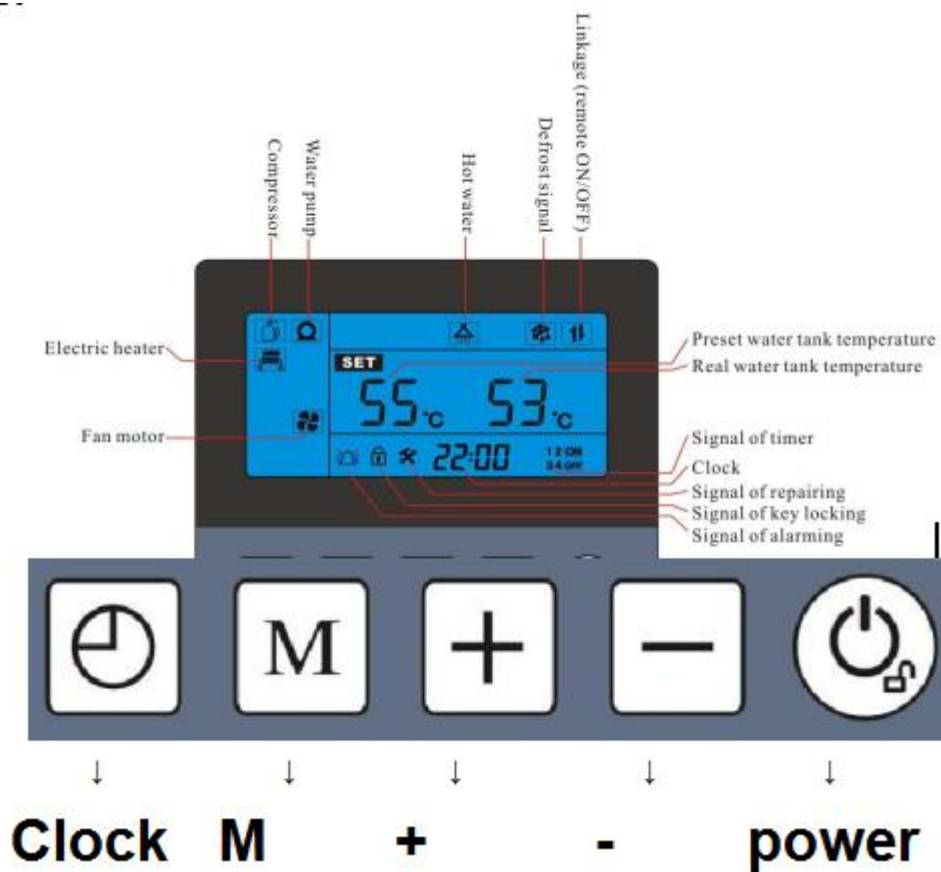




# Section 3

# Operating Heat Pump

## 1. Control Panel



## 2. Operation

### 2.1 Unlock

In the button lock state, the touch buttons are locked, and touching any button is invalid. Button unlock: When the screen is locked, press and hold "🔒" for 5 seconds to unlock the screen "🔓", and after the buzzer beeps once, unlock the buttons (when there is no button operation for about 60 seconds, the buttons will be automatically locked ,display the button lock symbol).

### 2.2 Power on/off the Machine

In the unlock state, long press "🔌" for 1 second to switch on/off. In other setting states, press "🔌" to return to the main interface.

### 2.3 Mode and Temperature Setting

This machine is a hot water machine with only hot water mode. When the hot water

mode is turned on, the "🏠" icon will be displayed at the top of the screen.

Temperature setting: touch the "+" button with your finger, the "SET" symbol will start to flash and display the set temperature, and then touch the "+" button with your finger, the set temperature will increase. Touch the "-" button with your finger, the symbol of "SET" starts to flash and the set temperature is displayed, and then touch the "-" button with your finger to decrease the set temperature. Temperature setting range: hot water mode: 20 degrees C - 55 degrees C.

## 2.4 Forced Defrosting

In the power-on state, long press the "-" button for 5 seconds to enter the forced defrosting, long press the "🕒" button to completely exit the forced defrosting after shutting down, or the defrosting time reaches the set time to exit the forced defrosting.

Note: Only when the coil temperature is lower than the defrosting exit temperature, can the forced defrosting can be entered.

## 2.5 Clock Setting

In the main interface, press the "🕒" button for 5 seconds to enter the real-time clock setting interface. In the real-time clock interface, press the "🕒" button, the number of hour will flash, and press the "+" or "-" button at this time, then you can set the hour of the real-time clock. Then touch the "🕒" button with your finger to adjust the "minute" of the clock, and then touch the "🕒" button with your finger to complete the setting and exit the setting mode. In the real-time clock setting interface, press the "🕒" button to confirm the current real-time clock setting value and return to the main interface.

## 2.6 Timer Setting

On the main interface, press the "🕒" button to enter the setting interface of the timer.

At this time, press the "+" button or "-" button to set the timer group, 1, 2, 3, 4, water supply, totally 5 timer.

When the timer 1 is flashing regularly, press the "🕒" button to enter the setting interface of the scheduled start-up time's hour for the timer 1, the number of the scheduled start-up time's hour flashes, press the "+" or "-" key at this time, you can set the hour for timer 1's start-up.

After setting the hour of the scheduled start-up, press the "🕒" button again, and the number of the scheduled start-up time's minute flashes. At this time, press the "+" button or "-" button to set timer 1's minute.

After setting the timer 1's minute of start-up, press the "🕒" button again to enter the timer 1's shutdown hour setting, the setting method is the same as above.

After setting the timer's shutdown time, press the "🕒" button again to confirm the

current timer's on/off time, enter the setting of timer 2's on/off, the setting is consistent with timer 1, and return to the main interface.

In the timer setting interface, long press the "⏸" button for 5 seconds to cancel the timer on/off of the current timer.

In the timer interface, if there is no button operation for 30 seconds, confirm the current set timer time and return to the main interface. (memory when power off after timer)

In the timer interface, press the "⏹" button to confirm the current set timer time and return to the main interface.

The other timers are the same as the timer 1's setting.

Remarks: Timer 1 and 2 are timer on/off, timer 3 is timer replenishment on/off.

## 2.7 Parameter Query

Under main interface, press "M" button for 5 seconds to enter heat pump working parameter query; press "+" or "-" button to query each parameter.

### 2.7.1 The Query Code List as below:

Code	Meaning	Code	Meaning
A0	Water tank temperature (hot water mode)	A15	Return air 2 temperature
A1	Outlet water temperature (hot water mode)	A16	Temperature 2 after throttling
A2	Coil 1 temperature	A17	Economizer inlet 2 temperature
A3	Return air 1 temperature	A18	Economizer outlet 2 temperature
A4	Exhaust 1 temperature	A19	Current value of press 2
A5	Ambient temperature	A20	Main circuit 2 electronic expansion valve opening
A6	Economizer inlet 1 temperature	A21	Auxiliary circuit 2 electronic expansion valve opening
A7	Economizer outlet 1 temperature	A22	Heating water temperature
A8	Heating return water temperature	A23	User pipeline return water temperature
A9	Current value of press 1	E1	Fault code history
A10	Main circuit 1 electronic expansion valve opening	E2	Fault code history
A11	Auxiliary circuit 1 electronic expansion valve opening	E3	Fault code history

<b>A12</b>	Temperature 1 after throttling	<b>E4</b>	Fault code history
<b>A13</b>	Coil 2 temperature	<b>E5</b>	Fault code history
<b>A14</b>	Exhaust 2 temperature	<b>E6</b>	Fault code history

## 2.7.2 User Parameter Query and Setting:

- User parameter query and setting (can be set no matter on and off)
- In the main interface, long press the "M" button for 3 seconds to enter the user parameter query interface. Press the "+" button or "-" button to query each parameter.
- In the user parameter query interface, press the "M" button to enter the current user parameter setting interface, at this time press the "+" or "-" button to modify the current user parameter value, and then press the "M" key to return query status.
- In the user parameter query or user parameter setting interface, if there is no button operation for 30 seconds, it will automatically exit the user parameter query interface or user parameter setting interface and return to the main interface. Press the switch button to return to the main interface.

The related parameters are as follows:

Code	Description	Adjustment Range	Default
L0	Hot water hysteresis	2°C~18°C	3°C
L1	Hot water set temperature	20°C~parameterF1	55°C
L2	Refrigeration return difference	2°C~18°C	5°C
L3	Cooling set temperature	10°C~32°C	12°C
L4	Heating return difference	2°C~18°C	5°C
L5	Heating set temperature	12°C~55°C	40°C
L6	Allow the electric heating to turn on the ambient temperature	-30°C~35°C	-15°C
L7	Return water temperature	20°C~80°C	30°C

L8	Allowable water temperature	20°C~80°C	48°C(20°C is not affected by water temperature)
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### 2.8 Manual Electric Heating:

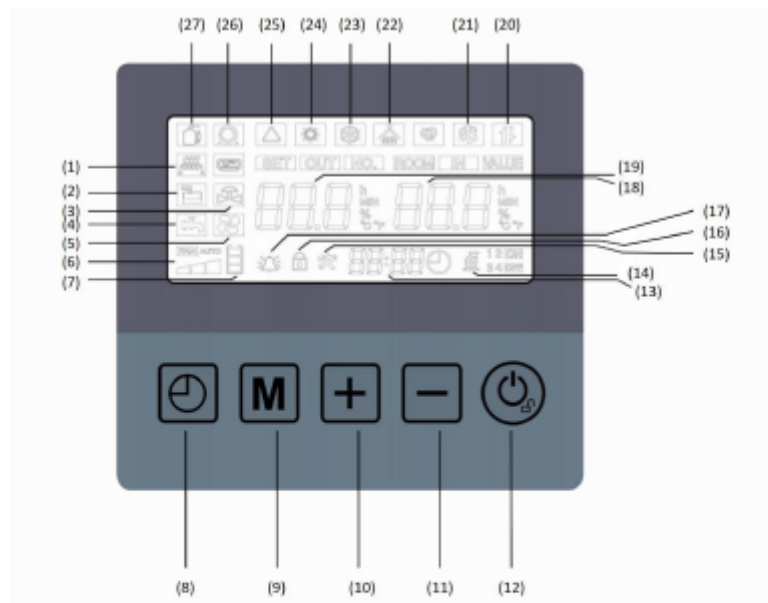
Long press “⏸” timer button + on/off button “⏻” for 3 seconds to turn on/off electric heating manually.

### 2.9 Clear Historical Errors:

In the historical fault query interface, long press the “⏸” button + "M" key for 5 seconds to clear the previously stored historical errors.

### 2.10 Parameter Factory Setting Recovery:

In the shutdown state, press and hold the button “-” + “⏸” button for 5S, the parameters will be restored to factory settings.



Serial Number	Meaning
(1)	Electric heater
(2)	Replenishment water valve
(3)	Return water valve
(4)	Water supply pump
(5)	Fan motor
(6)	Fan speed
(7)	Water level
(8)	Timer setting / Cancel timer setting / Clock setting
(9)	Status query Parameter setting
(10)	Up; Increase; Mode switching
(11)	Down; Decrease; Frost defrosting
(12)	On-off; Unlock
(13)	Clock display
(14)	Scheduled water supply
(15)	Maintenance icon
(16)	Lock icon
(17)	Alarm icon
(18)	Water tank temperature display
(19)	Outlet water temperature display
(20)	Cascade Icon
(21)	Defrosting Icon
(22)	Hot water mode
(23)	Cooling mode
(24)	Heating mode
(25)	Eco mode
(26)	Circulation pump icon
(27)	Compressor icon

### 3. Controller Error Code

Error code	Description(double system)	Error code	Description(double system)
Er 01	Phase failure	Er 20	Ambient temp sensor failure
Er 02	Phase stagger	Er 21	Return water sensor failure
Er 03	Water flow failure on the hot water side (hot water conditioning mode is invalid)	Er 22	Water sensor failure (hot water mode)
Er 04	Air conditioner side water flow failure (hot water mode is invalid)	Er 23	Suction gas 1 sensor failure
Er 05	High pressure 1 protection	Er 24	Suction gas 2 sensor failure
Er 06	Low pressure 1 protection	Er 25	Economizer inlet 1 sensor failure
Er 07	High pressure 2 protection	Er 26	Economizer inlet 2 sensor failure
Er 08	Low pressure 2 protection	Er 27	Economizer outlet 1 sensor failure
Er 09	Communication failure	Er 28	Economizer outlet 2 sensor failure
Er 10	Water tank sensor failure	Er 29	Compressor 1 current protection
Er 11	Limited time lock	Er 30	Compressor 2 current protection
Er 12	Exhaust gas 1 overheat protection	Er 31	Water level switch failure
Er 13	Exhaust gas 2 overheat protection	Er 32	Ambient temperature too low protection
Er 14	Temperature 1 failure after throttling	Er 33	Heating water sensor failure
Er 15	Temperature 2 failure after throttling	Er 34	Air conditioner water out-cooling protection (below 4 degrees)
Er 16	Evaporator coil 1 sensor failure	Er 35	User water return sensor failure
Er 17	Evaporator coil 2 sensor failure	Hot water icon flashes	Antifreeze on hot water side
Er 18	Exhaust gas 1 sensor failure	Heating icon flashes	Antifreeze on the air-conditioning side
Er 19	Exhaust gas 2 sensor failure		

Note: When there is protection for fault, the error code will be displayed and flash with alarm.

### 4. Common faults and troubleshooting methods

If the user finds a problem with the unit during use, please contact the professional maintenance personnel. The maintenance personnel may need to refer to the following table to troubleshoot the problem when handling the problem.



<b>Fault</b>	<b>Possible reasons</b>	<b>Solutions</b>
The unit is not running	<p>electricity failure</p> <p>Loose power wiring of the unit</p> <p>Unit power fuse blown</p> <p>Thermal overload protector tripped</p> <p>Voltage is too low</p>	<p>Turn off the power switch and check the power supply</p> <p>Find out the cause and fix it</p> <p>Replace with a new fuse</p> <p>Detect unit voltage and current</p>
The pump is running but the water does not circulate or the pump is noisy	<p>Water shortage in the water system</p> <p>There is air in the water system</p> <p>Water system valves are not fully opened</p> <p>Dirty water filter</p>	<p>Check the system water replenishment device and replenish water to the system</p> <p>Exhaust air from the water system</p> <p>Fully open the water system valve</p> <p>Cleaning the water filter</p>
heating capacity is low	<p>Insufficient refrigerant</p> <p>Poor water system insulation</p> <p>Clogged filter drier</p> <p>Poor heat dissipation in the air heat exchanger</p> <p>Insufficient water flow</p>	<p>The system detects leaks and is charged with refrigerant</p> <p>Strengthen water system insulation</p> <p>Replace the filter drier</p> <p>Clean air heat exchanger</p> <p>Cleaning the water filter</p>
The compressor does not run	<p>electricity failure</p> <p>The compressor contactor is damaged</p> <p>Loose wiring</p> <p>Compressor overheat protection</p> <p>Outlet water temperature is too high</p> <p>Insufficient water flow</p> <p>Compressor overload protector tripped</p>	<p>Find out the cause and solve the power failure</p> <p>Replace the contactor</p> <p>Identify the loose point and repair it</p> <p>Check unit pressure and exhaust temperature</p> <p>Reset the water temperature</p> <p>Clean the water filter and remove the air from the system</p> <p>Check whether the unit's operating current and overload protector are damaged</p>
The noise of compressor is too big	<p>Liquid refrigerant enters the compressor</p> <p>The internal parts of the compressor are damaged</p> <p>Voltage is too low</p>	<p>Check whether the expansion valve fails</p> <p>Replace compressor</p>

The fan does not work	The fan fastening screws are loose Fan motor burned out Damaged contactor	Retighten the screws Replace the fan Replace the contactor
The compressor is running, but the heat pump is not heating	All refrigerant leaked Compressor failure Compressor reverse	The system detects leaks and is charged with refrigerant Replace compressor Reversing the compressor phase sequence
water flow too low protection	Insufficient water flow in the system Water flow switch failure	Clean the water filter and remove the air from the system Check the water flow switch and replace it again
Exhaust pressure is too high	Too much refrigerant The refrigeration system has non-condensable gas Insufficient water flow Water temperature is too high	Exhaust excess refrigerant Discharge non-condensable gas Check the water system and increase the water flow Check whether the water temperature probe is damaged Adjust the working opening of the electronic expansion valve
Suction pressure to low	Clogged filter drier The electronic expansion valve does not open Refrigerant leak	Replace the filter drier Repair or replace the electronic expansion valve Check for leaks and re-add refrigerant Adjust the working opening of the electronic expansion valve
Compressor oil loss	Insufficient lubricating oil	Add lubricant
Defrost is not clean	Coil sensor falls off Inaccurate setting of defrost parameters	Check whether the temperature sensing position of the coil probe is accurate and whether it is damaged Re-adjust the defrost parameters

Exhaust temperature is too high	Insufficient refrigerant in unit Unit pressure is too high Dirty heat exchanger The refrigeration system contains non-condensable gas	Re-add refrigerant Check the unit current and water flow Cleaning the heat exchanger Re-vacuum Adjust the working opening of the electronic expansion valve
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