

# **Heat Pump User Manual**

Comprehensive version

(EVI heat pump and High temp. heat pump)



### Attention

*Thank you for choosing our product, we shall be more than glad to service you. For you to better operate this product and to prevent accidents due to misoperation, please read carefully this user manual before carrying out any installation or operation, also please pay special attention to the warning, prohibition and attention instructions. We are continuously supplementing and upgrading this user manual to better service for you!*

## This manual is suitable for below heat pumps:

No.	Abbreviations	Details	Model
1	EVI-HW	EVI air source heat pump hot water series	
2	EVI-HH	EVI air source heat pump heating + hot water series	
3	EVI-HC	EVI air source heat pump heating and cooling series	
4	HT	Air source high temperature heat pump	

Note: Abbreviations name will be used in the below content, pls check the related content for your heat pump referring to the form above.

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# Part 1 Before Use

## 1. Attentions



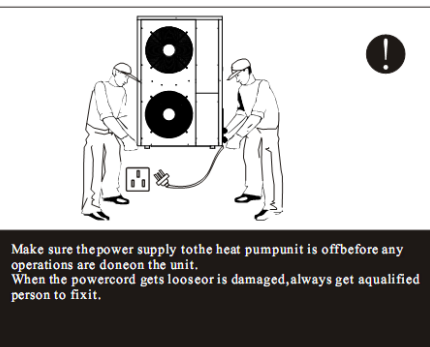
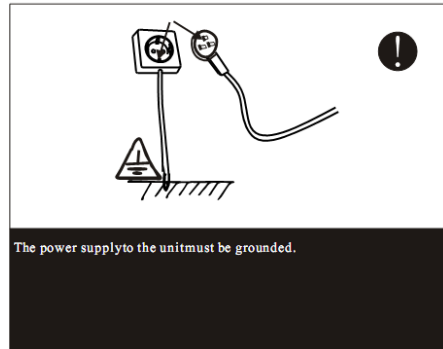
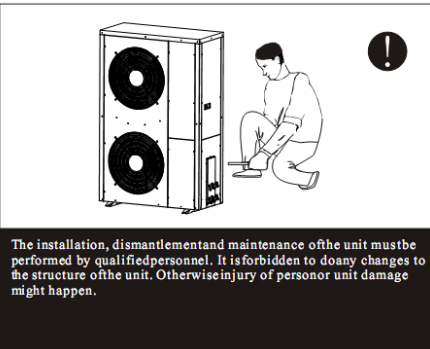
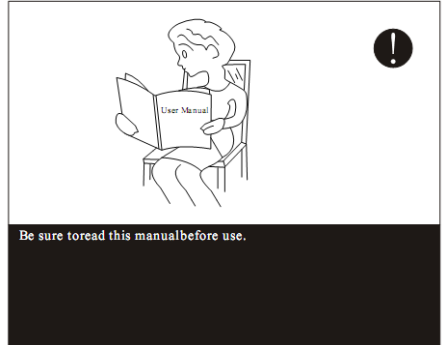
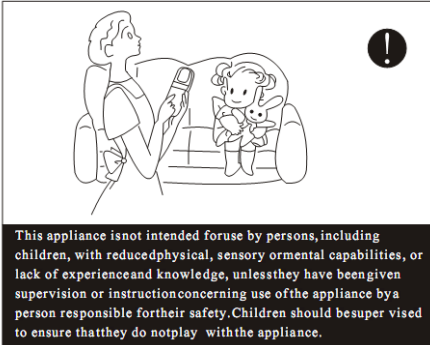
Warning

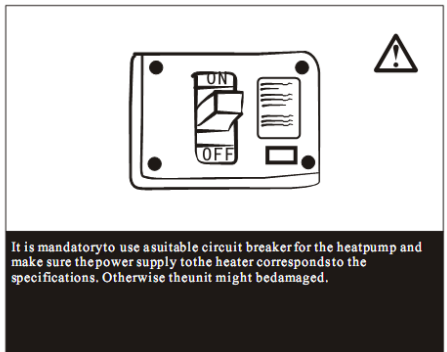
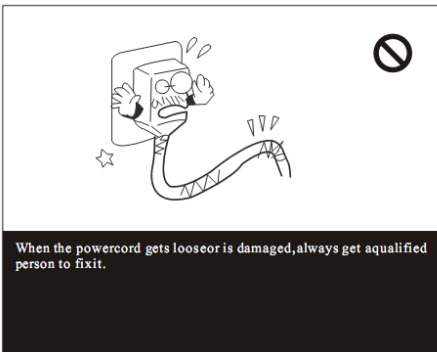
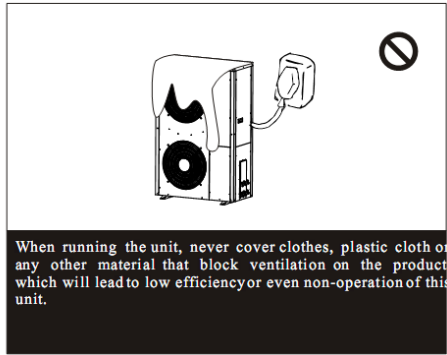
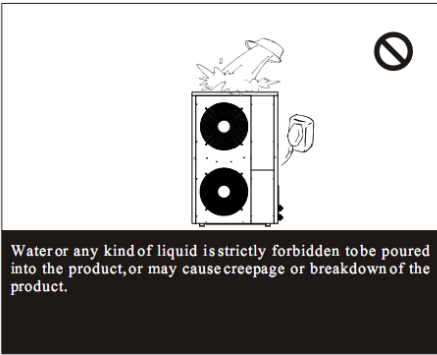
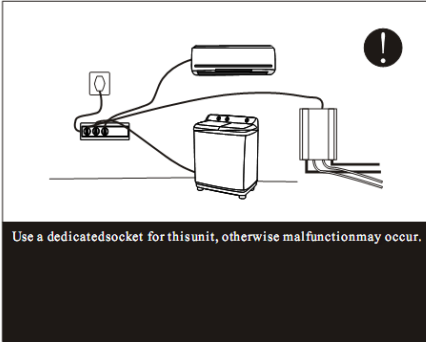


Caution



Prohibition

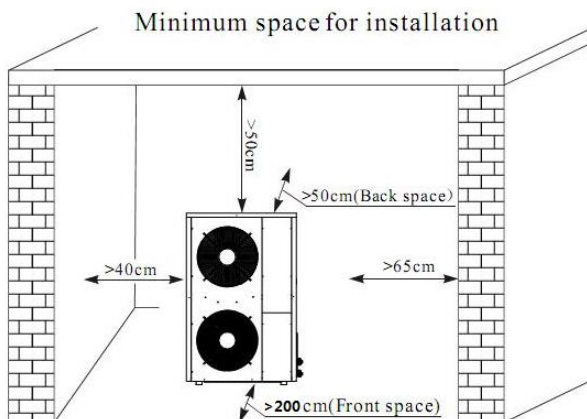




## 2. Installation

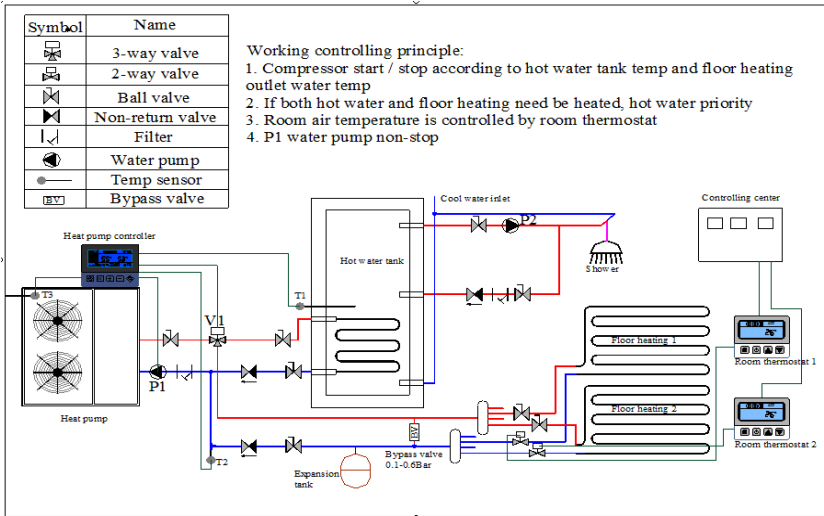
### A. Heat pump installation location and attentions

- \*. Heat pump is not allowed to be installed in the place where combustible gas may leaks.
- \*. Heat pump is not allowed to be installed in the place where there is oil or corrosion gas released.
- \*. Heat pump should be installed in a open space, and good ventilating.
- \*. Heat pump each side to wall or barrel should be keep certain distance, air outlet to barrel distance should  $\geq 2\text{m}$ , air inlet distance to wall or barrel  $\geq 0.5\text{m}$ , bottom distance to ground  $\geq 0.5\text{m}$ , other side distance should be enough for installation or repairing.
- \*. Heat pump should be installed on concrete basic or steel bracket, and anti-shock pad should be put between heat pump and basic or bracket. Then use expansion bolt to fix heat pump on bracket.
- \* Water drainage pipe and ditch should be set around heat pump and water pipes and water tank. When testing or repairing, maybe need drain plenty of water, and when heat pump is working, there are some condensed water flow down.

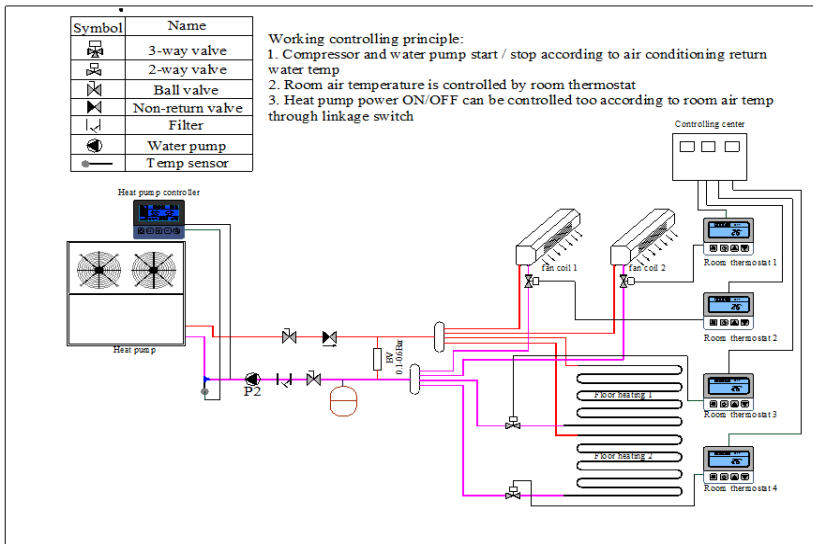


## B. Installation diagram ( it is only for reference,the actual installation shall be based on actual project)

\* for hot water and floor heating



\*for heating/cooling



### **Tips for installation related to the water pipe part:**

- \* Install a valve at the highest point of each water circulation for releasing air from water system.
- \* A Y filter is very important in front of circulating water pump of heat pump.
- \* If more heat pumps installed in one water pipe system, the connection of these heat pumps can't be in series, only can be in parallel or independent.

### **C. Pre-start up**

#### 1. Checking before pre-start up

- \* Check if the water pipe are connected well and if there is any leakage.

The water supply valve are open.

- \* Make sure the water flow is enough and meet the demand of the heat pump selected and water flow smoothly without air . In cold area, pls make sure that the water flow is without freezing

- \* Check if the power cable is connected well and properly grounded.
- \* Check if fan blade is blocked by the fixing plate of fan blade and fan blade protecting grill.
- \* Check if the tank has been filled with water or enough water volume that can meet the demand of heat pump running



If everything above is OK, the unit can start up. If any of them fails, please improve it.



## 2. Pre-start up

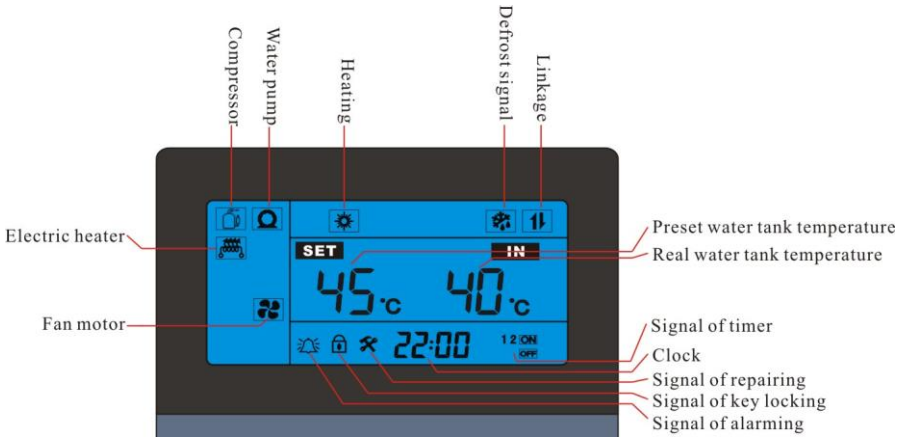
- ◆ After check completely and confirm no problem for installation, the unit can be power to start up .
- ◆ After connect power supply, heat pump delay 3mins to start. Check carefully is there is some abnormal noise or vibration or if the working current is normal or if water temp increasing is normal.
- ◆ After the unit is working properly for 10 minutes without any problem, then the pre-start up is usefully completed. If not, pls refer to Service and Maintenance Chapter to solve the problem.

## Part 2. Use

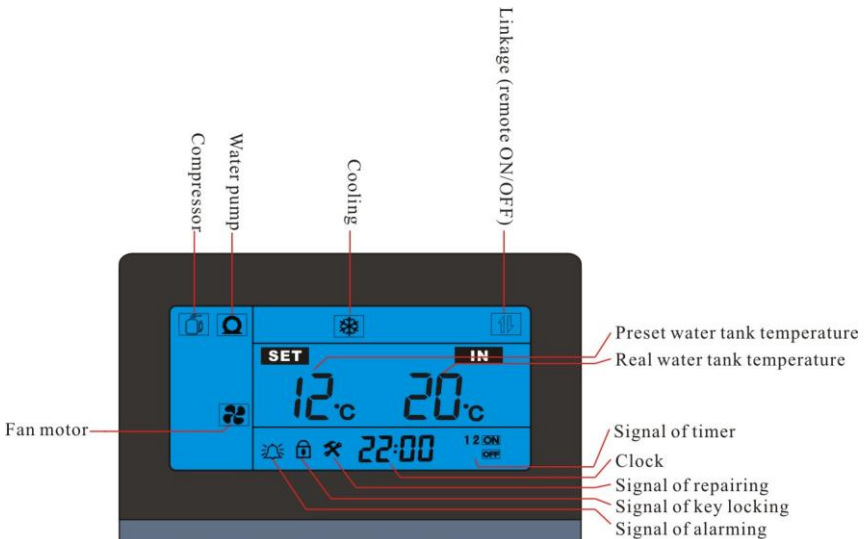
### A. Operating panel display

#### ➤ EVI-HC

##### A. Heating mode

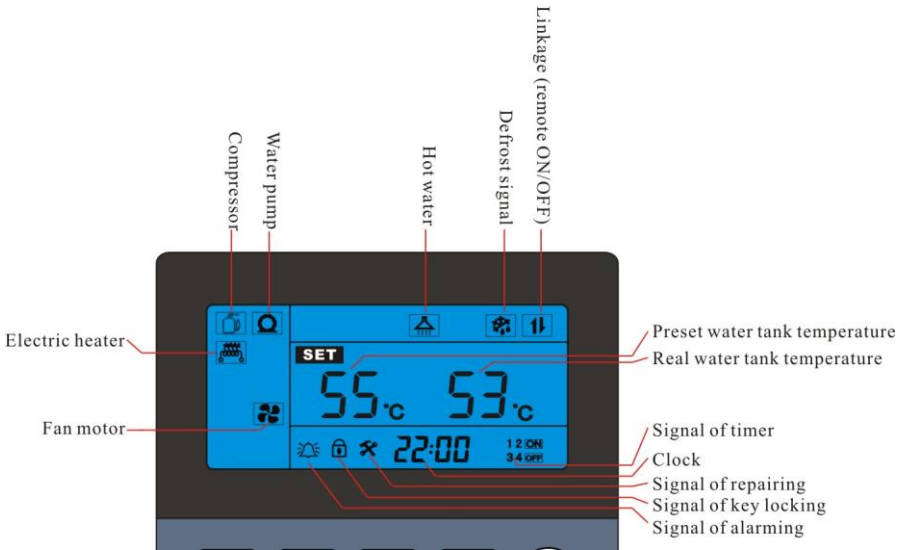


##### B. Cooling mode

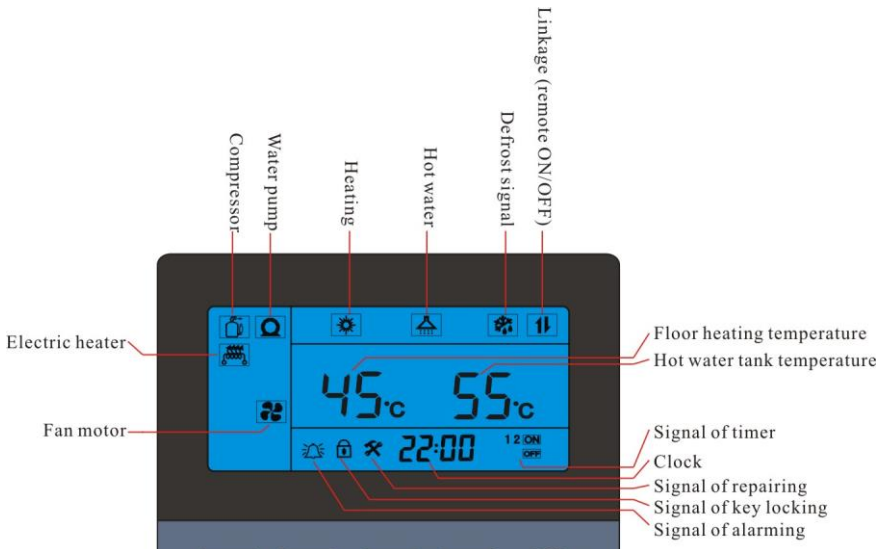


➤ **EVI-HH**

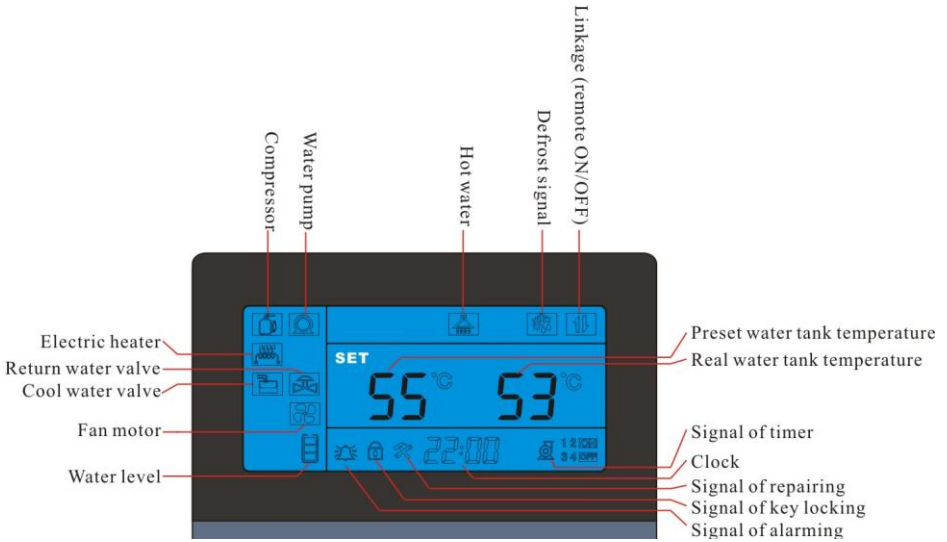
**A. Only hot water mode**



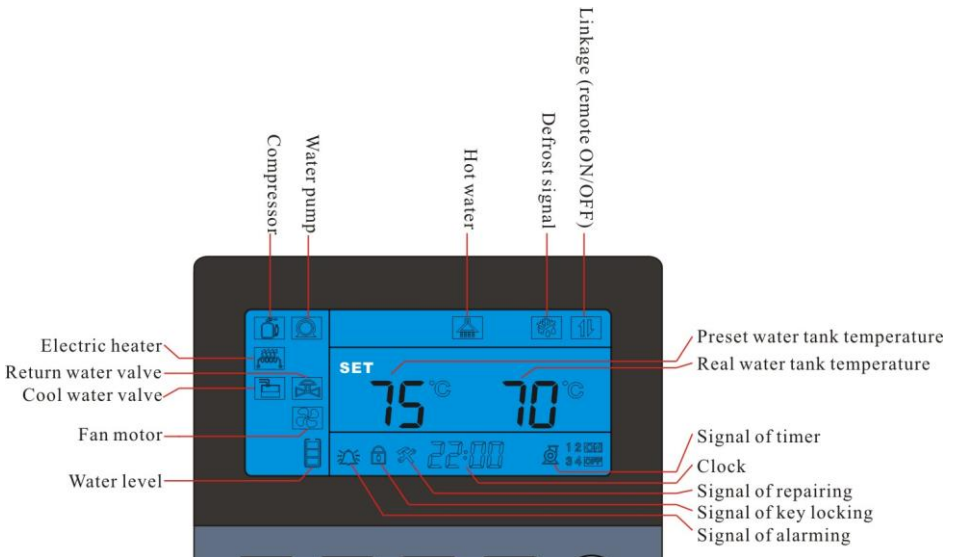
**B. Heating + hot water mode**



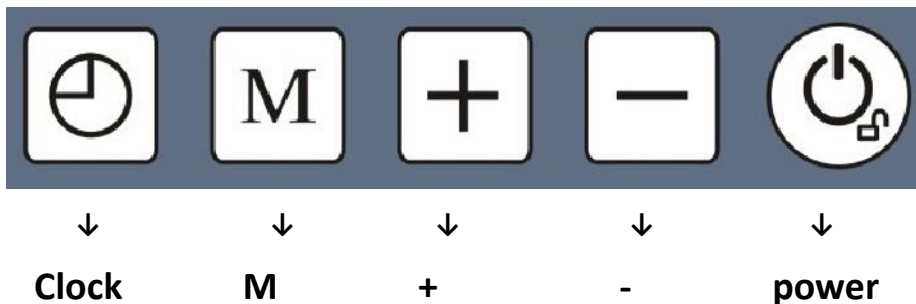
➤ **EVI-HW**



➤ **HT series**



## B. Buttons function



- **“Power” button**

2.1.1 Under unlock state, press this button for 1second, can turn on and turn off heat pump.

2.1.2 Under other state, press this button, can return main interface.

2.1.3 Under locking state, press this button for 5 seconds, can unlock buttons.

- **“M” button**

Under main interface, press “M” button, can query the working status parameters

- **“+”and “-” button**

2.3.1 Turns page, change value

2.3.2 Combine with “M” button, can query and set parameter

2.3.3 Under power on state, press “+”and “-”button, can set current working mode water temperature (except heating + hot

water mode).

- **“Clock” button**

2.4.1 Press this button for 10seconds, enter clock setting interface

2.4.2 Press this button, can enter timer of ON/OFF setting, combine “+”and “-“button, can set timers.

## **C. Operating**

- **Operating panel get electricity**

When heat pump power supply is supplied, operating panel and PC board will get electricity, then display panel displays, background light is very weak, all buttons are locked now, any touching is invalid.

- **Unlock buttons**

Press “power” button for 3sec, when hear “Du” voice, move finger, now background light is strong, all buttons are unlocked, the lock symbol disappear. (if there is not operating on buttons for 60sec, buttons will be locked automatically, and displays lock symbol)

- **Turn on/off heat pump.**

Press “power” button, if operating panel shows off state, will turn on heat pump.

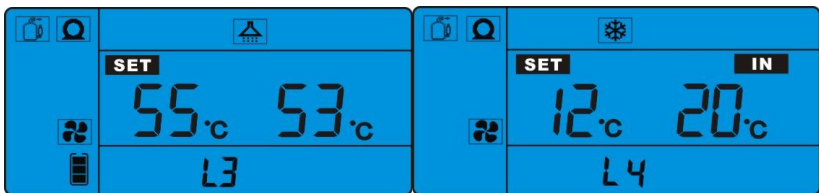
If operating panel shows on state, will turn off heat pump.

- **Water tank temperature setting (L3 or L4)**

Except EVI-HH and HH series, other series have two way to set water tank temperature:

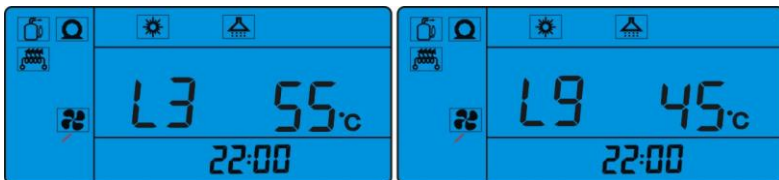
Way 1:

Under on state and main interface, press “+” and “-” button, can adjust current working mode water tank preset temp. The preset water tank temp is the left one temperature, the real water tank temp is the right one temperature. When setting, the left temp will change, and display L3 or L4 below it.



Way 2:

Refer to “Table 3: user parameters query and setting” in P15. All user parameters can be set by the same way. Floor heating water temperature only can be set by this way.



- **Parameters query and setting operation**

- ① **Working status parameters and history error code query**

How to enter? Under main interface, press "M" button, can query the working status parameters and history error codes

Working status parameters (table 1)

**Table 1: heat pump working status parameters query**



Code	Meaning	Note
A0	Water tank temperature	
A1	Outlet water temperature	
A2	Air heat exchanger 1 lowest tube temp	Same meaning for all series
A3	Inlet gas temperature of compressor 1	Same meaning for all series
A4	Outlet gas temperature of compressor 1	Same meaning for all series
A5	Ambient air temperature	Same meaning for all series
A6	Inlet economic unit 1	Same meaning for all series
A7	Outlet economic unit 1	
A8	Return water temperature of water tank	For EVI-HW and HT series
	Inlet water temp	For EVI-HC
	Floor heating water temp	For EVI-HH and HH series (displayed on main interface, the left one temperature)



A9	Compressor 1 current	Same meaning for all series
A10	Primary electronic expansion valve opening degree 1	For HW and HH and SP-H series, rated heating capacity less than 52KW models
A11	Secondary electronic expansion valve opening degree 1	Same meaning for all series
A12	After throttling1 temperature	
A13	Air heat exchanger 2 lowest tube temp	Same meaning for all series
A14	Outlet gas temperature of compressor 2	Same meaning for all series
A15	Inlet gas temperature of compressor 2	Same meaning for all series
A16	After throttling 2 temperatures	
A17	Inlet economic unit 2	
A18	Outlet economic unit 2	
A19	Compressor 2 current	Same meaning for all series
A20	Primary electronic expansion valve opening degree 2	For HW and HH and SP-H series, rated heating capacity less than 52KW models
A21	Secondary electronic expansion valve opening degree 2	Same meaning for all series
A22	Air conditioning (floor heating) inlet the water temperature	
A23	User return water temperature	
E1~ E6	History error code	Same meaning for all series

Note:

1.A23 return water temperature:

It is the return temperature of hot water mode, the temp sensor need to be installed in the water tank on the return pipe, used to control the return valve;

2. about water tank temp sensor, installation position in each series is different.

**A.** EVI-HW: should be installed in hot water tank by installer

**B.** EVI-HH series: hot water tank temp sensor should be installed in hot water tank by installer. (Floor heating water temp sensor should be installed in floor heating water tank or on floor heating system return water pipe)

**C.** EVI-HC series: water tank temp sensor has been installed on inlet water pipe by factory (if project has A/C water tank, installer can move the sensor to tank from heat pump)

**Table 2: Error code**



Code	Meaning	Method
Er 01	Wrong phase error	Exchange phase sequence

Er 02	Lack phase error	Check the power supply
Er 03	Water flow switch error	Check the hot water side of the water flow is sufficient or the water flow switch wiring, such as damage please replace
Er 04	A/C side of the water flow switch	Check the hot water side of the water flow is sufficient or the water flow switch wiring, such as damage please replace
Er 05	System (1) High pressure	Check water flow is too small; check the dust of fin heat exchanger
Er 06	System (1) Low pressure	Check water flow is too small; check whether the refrigerant leak
Er 07	System (2) High pressure	
Er 08	System (2) Low pressure	
Er 09	Communication error	Check the PC board and control panel line is connected, if damaged please replace
Er10	Tank temp sensor	
Er 11	Time limit for locking heat pump reached	Please cancel setting time of running
Er 12	System (1)Outlet gas pressure of compressor 1 is too high	
Er 13	System (2)Outlet gas pressure of compressor 2 is too high	
Er 14	Throttling temperature 1	Check the sensor contact is good; replace the temp sensor
Er 15	Throttling temperature 2	
Er 16	Air heat exchanger 1 coil temp sensor	as above
Er 17	Air heat exchanger 2 coil temp sensor	
Er 18	Outlet gas temp sensor 1 of compressor error	as above
Er 19	Outlet gas temp sensor 2 of compressor error	
Er 20	Ambient air temp sensor error	as above

Er 21	A/C Return water temp sensor	as above
Er 22	HE outlet water temp sensor	as above
Er 23	Inlet gas temp sensor 1	as above
Er 24	Inlet gas temp sensor 2	
Er 25	The economic unit 1 inlet the sensor error	as above
Er 26	The economic unit 2 inlet the sensor error	
Er 27	The economic unit 1 outlet the sensor error	as above
Er 28	The economic unit 2 outlet the sensor error	
Er 29	Compressor 1 current too high protection	Check the current and voltage are stable
Er 30	Compressor 2 current too high protection	
Er 31	Water level switch error	Check the wiring contact is good; replace the pressure switch
Er 32	Ambient temp too low protection	Beyond the normal operating temperature range of the heat pump
Er 33	Outlet water temp too high error at heating mode	Check the sensor contact is good; replace the temperature sensor
Er 34	Air conditioning supercooling protection	Check if the air conditioning water pump is low water
Er 35	Return water temp sensor error of water tank	Check the sensor contact is good; replace the temperature sensor
Hot water symbol flashing	Anti-freeze protection for hot water side	
Heating symbol flashing	Anti-freeze protection for heating side	

**② User parameters query and setting (both ON and OFF state can set)**

How to enter?

- ◆ Under main interface, press “M” for 3seconds, enter user parameter query interface, then press “+”and “-” button , can query L0 to L9value.
- ◆ Under user parameter query interface, press “M” button, enter setting interface, press “+”and “-” button, to set the value of current parameter, press “M” button again, return query interface.
- ◆ Under user parameters query interface and setting interface, if there is not operation for 30seconds constantly, system will quit user parameter query or setting interface automatically, and return to main interface, press “power” button can return main interface too.

Table 3: user parameters query and setting



Code	Meaning	Setting range	Factory setting
L0	Compressor restart temperature of hot water drop	2 °C -18°C	3°C
L1	Preset water tank temperature of heating mode	20 °C -58°C	1. HT series: 75°C 2. EVI-HC series: 45°C 3. Other series: 55°C

L2	Compressor restart temperature cooling drop	2 °C -18°C	5°C
L3	Preset water tank temperature of cooling mode	10 °C -32°C	12°C
L4	Heating drop	2 °C -18°C	5°C
L5	Heating set the temperature	12 °C -99°C	45°C
L6	Ambient air temperature below which electric heater is allowed to start	-30 °C -35°C	0°C
L7	Return water temperature	20 °C -80°C	30°C
L8	Water compensate temperature	20 °C -80°C	48°C (20°C no need water compensate )
L9	Compressor current	0~48A	0A (0A: will not detect current )

Note:

L1, L3 is the water tank setting temperature . Water tank temperature is directly displayed on PC board. The left side is the setting temperature, the right side is the actual temperature.

For heating, User need put the temp sensor into blind tube which is installed on water tank.

The pool temp sensor is installed on a titanium tube heat exchanger by factory

The water temp sensor of the heating and cooling mode is installed in the return pipe of the heat pump by factory.

- **Other operation**

- ① **Clock setting**

- A. At main interface, press “clock” button for 5 seconds, enter clock setting interface

- B. At clock interface, press “clock” button, then “hour” flash, press “+”or “-”button, can set hour.

- C. After finish setting hour, press “clock” button, then “minute” flash, now press “+”or “-”button, can set minute.

- D. After finish setting minute, press “clock” button, to confirm clock setting, and back to main interface.

- E. At clock setting interface, if there is not operation within

30seconds, system will confirm clock setting and back to main interface automatically.

F. At clock setting interface, press “power” button, can confirm current clock setting and back to main interface.

## ② Timer setting and cancelling (ON/OFF timer)

A. At main interface, press “clock” button, enter timer group setting.

Now press “+”or“-”button, can switch timer groups, there are 4 groups ON/OFF timer.

B. When group 1 ON timer flashing, press “clock” button, enter group 1 ON timer “hour” setting interface, “hour” flash, then press “+”or“-”button, then can set “hour” for group 1 ON timer.

C. After finish setting “hour”, press “clock” button, then “minute” flash, then press “+”or“-”button, can set “minute” for group 1 timer.

D. After finish setting group 1 ON timer “minute”, press “clock” button, enter group 1 OFF timer setting, same way like ON timer setting.

E. After finish setting group 1 ON/OFF timer, press “clock” button, confirm group 1 setting, and enter group 2 ON/OFF timer setting, same way like group 1 setting.



**F.** At timer interface, if there is not operation within 30seconds, then confirm current timer setting, and back to main interface (this setting can be remembered if electricity is cut off)

**G.** At timer interface, press “power” button, confirm current timer setting, and back to main interface.

**H.** Other groups ON/OFF timer setting are same way like group1.

Remarks: groups 1 and 2 are heat pump ON/OFF timer, group 3 is return water timer, group 4 is cool water compensating timer.

group 3 and 4 only valid for EVI-HW, HT series.

**I.** How to cancel timer?

At timer interface, press “clock” button for 5seconds, when the ON and OFF signal disappear, then press “power” button to confirm, can cancel current group ON/OFF timer.

### **③ Forced defrosting**

◆ At ON status, press “-” for 3seconds, enter forced defrost.

◆ To quit forced defrost, there are two ways.

a. Automatic quitting: when defrost time reach preset quitting temperature, can quit forced defrost.

b. Forced quitting: Press “power” button, after power off, 3minutes later, will quit forced defrost completely.

#### **④ Remove history error code**

At the interface of query history error code, press “power” and “M” button together for 5seconds, can remove all the history error code.

#### **⑤ Change working mode**

Press “+” button for 5seconds, can change the working mode  
For EVI-HC series, change working mode between heating mode and cooling mode.

For EVI-HH series, change working mode between hot water mode and heating + hot water mode.

### **C. Working mode**

#### **1. EVI-HW, HT series**

The three series mainly used to supply hot water, (sometimes used for house heating), have only one working mode: hot water mode.

**1.1** The unit start and stop based on the hot water tank temp. and setting temp.

#### **2. EVI-HH series**

The two series mainly used to supply hot water and heating house, have two working mode: Hot water mode and hot water + heating mode.

**2.1** Hot water mode controlling, the unit start and stop based on

the hot water tank temp. and the setting temp.

## **2.2 Hot water + heating mode controlling**

### 2.2.1 Hot water mode: working same as 2.1

### 2.2.2 Heating mode

The unit start and stop based on the heating return temp. and the setting temp.

### 2.2.3 Hot water + floor heating controlling logic

- ◆ Hot water is priority, before hot water reach preset temp, 3-way valve doesn't have electricity
- ◆ When hot water reach preset temp, heat pump stop, then check heating side water temp automatically, if heating side water temp doesn't reach preset temp, then 3-way valve will get electricity, and meanwhile heat pump start. When heating system water temp reach preset temp, heat pump stop to standby. In the process, if check hot water tank temp dropped lower then setting temp., then heat pump stop and 3-way valve loss electricity, then heat pump restart to heat hot water.

## **3. EVI-HCseries**

The three series are all heating and cooling type. User can change the working mode between heating mode and cooling mode.

### 3.1 Heating mode

The unit start and stop based on the setting temp. and real water

tank temp.

### 3.2 Cooling mode

The unit start and stop based on the setting temp. and the real water tank temp.

## 4. Defrosting:

Defrost only valid at heating or/and hot water mode.

When defrost, the display panel will display defrost symbol.

Fan motor doesn't work.

Compressor stops first, then start.

Circulating water pump doesn't stop.

## D. Each electrical component controlling

### 1. Compressor (installed inside heat pump)

1.1 Compressor start / stop according to water tank (or heating system) real temperature and preset temp.

1.2 After compressor stops, should need at least 3min, then it can restart again.

1.3 After compressor start, should work at least 2min first, then can stop. (Except turned off or there is error).

1.4 There is not 3min protection for the first time starting.

### 2. Four - way valve (installed inside heat pump)

2.1 At heating or hot water mode, 4-way valve lose electricity.

2.2 When cooling or defrosting, four-way valve get electricity.

2.3 Four way valve delay 2min change direction after compressor stop when change working mode.

2.4 When defrosting and forced defrosting, 4-way valve get electricity.

### **3. Circulating water pump**

3.1 EVI-HW, EVI-HC, HT series:

Circulating water pump start / stop together with compressor.

3.2 EVI-HH series

If change to hot water mode, circulating water pump start/stop together with compressor.

If change to hot water + heating mode, circulating water pump doesn't stop.

### **4. Fan motor (installed inside heat pump)**

4.1 Normally, fan motor start in advance than compressor, and stop at the same time as compressor.

4.2 When defrosting, fan motor doesn't work.

### **5. Auxiliary electrical heater**

5.1 Starting conditions:

5.1.1 At heating or hot water mode

5.1.2 Ambient temperature  $\leq$  L6

5.1.3 Water tank temperature < water tank setting temp. – L0

5.1.4 Low level switch connects.

When all of above conditions are met, electric heater starts.

## **5.2 Stopping conditions:**

5.2.1 Water tank temp  $\geq$  water tank setting temp..

5.2.2 Water tank temp sensor damaged and controller show error code.

5.2.3 Ambient temp  $\geq$ L6+2°C;

5.2.4 Water level switch has error

5.2.5 Low level switch disconnects

Any of above condition is met, electric heater stops.

**5.3** When defrosting, forced defrosting, secondary anti-freeze, electric heater is forced to start.

**5.4** Except there is water level error, hot water tank temp sensor error, when there is other temp error, high and low pressure error protection, electric heater will start.

Remarks: EVI-HH series, only hot water side has electric heater function, heating side doesn't have.

## **6. Three-way valve**

6.1 Only EVI-HH and HH heat pump have three-way valve function.

Installer need install three-way valve on outlet water pipe of heat pump.

6.2 When switch to hot water side, 3-way valve lose electricity.

When switch to heating side, 3-way valve get electricity.

6.3 Before 3-way valve switch the direction, circulating water pump should stop first 10seconds in advance.

## **7. Return water valve**

Only EVI-HW, HT series has return water valve function.

7.1 Condition of return water valve open (all below condition should be met):

7.1.1 Low water level switch connects

7.1.2 Water tank temp  $\geq L7 + 5$

7.1.3 Return water temp  $\leq L7 - 5$

7.2 Condition of return water valve closes (any below condition met):

7.2.1 Low water level switch disconnects

7.2.2 Water tank temp  $< L7 + 5$

7.2.3 Return water temp  $> L7$

## **8. Linkage switch**

8.1 Linkage switch is input OF/OFF signal, heat pump can be turned on/off by the signal.

8.2 When operating panel is under on state, if linkage signal is on, heat pump keep on state. If linkage signal is off, heat pump will be turned off.

8.3 When operating panel is under off state, if linkage signal is off,

heat pump keep off state. If linkage signal is on, heat pump will be turned on.

## 9. RS485 Connection

### **Part 3. Maintenance and repairing**

#### **A. Daily maintenance**

Heat pump is high automatic equipment, if can check and maintain periodically, the stability and lifetime of heat pump will increase greatly.

1. When using and maintain the heat pump, please note: all security device have been set before leave factory, please don't adjust anymore.
2. Check if power cable and other cables connection is firm, if electrical unit work is abnormal, if yes, repair or replace at once.
3. Check periodically if water system leaks water, if insulation damaged.
4. Check if the air around is clean and dry, if ventilation is good.
5. Don't put debris around heat pump, avoid blocking air inlet and outlet.
6. If need stop heat pump for long time, should drain the water in the system, and cut off the power supply. Before restart, check the system completely.
7. When there is error codes, or heat pump work abnormally, please call local servicer to repair.

#### **B. Some error code and repairing**



When below error happen, controller will alarm and display error code.

Error	Possible reason	Method to repair
High pressure error	<ol style="list-style-type: none"> <li>1. Real water temp is too high but probe can't detect real temp</li> <li>2. Water flow is too small</li> <li>3. Refrigerant is excessive</li> </ol>	<ol style="list-style-type: none"> <li>1. Check if water tank temp probe is installed correctly</li> <li>2.1 Release air from highest position of circulation.</li> <li>2.2. Open Y type filter to check if there is impurity on the net.</li> <li>3. Drain refrigerant and vacuum and refill refrigerant according to nameplate.</li> </ol>
Low pressure error	<ol style="list-style-type: none"> <li>1. Lack of refrigerant</li> <li>2. Fan motor doesn't run</li> <li>3. Air flow is blocked</li> </ol>	<ol style="list-style-type: none"> <li>1. Check leaking point and repair and refill refrigerant</li> <li>2. Change fan motor or blade</li> <li>3. Wash fin of air heat exchanger or remove barrier close air inlet or outlet.</li> </ol>
Outlet gas temp too high error	<ol style="list-style-type: none"> <li>1. Lack of refrigerant</li> <li>2. Water pump is too small</li> <li>3. Water pipe is too small</li> <li>4. Air entered water system</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair leakage and refill refrigerant</li> <li>2. Change a bigger water pump</li> <li>3. Change bigger size water pipe</li> <li>4. Release air in water</li> </ol>

		system
Outlet water temp too low protection when cooling	<ol style="list-style-type: none"> <li>1. Circulating water pump is too small</li> <li>2. Air entered water system</li> <li>3. There is impurity in water filter.</li> </ol>	<ol style="list-style-type: none"> <li>1. Change a bigger water pump</li> <li>2. Release air from water system</li> <li>3. Clean the filter</li> </ol>
Outlet water temp too high protection when heating (hot water)	<ol style="list-style-type: none"> <li>1. Circulating water pump is too small</li> <li>2. Air entered water system</li> <li>3. There is impurity in water filter.</li> </ol>	<ol style="list-style-type: none"> <li>1. Change a bigger water pump</li> <li>2. Release air from water system</li> <li>3. Clean the filter</li> </ol>
Compressor current is too large	<ol style="list-style-type: none"> <li>1. The current detector is damaged</li> <li>2. Compressor damaged</li> <li>3. Compressor doesn't start</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the detector</li> <li>2. Change compressor</li> <li>3. Check if the compressor cable is loose</li> </ol>

### C. Other problem and repairing

No	Error	Possible reason	Method
1	Heat pump doesn't run	<ol style="list-style-type: none"> <li>1. Power supply cable is loose</li> <li>2. The fuse of power supply is fused.</li> </ol>	<ol style="list-style-type: none"> <li>1. Cut off the power supply to check and repair.</li> <li>2. Change the fuse.</li> </ol>
2	Heating capacity is too small	<ol style="list-style-type: none"> <li>1. Refrigerant is not enough</li> <li>2. Water system insulating is not good</li> <li>3. Air heat exchanger is dirty</li> <li>4. Water heat exchanger scaled</li> </ol>	<ol style="list-style-type: none"> <li>1. Check leakage and repair and refill gas</li> <li>2. Improve the insulation</li> <li>3. Clean air heat exchanger</li> <li>4. Clean water heat exchanger</li> </ol>
3	Compressor doesn't run	<ol style="list-style-type: none"> <li>1. Power supply has error</li> <li>2. Cable connecting is loose</li> <li>3. Compressor is overheat</li> </ol>	<ol style="list-style-type: none"> <li>1. Check reason and solve</li> <li>2. Check loose and repair</li> <li>3. Check reason and repair</li> </ol>
4	Compressor noise is loud	<ol style="list-style-type: none"> <li>1. Expansion valve damaged lead to liquid entering compressor</li> <li>2. The internal parts of compressor damaged</li> <li>3. Compressor lack of oil</li> </ol>	<ol style="list-style-type: none"> <li>1. Change expansion valve</li> <li>2. Change compressor</li> <li>3. Compensate oil for compressor</li> </ol>
5	Fan motor doesn't run	<ol style="list-style-type: none"> <li>1. Fan blade fixing screw is loose</li> <li>2. Fan motor damaged</li> <li>3. Fan motor capacitance damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. Tight the screw</li> <li>2. Change fan motor</li> <li>3. Change the capacitance</li> </ol>

6	Compressor run, but not heat	<ol style="list-style-type: none"><li>1. There is not refrigerant at all</li><li>2. Compressor damaged</li></ol>	<ol style="list-style-type: none"><li>1. Check leakage and repair</li><li>2. Change compressor</li></ol>
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## Items of warranty:

1. Warranty term: \_\_\_\_\_; Within warranty, any problem because of quality, we repair for free.
2. When need repair, please show the warranty card and invoice of order or other proof.
3. We don't afford the problem that is caused by re-fitment or adding other function by user.
4. Warranty card and invoice or other purchasing proof will be invalid if alerted.
5. Please keep the warranty card and invoice or other purchasing proofs good, we will not supply service if these documents are lost.
6. We will not repair for free for below condition:
  - ① without proof;
  - ② Errors caused by re-fitment or not correct operating;
  - ③ Damage caused by not professional people operating;
  - ④ faulty by moving or falling;
  - ⑤ Faulty caused by natural disaster.

**CERTIFICATE**

Product Model: \_\_\_\_\_

\_\_\_\_\_

Bar code: \_\_\_\_\_

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