USER MANUAL
INSTALLATION & OPERATION

DC INVERTER

Swimming Pool Heat Pump

Applicable Models:Electroheat ECO V 25KW

Thank you very much for purchasing our air source heat pumps.
Please read this manual carefully and keep it for future reference before installing and using the heat pumps.

THIS MANUAL MUST BE READ AND UNDERSTOOD BY A QUALIFIED PERSON OR PERSONS BEFORE INSTALLATION

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Introduction of Swimming Pool Heat Pump

Thank you for purchasing our reversible heat pump water heater for your Swimming Pool/Pond. Our heat pump was produced in accordance with the current European Standard and it is now ready to be used. Please read this manual carefully before install the heat pump, otherwise it may lead to damage to the heat pump or may injure operators as well as cause financial loss.
The heat pump should be installed by professionals or qualified technicians.

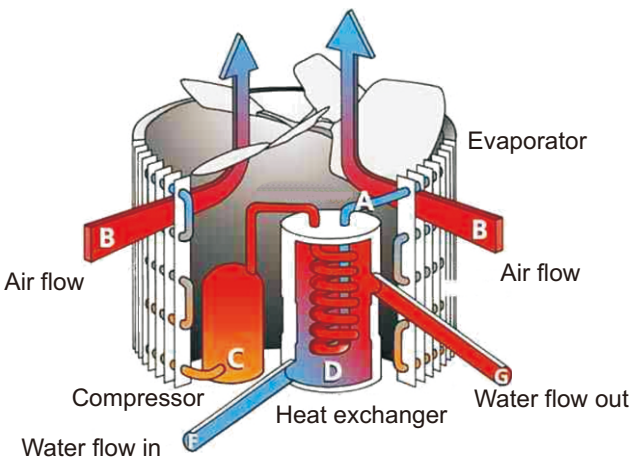
Heat Pump Technology

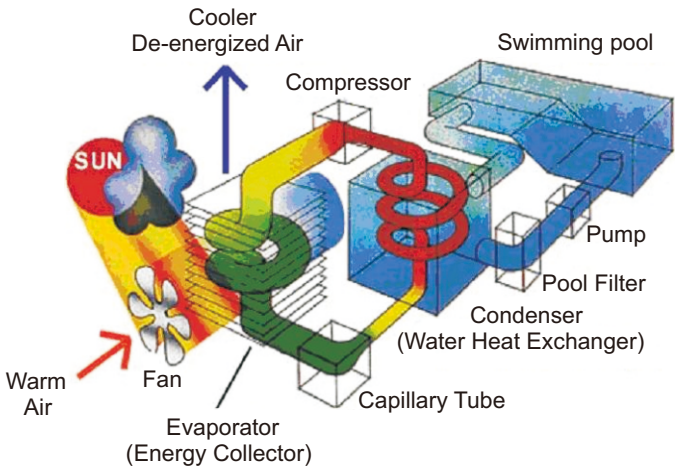
Heat pumps utilize the sun's free heat by collecting and absorbing energy from the outside air. This energy is then compressed and transferred to the pool/pond water. Your existing water pump circulates the water through the heater, usually next to the pool equipment, and the water warms up.

The unit contains a fan that draws in outside air and directs it over the surface of the EVAPORATOR (energy collector).The liquid refrigerant within the EVAPORATOR coil absorbs the heat from the outside air becomes a gas.

The warm gas in the coil passes through the COMPRESSOR concentrating and increasing the heat to form a very hot gas which then passes to the CONDENSER (water heat exchanger).It is here that the heat exchange occurs as the hot gas gives off heat to the cool swimming pool water circulating through the coil. The pool water becomes warmer, and the hot gas cooling as it flows through the CONDENSER coil returns to its liquid form and, after passing on through the CAPILLARY TUBE the whole process begins again.

The state of the heat pump technology can efficiently collect heat from the outside air down to the 7°C to 10°C range. For tropic and subtropical climates, this means that the pool can be maintained at 26°C to 32°C.





Heat Pump Features

►High Efficiency

With a COP value up to 5.5, our heat pumps are very efficient when transferring heat from the air to the swimming pool water. With the heat pump technology, as much as 80% of cost compared to an electrical heater can be saved.

►Long Life-Span

The heat exchanger is made of PVC & Titanium tube, which can withstand and prolong exposure to swimming pool/pond water.

►Easy Control and Operation

The unit is very easy to operate: simply switch it on and set the desired pool water temperature. The system includes a micro-computer controller, allowing all operation parameters to be set. Operation status can be displayed on the controller with LCD display.

►Excellent components

High quality Japanese brand compressor: Mitsubishi, Toshiba, Sanyo compressor with green gas R410A, achieving higher performance of heat exchanging.

Durable and reliable Titanium heat exchanger, which can resist chloride ion corrosion in the water; hydrophilic fin-tube evaporator, inbuilt threaded pipe, which provides good performance in water skiing and anti-defrost.

Safety Precautions

Attention!

It is required to read the Safety precautions in detail before operation. The precautions listed below are all-important for safety, please obey without fail.

General

1) Before install the heat pump, please confirm the local power supply is in accordance with the requirement of the heat pump, refer to the Technical data and the Wiring diagram provided in this manual.

2) Connecting the heat pump to a ground wire is necessary, in order to prevent electrical shock caused by an unexpected short circuit inside the unit.

3) Please install the electrical protection devices, according to the local regulations.

4) The heat pump must be installed on reliable base or supporting framework.

5) If the heat pump is installed on the floor, its base or supporting framework should be heightened, to avoid ingression of accumulated water in rainy season. In snowy areas, it is important to prevent accumulated snow from blocking up the air-out. The recommended height is 20cm to 30cm.

6) Install the drainage pipe before fix the heat pump to the ground. There are two drainage hole on the heat pump base, which could be connected to the drainage pipe with a pipe arches which contains in spare parts.

7) Drain ditch or other facilities should be arranged under the heat pump, to avoid the environment influence because of water discharge.

8) Ensure the unit is well ventilated, direction of air exhaust is kept away from windows of neighboring buildings, and the exhaust air cannot flow back. Moreover, adequate service clearance should be kept around the unit.

9) DO NOT put fingers or sticks into the ventilative fan.

10) The unit should not be installed at places accompanied with oil, inflammable gas, corrosive components e.g. sulfur compound, or high-frequency equipment.

11) The heat pump is usually placed next to a house, which gives a directed sound distribution that should be considered, so it should take proper action to reduce the noise impact.

12)Cut off the power supply before maintaining the unit, and the maintenance work should be carried out by professional.

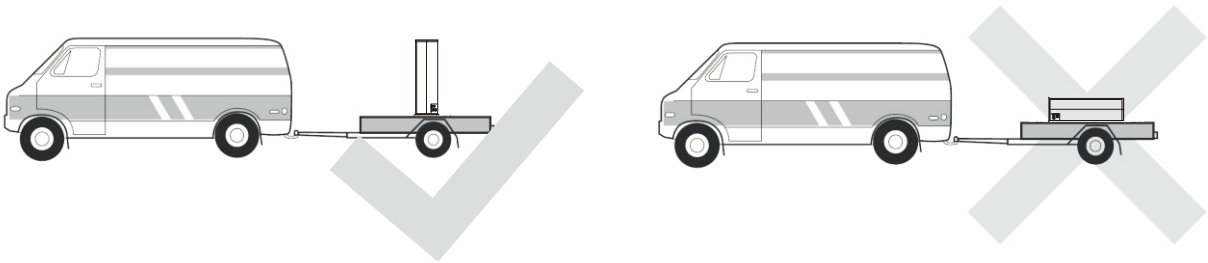
13)If any abnormity occurs in the heat pump, such as abnormal noise or burned smell, cut off the power supply immediately, and contact professionals for check and repair.

14)Clean the heat pump with follow instructions:

- ►Before cleaning, cut off the power supply firstly to avoid any potential danger.
- ►Don't rinse the unit by water because it may lead to electric shock.

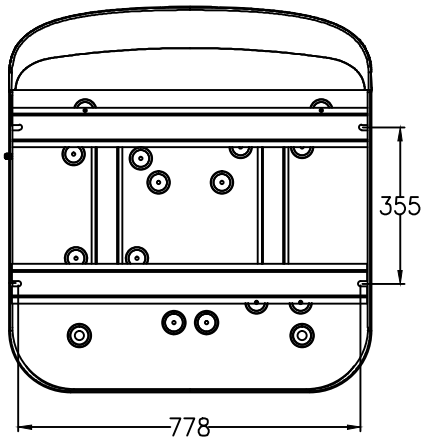
Transportation and Storage

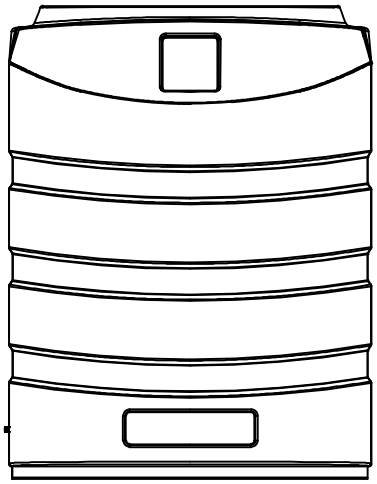
1) The heat pump MUST be transported and stored **VERTICALLY!**
2) The heat pump MUST be transported and stored uprightly on a pallet with good package.
3) Should the heat pump be laid down, please wait at least 12 hours before switching it on.

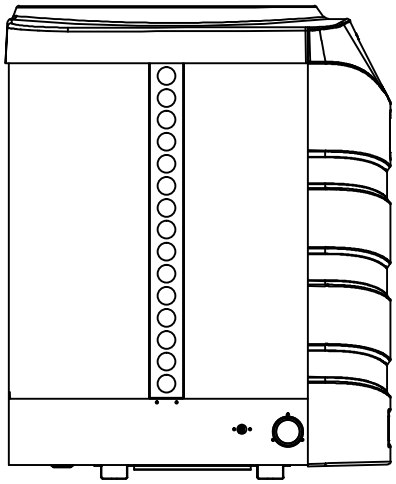


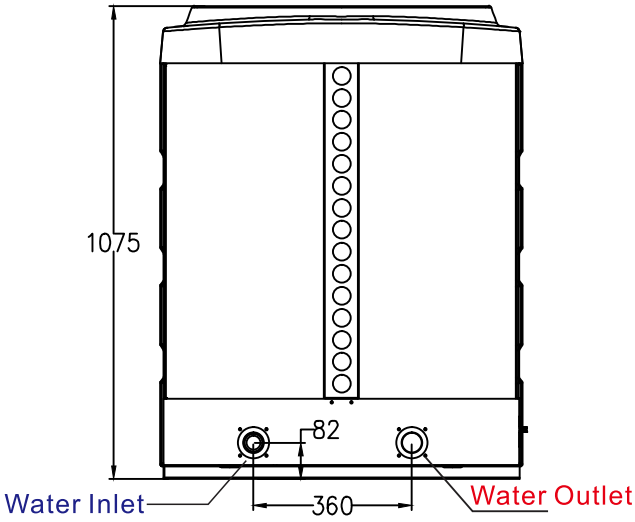
Model			Electroheat ECO V 25KW
Air 15℃ /Water 26℃	Heating Capacity	KW	24.1～6.1
	Heating Input	KW	5.95～0.85
	Normal Current	A	27.2～3.95
	COP		4.05～7.2
Power Supply		V/Ph/Hz	230V/1Ph/50Hz
Setting Temp. Range		℃	15℃～40℃
Running Temp. Range		℃	-5℃～43℃
Water Heat Exchanger			Titanium PVC Tank
Compressor			Inverter
Compressor Quantity			1
Fan quantity			1
Water Inlet/Outlst Dimension			1.5"
Hydraulic Connection		MM	PVC 50
Nominal Water Flow		M^3/H	10
Sound Pressure Level at 1M		dB(A)	50～59
Sound Pressure Level at 10M		dB(A)	32～42
Unit Dimentions(L*W*H)		MM	800*900*1050
Net Weight		Kg	126
Refrigerant			R410A
Display			LCD
Mode			Heating/Cooling/Auto.

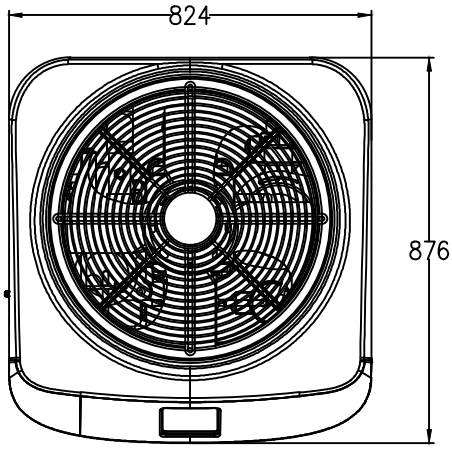
Dimensions











Installation

Installation Location

1. Installation must be simple and allow easy access for later work.

2. If the unit is to be installed on the floor, its undercarriage should be heightened, to avoid ingression of accumulate water in rainy season. In snowy areas, it is important to prevent accumulated snow from blocking up the air-out.The recommended height is 20cm to 30cm.

3. Drain ditch or other facilities should be arranged under the outdoor unit, to avoid the environment influence because of water discharge.

4. To install the unit at balcon or top of building, the installation site must meet the allowable bearing capacity of building structure, without affecting the structural safety.

5. Ensure the unit is well ventilated, direction of air exhaust is kept away from windows of neighboring buildings, and the exhaust air cannot flow back. Moreover, adequate service clearance should be kept around the unit.

6. The unit should not be installed at places accompanied with oil, Inflammable gas, corrosive components. e.g. Sulfur compound, or high-frequency equipment.

7. The unit must be installed on reliable base or framework. Weight capacity of framework should be 3 times of the body weight, and safeguard measures should be taken to avoid malfunction of fastenings.

8. The unit should not be installed at sites with typhoon/earthquake hazards. Midair installation should be avoided as much as possible as machine falling down may result in severe accident.

9. Do not install the heat pump close to a road or path to avoid mud splashing on the unit.

10. Keep, wherever possible, the unit out of reach of children.

NOTE:

The pool heat pump will perform well on any location provided three factors are present:

1. Fresh air - 2. Electricity - 3. Pool filter piping

The heat pump may be installed virtually anywhere outdoors providing minimum distance requirements are met with respect to other objects (see diagram below).

For indoor pools please consult your installer.

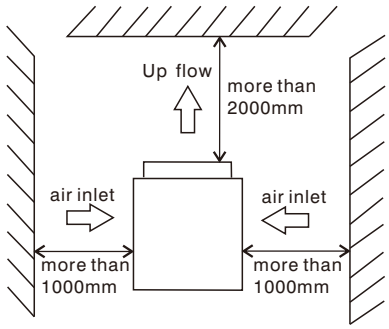
If the heat pump is placed in a windy area, no problems occur with e.g. the pilot light, as opposed to what is often the case with gas heaters.

Attention:

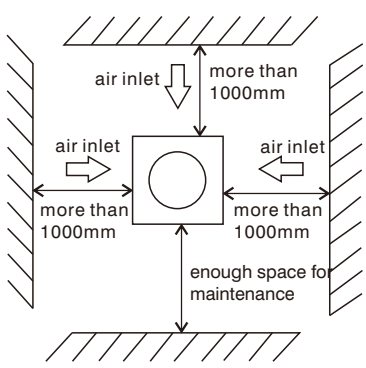
Do not place the heat pump in an enclosed area with a limited air volume where the unit's discharged air will be re-circulatedor near shrubs that could block the air inlet.

These locations deny the unit a continuous fresh air supply, which reduces its efficiency and may prevent adequate heat yield.

See diagram at the right side for minimum required distances.



Horizontal View



Vertical View

Pool Connection Diagram

Diagram 1

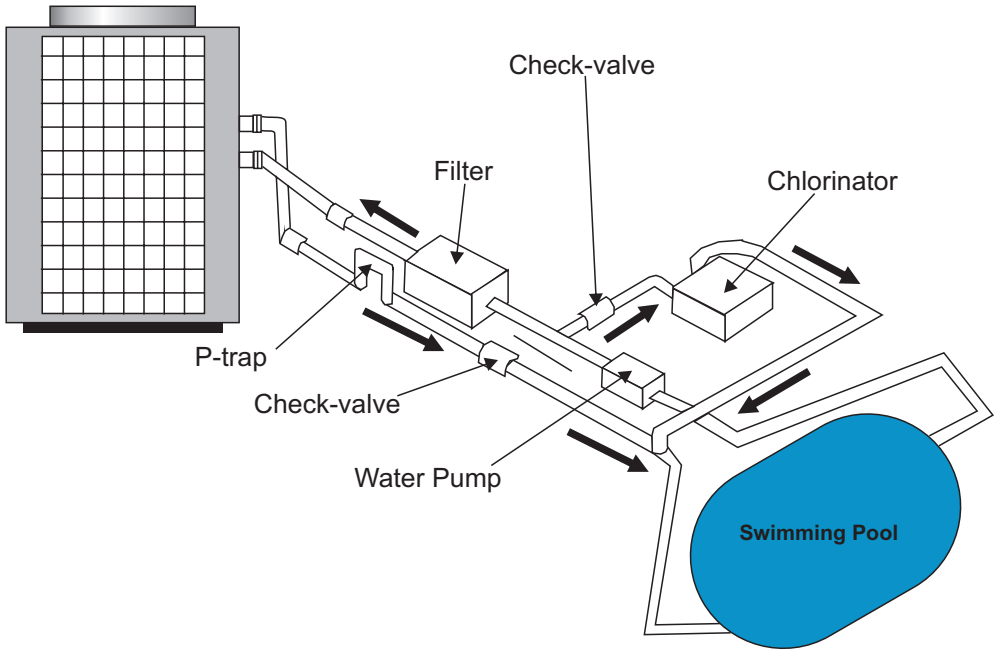
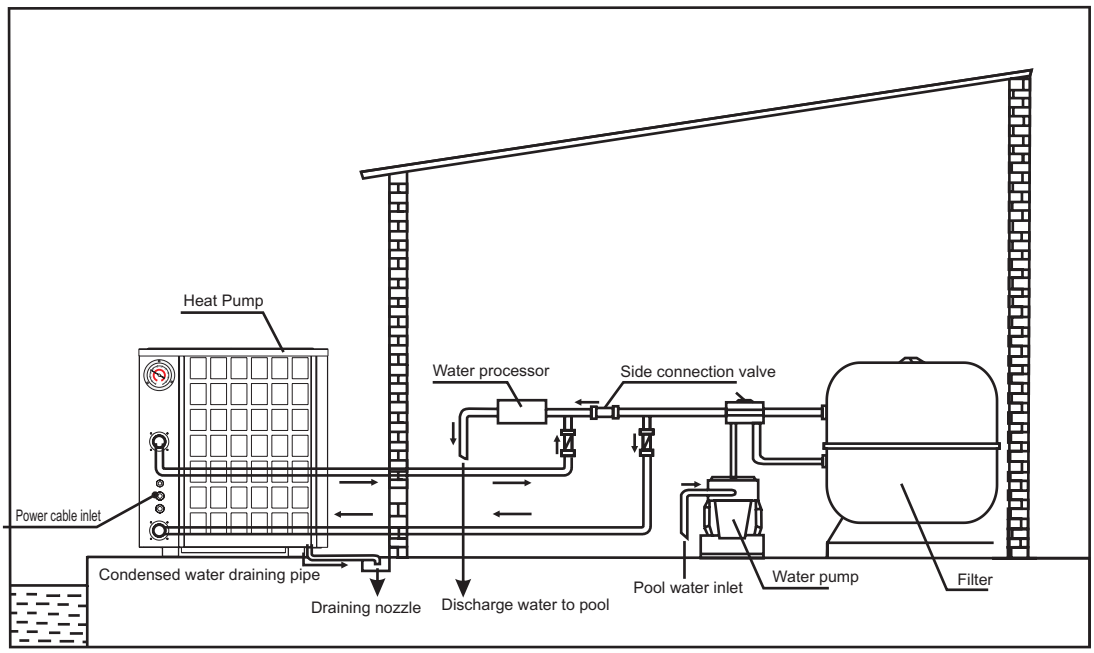


Diagram 2



Remarks:

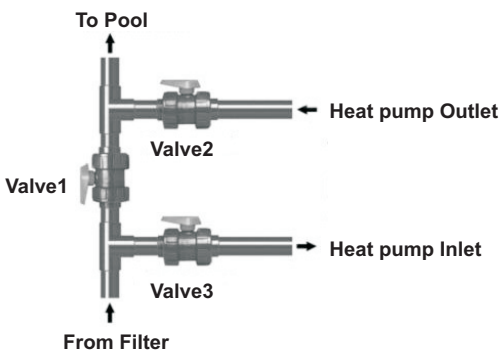
►Each addition of chemicals has to be performed through the conduits located downstream of the heat pump.

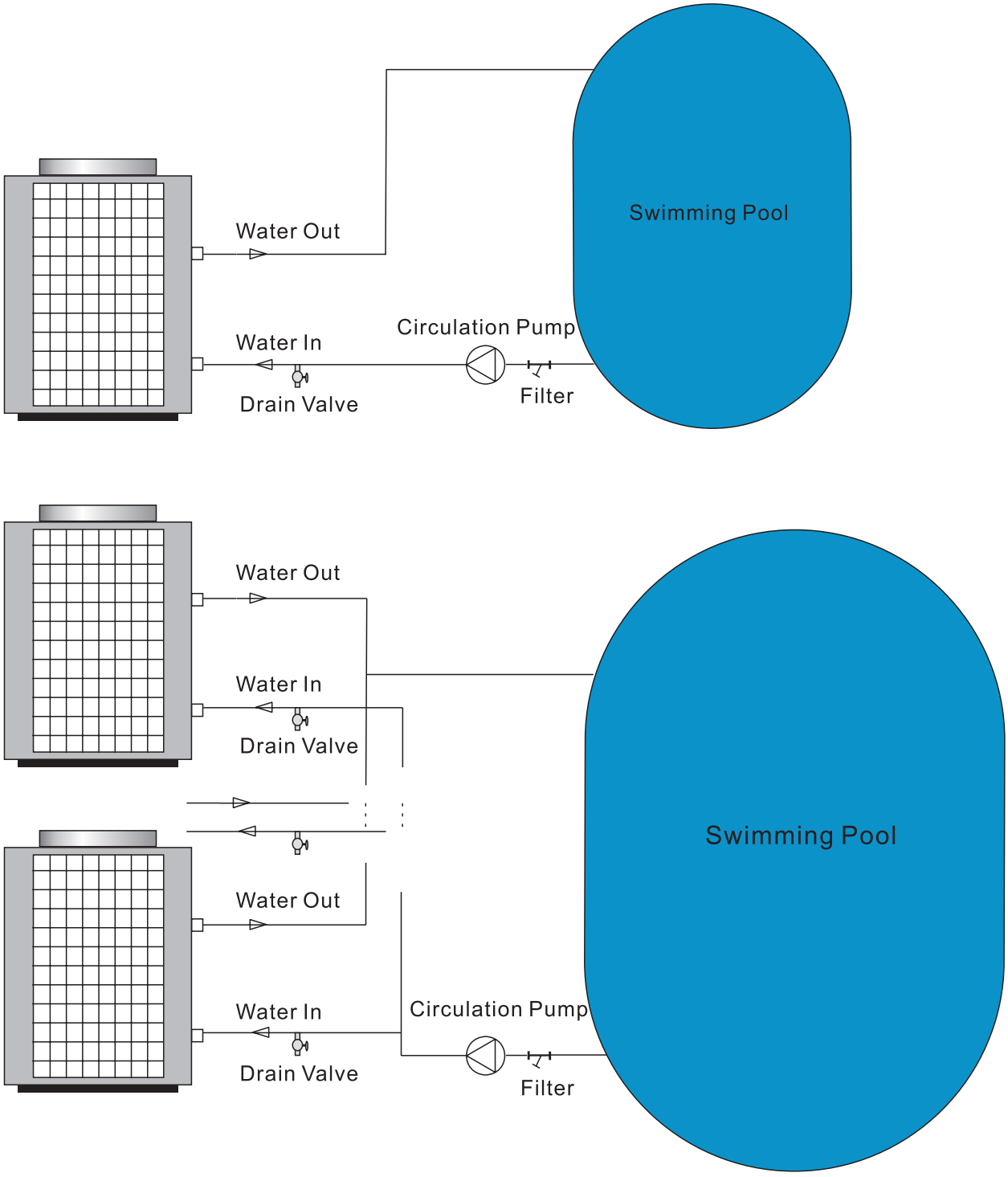
►Install a by-pass when the flow of the pool pump exceeds the authorized flow through the heat exchanger of the heat pump with 20%.

By-pass Setting

With the by-pass set correctly, best performance of the pool heat pump will be made.
Please see the right diagram for the connection.

SETTING:
Valve 1: close slightly
Valve 2: open half way
Valve 3: open completely





The filter connected with pipes should be cleaned regularly to make sure the water inside systems clean,

NOTS for Anti-Freezing in Winter

1. The heat pump unit has auto antifreeze program. When the unit is working normally, there will not be freezing.
2. When the ambient temperature is minus, and the unit stops for over 3 hour , or the unit stops long term when power off, the user is advised to drain all the water inside popes through the valve which connected to water outlet to avoid frost crack.
3. If the unit is under off season, should cut off power and take the protection cover outside of unit when necessary.
4. Before restart the unit which has drained out all the water inside, the user is advised to reinstall the unit and adjust program, further more need complete check of the system.

Electrical Connection

ATTENTION

This section is an indication only and must be checked and set when necessary according to installation conditions.

Electrical installation and service must be carried out under the supervision of a qualified electrician or engineer.

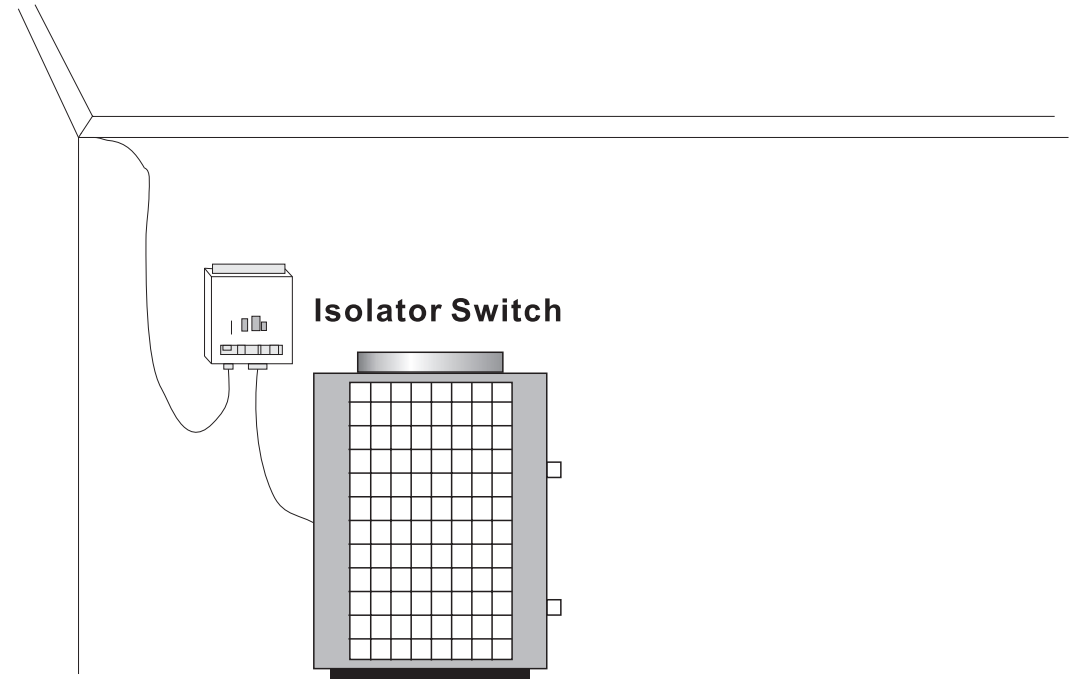
1. The electrical power supply to the heat pump must be protected with a fuse and isolator switch (not provided) in compliance with standards and regulations valid in the country in which the system is to be installed.

2. The unit is designed for connection to a general power supply with full earth and neutral or neutral earth systems.

3. The power supply cable must be connected to a circuit-breaker with at least a 3mm breaking gap. Incoming supply must be 220~240V/1/50Hz, via a distribution board with fuses.

4. If an insulation test is to be carried out in the building, please make sure to disconnect the heat pump.

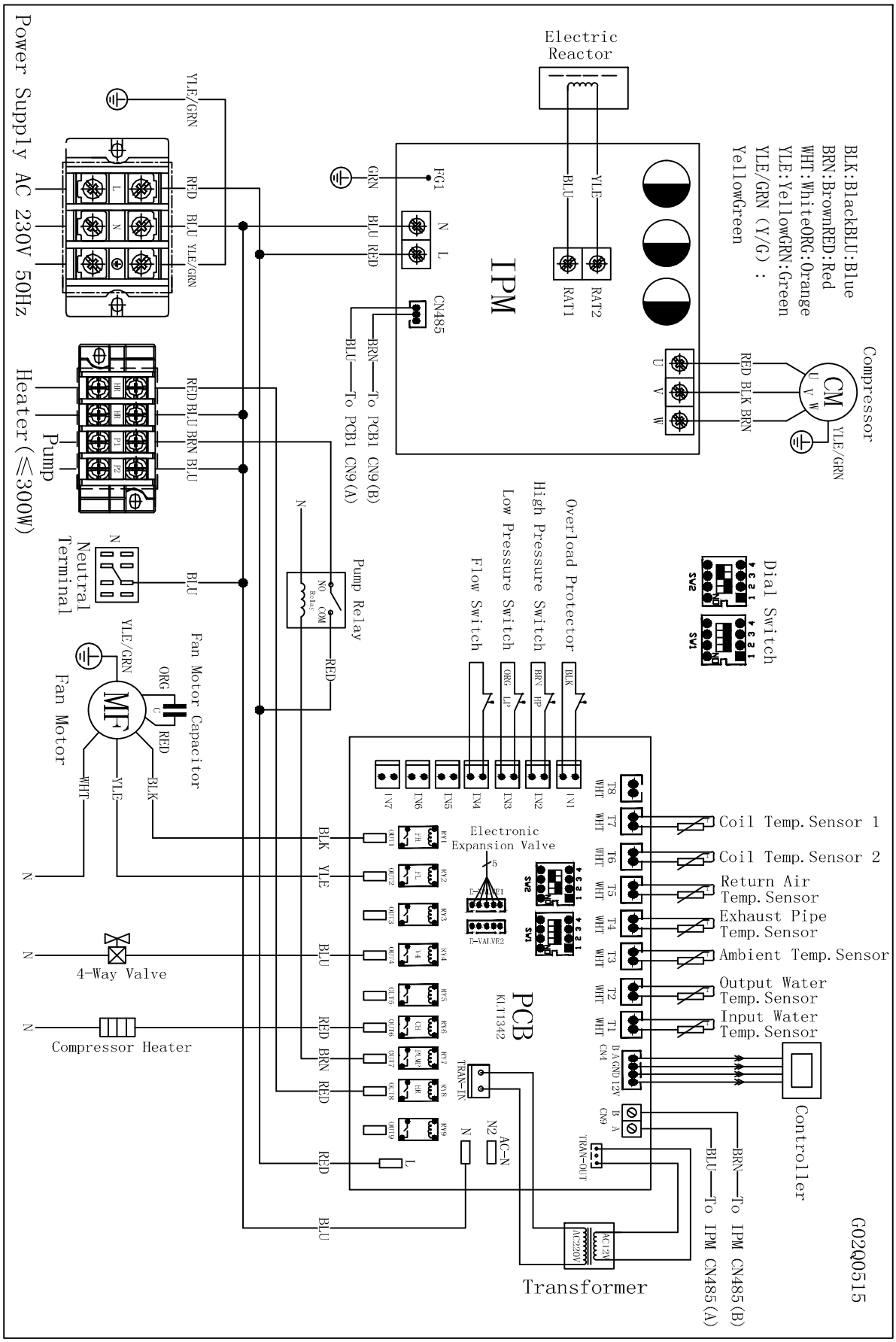
5. The communication wire must be STP(Shielded Twisted Pair), the size should not less than 0.5 mm.



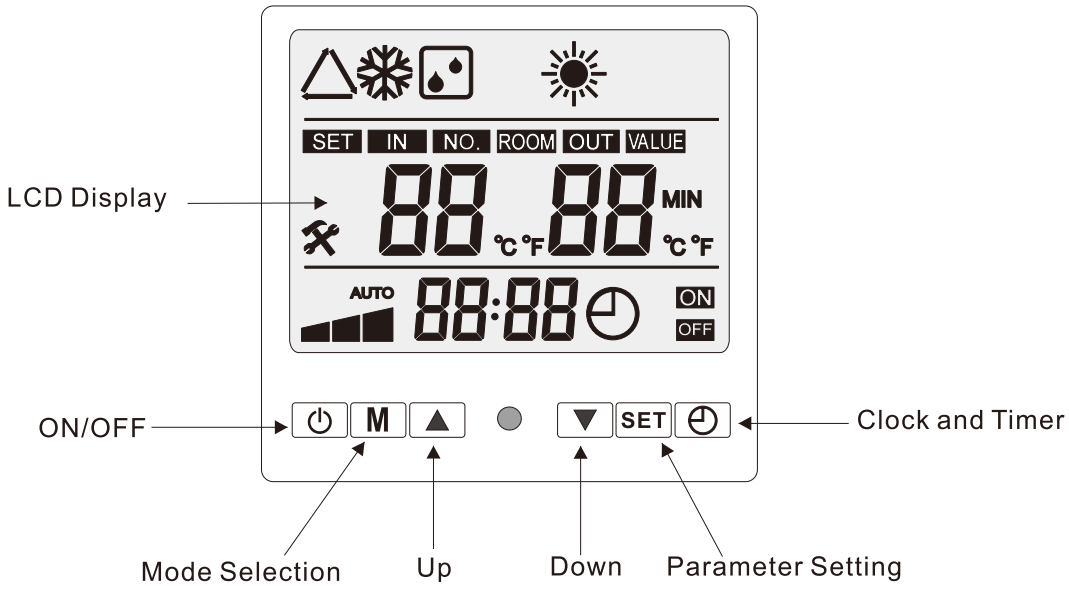
IMPORTANT REMARK

1. A voltage variation of ±10% during operation is acceptable.
2. The electrical supply conduits must be securely fastened.
3. The cable must be suitable for outdoor use.
4. Use a cable gland to pass the power supply cable into the heat pump.

Electric Circuit Drawing



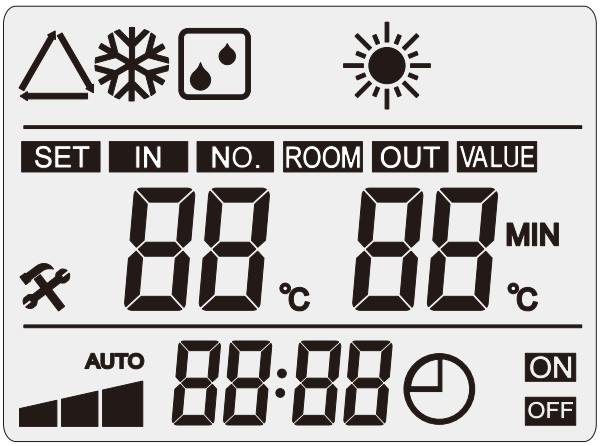
Controller



◆ Button Operation:

1. On/Off: Press the " ⏻ " button on the main interface to switch between the On/Off status;
2. Mode switching: Press the "M" button on the main interface to switch between the operation modes;
3. Button locking: Press and hold the "▲" and "▼" buttons for 5S at the same time on the main interface to lock the buttons, and the icon will appear on the screen when the buttons are locked. Repeat the operation to unlock;
4. Manual defrosting: Press the " SET " and " ◴ " buttons for 5s at the same time in the power-on state to start forced defrosting;
5. Parameter resetting: Press the " ⏻ ", "M" and " ◴ " buttons for 5 seconds at the same time to reset the parameters
6. Clock setting: Press the "SET" button on the main interface to enter the clock setting interface. After entering the clock setting screen, the hour flashes first, and you can use the "▲" or "▼" to adjust the hour. After the hour is set, press the "SET" button to enter the minute setting. After the minute is set, press the "SET" button to complete the clock setting and return to the main interface.
7. Timing setting: Press the " ◴ " button on the main interface to enter the timing setting interface. After entering the timing setting interface, the hour in the time period 1 setting starts flashing, and you can use the "▲" or "▼" to adjust the hour. In the adjustment process, press the " ◴ " button to switch to the next time period setting until the timing setting of the two time periods is completed. Press the "SET" button during any time period setting to cancel the time period
8. Other operations: Press and hold the "Set" button for 5s to enter the password setting interface, enter "8563" to enter the time limit setting interface, enter "9615" to enter the manual frequency status, and enter "8866" to switch between the display frequency (clock display window).

Illustration for LCD Display



Top area

- Automatic mode symbol.
- Cooling mode symbol.
- Defrosting symbol.
- Heating mode symbol.

Middle area

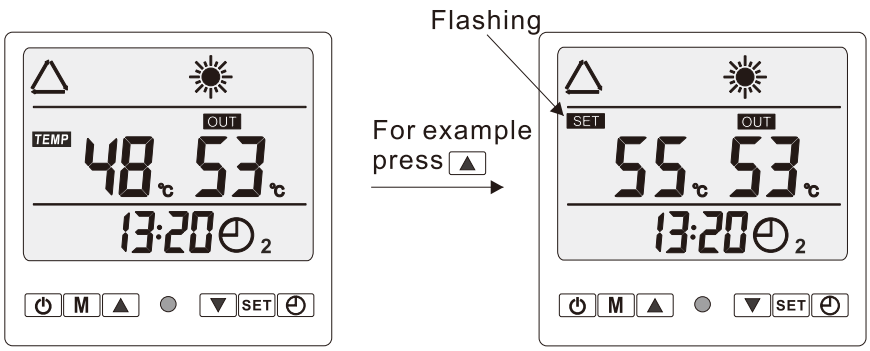
SET Temperature setting symbol, the figure under is the temperature value.
IN Inlet water temperature symbol, the figure under is the temperature value.
NO. Parameter number symbol, the figure under is the parameter number .
ROOM OUT Outdoor ambient temperature symbol, the figure under is the temperature value.
VALUE Parameter value symbol, the figure under is the parameter value.
Failure symbol.

Bottom area

ON Turning on timer symbol. It appears when setting turn on timer.
OFF Turning off timer symbol. It appears when setting turn off timer.
Clock symbol. It appears when setting time.

Water Temperature Setting

When the heat pump is switched on, just press ▲ or ▼ to adjust water temperature.
When outlet water temperature is reset, the display will automatically return to normal display and resetting is activated.



Initial State

Water Temperature Setting State

Maintenance and Trouble Shooting

Maintenance

The heat pump water heater is an advanced equipment with high automization. The reliability and operation life of the heat pump can be expectedly gurranteed and even increased by regular inspection and effective maintenance.

The external water filter should be cleaned regularly to ensure the cleanness of the water in the system and avoid damage caused by blockage in the filter.

All protective settings in the unit have been set before ex-factory. Users must not adjust it when the heat pump unit is in use.

Regular inspection is required for the power source and the wiring connection of the electric system. Loose wiring connection and electric components should be repaired in time.

The water supply system, relief valve of the water tank, water level control device and air discharge device need to be checked regularly in case of low circulation water volume caused by air entering the system, to ensure enough capacity and reliability of the heat pump.

Check the water pump and the valves on the pipes if they work well, and make sure there is no leakage from connectors.

Keep the surrounding of the heat pump dry, clean and ventilated. Regularly clean the evaporator to keep high heat exchanging efficiency.

Check the inside pipe connectors and refrigerant service port is dirty with oil. Make sure there is no refrigerant leakage.

Before stopping the heat pump for long time, drain out all water in the pipes, and shut off the power supply, and put it into a shield. Full inspection of the system is required before next operation.

Users should call the installer or the seller every time when there is an error on the heat pump controller.

Clean the condenser with phosphoric acid of 15% consistence under temperature of 50C-60C. Run the circulation pump for 3 hours, and then flush with fresh water for 3 times. When installing the pipes, add a 3 way valve on the pipes and closed on outlet of it, for cleaning use. Corrosive washing liquid is forbidden to clean the condenser.

Clean the inside of the water tank after being used for a period(usually two months, and according to local water quality.)

Press and hold the “ ” button for 5s to enter the status query:

Query Code	Meaning	Display Range
01	Inlet water temperature	-20~99℃
02	Outlet water temperature	-20~99℃
03	Ambient temperature	-20~99℃
04	Exhaust temperature	0~125℃
05	Return air temperature	-20~99℃
06	Outer coil temperature	-20~99℃
07	Inner coil temperature	-20~99℃
08	Main expansion valve opening	Actual value/10
09	Enthalpy increase expansion valve opening	Actual value/10
10	Press current	
11	Heat sink temperature	
12	DC bus voltage	Actual value/10
13	Press actual frequency	

Error code table

Code	Description	Remark
Er03	Flow side error	
Er04	Freeze in piping in winter	
Er05	High pressure switch error	
Er06	Low pressure switch error	
Er09	Communication failure	
Er10	PCB error	
Er11	Reserve	
Er12	High discharge temp error	
Er15	Water inlet probe error	
Er16	Defrost probe error	
Er18	Discharge probe error	
Er20	PCB abnormal error	
Er21	Ambient probe error	
Er23	Lower water outlet temp error in cooling mode	
Er27	Water outlet probe error	
Er29	Suction temp error	
Er32	Higher water outlet temp error in heating mode	
Er35	Compressor overload current error	
Er43	Piping probe error	

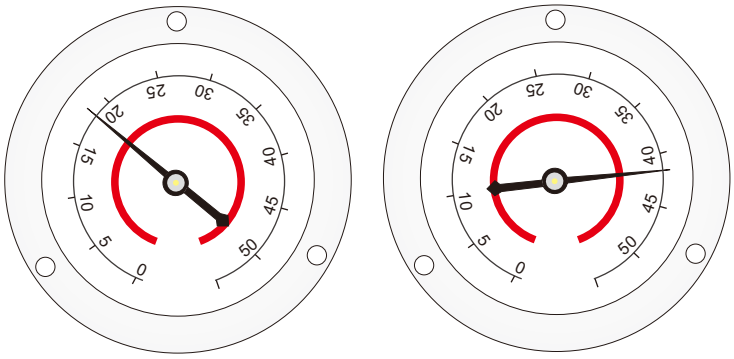
Parameter Number and Description Table

Press and hold the "Set" key for 5s to enter the password setting interface; enter "0814" to enter the parameter query interface:

Setting Code	Parameter Name	Adjustment Range	Initial Value
01	Air conditioning temperature difference	2℃~18℃	2℃
02			
03			
04	Cooling temperature setting	7℃~30℃	12℃
05	Heating temperature setting	15℃~50℃	35℃
06	Temperature setting for protection against excessive exhaust temperature	80℃~125℃	120℃
07	Recovery temperature setting for excessive exhaust temperature	50℃~100℃	95℃
08	Press current protection	2A~50A	20A
09	Inlet water temperature compensation	-5℃~15℃	0℃
10	Reserved		
11	Defrosting cycle	20MIN~90MIN	45MIN
12	Defrosting entry temperature	-15℃~-1℃	-3℃
13	Defrosting time	5MIN~20MIN	10MIN
14	Defrosting exit temperature	1℃~40℃	20℃
15	Defrosting environment and coil temperature difference	0℃~15℃	5℃
16	Defrosting ambient temperature	0℃~20℃	17℃
17	Main expansion valve operating cycle	20S~90S	30S
18	Overheat for heating target	-5℃~10℃	1℃
19	Exhaust temperature for main expansion valve regulation	70℃~125℃	95℃
20	Defrosting expansion valve opening	20~450	400
21	Main expansion valve minimum opening	50~150	80
22	Main expansion valve mode selection	0-manual/1-automatic	1
23	Main expansion valve manual levels	20~450	350
24	Overheat for cooling target	-5℃~10℃	0℃
25	Enthalpy increase expansion valve manual levels	20~450	350
26	Ambient temperature for enthalpy increase starting	11℃~45℃	23℃
27	Cooling main valve mode	0-ambient/1-overheat	1
28	Constant temperature pump mode	1-normally open/0-closed	1
29	F1	15~120Hz	40 Hz
30	F2	15~120Hz	45 Hz
31	F3	15~120Hz	50 Hz
32	F4	15~120Hz	55 Hz
33	F5	15~120Hz	60 Hz
34	F6	15~120Hz	65 Hz
35	F7	15~120Hz	70 Hz
36	F8	15~120Hz	75 Hz
37	F9	15~120Hz	80 Hz
38	F10	15~120Hz	85 Hz
39	Exhaust setting TP0	50~125℃	95℃
40	Exhaust setting TP1	50~125℃	100℃

41	Exhaust setting TP2	50~125℃	105℃
42	Exhaust setting TP3	50~125℃	110℃
43	Exhaust setting TP4	50~125℃	120℃
44	Current I limit	5~50A	16A
45	Current I down	5~50A	18A
46	Current I shutdown	5~50A	20A
47	Exhaust limit main expansion valve down 1	50~125℃	61℃
48	Exhaust limit main expansion valve down 2	50~125℃	65℃
49	Exhaust limit main expansion valve down 3	50~125℃	70℃

Manometer Instruction



The manometer is a kind of high pressure equipment, when the heat pump is on, the manometer pointer would point to the pressure value of refrigerant, the max. value of protection is 42kg/Cm^2. When the heat pump is off, the pointer would point to the same value as actual ambient temperature (e.g. 28℃) and related air pressure (e.g.18kg/ Cm^2).

Please check the manometer when you restart the heat pump after not using for a long time, if it shows ambient temperature valve is smaller than 2℃ (When the ambient temp. is higher than 2℃), it means that refrigerant has leaked a lot, and you need to confirm with professional engineer as soon as possible.

RoHS