# swimmax

# Swimming Pool Heat Pump
## User and Service Manual

# INDEX

Thank you for using our swimming pool heat pump for your pool heating, it will heat your pool water and keep the constant temperature when the air ambient temperature is at -12 to 43℃.

⚠ **ATTENTION: This manual includes all the necessary information for the use and the installation of your heat pump.**

- The installer must read the manual and follow the instructions of implementation and maintenance.
- The installer is responsible for the installation of the product and should follow all the instructions of the manufacturer and the regulations in application. Incorrect installation will invalidate the guarantee.
- The manufacturer declines any responsibility for the damage caused by any third party, object ingression and of the errors due to the installation that do not follow the manual guidelines. Any use that is not as intended by the manufacturer will invalidate the guarantee.

⚠**WARNING:**

**Important notice:**

- **Please always keep the heat pump in a well ventilated place and away from anything which could cause fire.**

- **Do not braze or weld the pipe if there is refrigerant inside machine. Please do not charge the gas when in a confined space.**

- **Please always empty the water in heat pump during winter time or when the ambient temperature drops below 0℃, or else the Titanium exchanger will be damaged because of being frozen, in such case, your warranty will be lost.**

- **Please always cut the power supply if you want to open the cabinet to reach inside the heat pump.**

- **Please keep the display controller in a dry area to protect the display controller from being damaged by humidity.**

- **Action of filling gas must be conducted by professional with R32 operating license.**
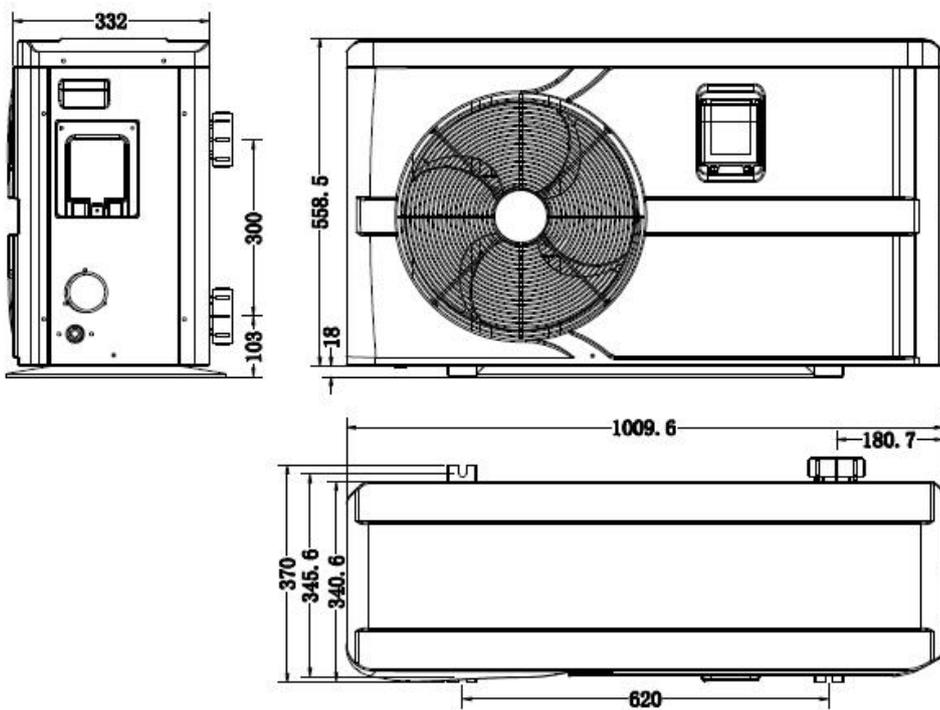
# 1. Description

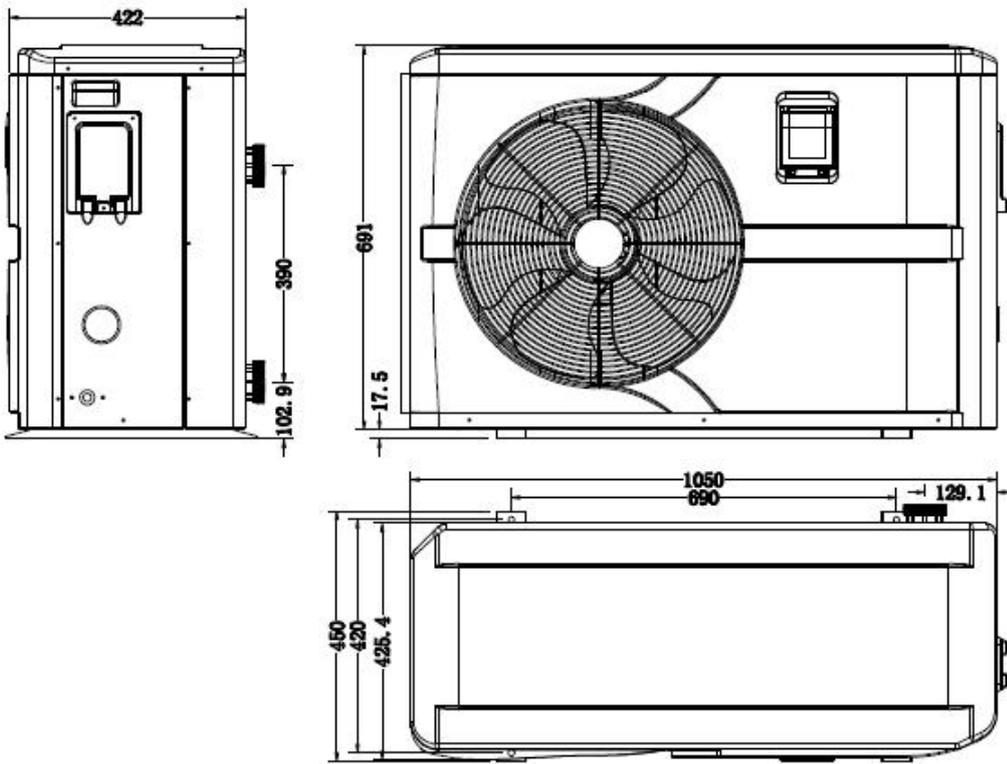## 1.1 Included with your Heat Pump
- Water connection assembly 48.3 mm (pcs: 2)
- User and service manual
- Draining plug (pcs: 2)
- Water drainage pipes (pcs: 2)
- 10 meters' signal wire (pcs: 1)
- Winter cover (pcs: 1)
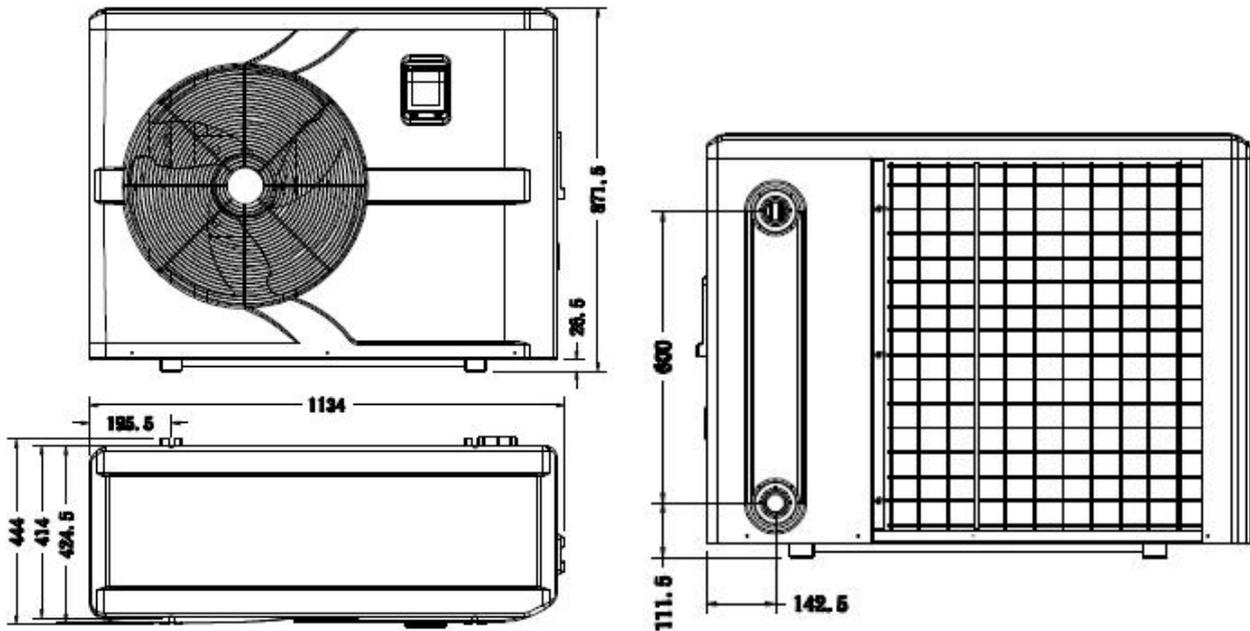- Anti-vibration base (pcs: 4)
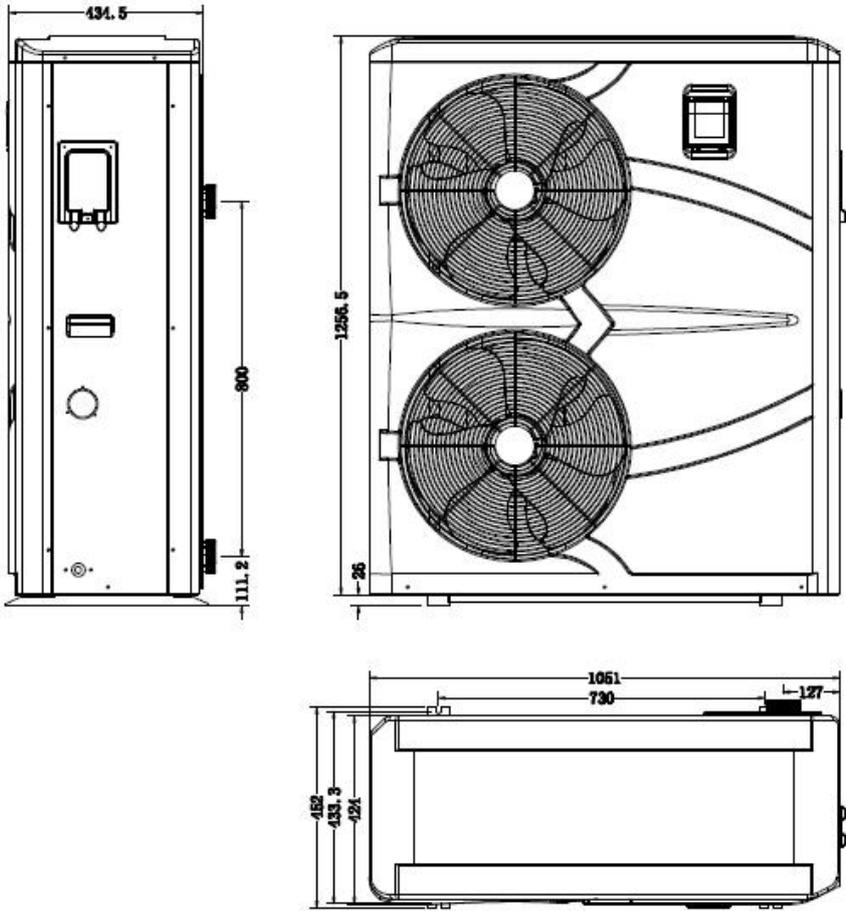
## 1.2 Dimension
**Model: Swimmax 07iPS**

**Model:    Swimmax 11iPS/Swimmax 17iPS**



**Model: Swimmax 20iPS/Swimmax 25iPS**

**Model: Swimmax 30iPS**

# 2. Transport information

## 2.1 Delivery of the unit

For the transportation, the heat pumps are fixed on the pallet and covered with a cardboard box.

To protect from any damage, the heat pump must be transferred in its package.
It is the responsibility of the addressee to notify of any damage incurred during delivery within 48 hours.
No responsibility can be taken once the unit has been signed for.

## 2.2 Stock advice

* The warehouse should be bright, spacious, open, well ventilated, have ventilation equipment and no fire source.

* Heat pumps must be stored and transferred in vertical position in its original packaging. If it is not the case, it cannot be operated until a minimum period of 24H has passed before the unit can have the electrical power turned on.

**FORBIDDEN**

### 2.3 Transfer to the final position

* During the unpacking of the product and the transfer from the pallet to the final place of installation, it is necessary to maintain the heat pump in a vertical position.

* Smoking and the use of flames are prohibited near R32 machine.
* Water connection are not to be used as load bearing handles. **The manufacturer would not take the responsibility in case of damage to the water pipes.**

# 3. Specifications

CE Standard, R32, ABS Cabinet

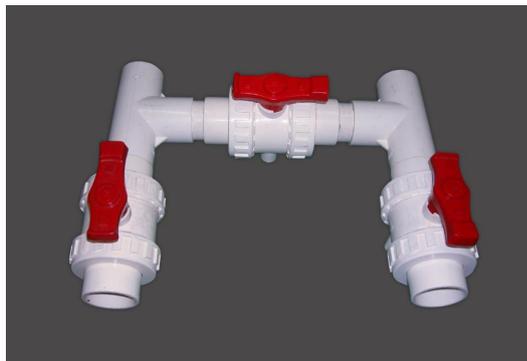| Model | | Swimmax 07iPS | Swimmax 11iPS | Swimmax 17iPS | Swimmax 20iPS | Swimmax 25iPS | Swimmax 30iPS |
|---|---|---|---|---|---|---|---|
| **\* Performance at Air 28℃, Water 28℃, Humidity 80%** | | | | | | | |
| Heating capacity | kW | 7-2.2 | 11-2.9 | 17-3.8 | 19-4.7 | 24-5.9 | 28.5-6.8 |
| Power consumption | kW | 1.25-0.14 | 1.77-0.18 | 2.83-0.24 | 3.1-0.29 | 4-0.37 | 4.75-0.43 |
| C.O.P. | | 16-5.6 | 16-6.2 | 16-6.0 | 16-6.0 | 16-6.0 | 16-6.0 |
| **\* Performance at Air 24℃, Water 26℃, Humidity 70%** | | | | | | | |
| Heating capacity | kW | 6.9-2.2 | 10.8-2.8 | 16.6-3.7 | 18.8-4.6 | 23.8-5.8 | 27.9-6.7 |
| Power consumption | kW | 1.25-0.14 | 1.77-0.18 | 2.66-0.24 | 3.1-0.29 | 3.98-0.37 | 4.73-0.43 |
| C.O.P. | | 15.7-5.4 | 15.7-6.0 | 15.7-5.8 | 15.7-5.8 | 15.7-5.8 | 15.7-5.8 |
| **\* Performance at Air 15℃, Water 26℃, Humidity 70%** | | | | | | | |
| Heating capacity | kW | 4.7-2.5 | 7.9-2 | 11.2-3 | 14-3.9 | 17.2-4.5 | 22.8-5.6 |
| Power consumption | kW | 1.02-0.35 | 1.72-0.28 | 2.43-0.42 | 2.78-0.54 | 3.74-0.63 | 4.96-0.78 |
| C.O.P. | | 7.1-4.6 | 7.2-4.6 | 7.2-4.6 | 7.2-4.6 | 7.2-4.6 | 7.2-4.6 |
| **\* General data** | | | | | | | |
| Compressor type | | Inverter compressor | | | | | |
| Voltage | V | 220~240V / 50Hz or 60Hz /1PH | | | | | |
| Rated current | A | 5.5 | 7.9 | 11.8 | 14 | 17.7 | 21 |
| MIN fuse | A | 10 | 16 | 20 | 21 | 25 | 32 |
| Advised pool volume (with pool cover) | m³ | 10-25 | 15-60 | 25-85 | 55-120 | 65-130 | 75-180 |
| Advised water flow | m³/h | 2.5 | 3.7 | 4.6 | 5 | 8 | 10 |
| Water pressure drop | Kpa | 12 | 14 | 15 | 18 | 20 | 25 |
| Heat exchanger | | Twist-titanium tube in PVC | | | | | |
| Water connection | mm | 40mm/1.5"HP | | | | | |
| Fan quantity | | 1 | | | | | 2 |
| Ventilation type | | Horizontal | | | | | |
| Fan speed | RPM | 500-850 | | 550-850 | 450-650 | 450-650 | (550-850)*2 |
| Power input of Fan | W | 6-35 | | 32-110 | 35-130 | | (32-110)*2 |
| Noise level(10m) | dB(A) | ≤41 | ≤42 | ≤43 | ≤45 | ≤45 | ≤49 |
| Noise level(1m) | dB(A) | 38-51 | 40-52 | 40-54 | 41-54 | 42-60 | |
| **\* Dimension/ Weight** | | | | | | | |
| Net weight | kg | 56 | 73 | 98 | 117 | 128 | 130 |
| Gross weight | kg | 68 | 78 | 113 | 135 | 146 | 148 |
| Net dimension | mm | 1010*370*559 | 1060*450*691 | | 1134*446*872 | | 1061*452*1256 |
| Packing dimension | mm | 1080*420*732 | 1121*495*848 | | 1186*495*1011 | | 1127*517*1425 |

\* Above data are subject to modification without notice.

# 4. Accessories and options
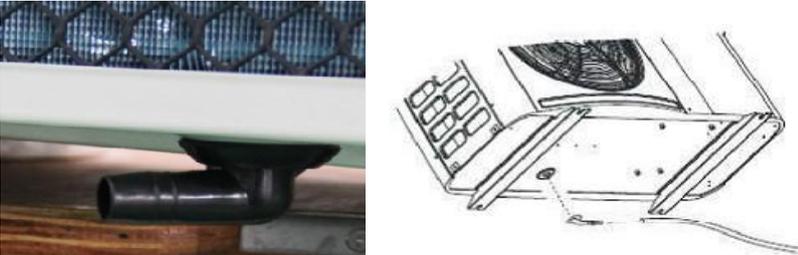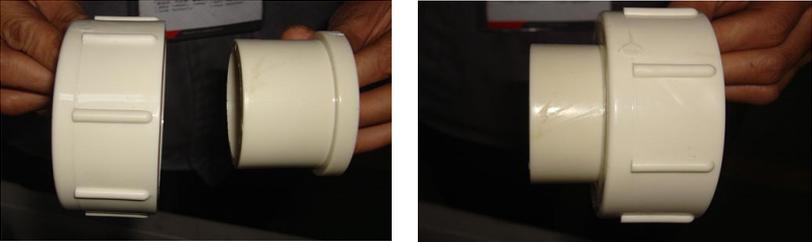
## 4.1 Accessories list

| | | |
|---|---|---|
| Anti-vibration base, 4 pcs | Draining plug, 2 pcs | Water drainage pipes, 2 pcs |
| 10M signal wire, 1 pc | Water connection assembly, 2 sets | Winter Cover, 1 pc |

## 4.2 The By-Pass Kit

The By-Pass Kit is the essential accessory for the installation of your heat pump, it is also a tool for the optimization of the heating of the water. The valves allows the optimum flow of water using a manometer to make sure the optimized running of the compressor, see paragraph 5.6 controls of the pressure.

## 4.3 Accessories Installation

| | |
|---|---|
|  | **Anti-vibration bases**<br>1. Take out 4 Anti-vibration bases<br>2. Install them on the bottom of machine. |
|  | **Draining plug**<br>1. Install the draining plug under the bottom panel<br>2. Connect with a water pipe to drain out the water.<br><br>Note: Lift the heat pump to install the draining plug. Never overturn the heat pump, it could damage the compressor. |
|  | **Water Inlet & outlet connection**<br>1. Install the two joints like the picture shows<br>2. Screw them onto the water Inlet & outlet connection |
|  | **Mains Cable wiring**<br>1.Connect the power supply wire through the white hole like the picture shows.<br>2.Fix the other side on joints inside the electric box. |
|  | **Water pump wiring**<br>1.Connect the water pump wire through the white hole marked<br>2.Fix the other side on joints inside the electric box. |

# 5. Location and connection

**ATTENTION:**

Please observe the following rules when installing the heat pump:

1. Any addition of chemicals must take place in the piping located **downstream** from the heat pump.

2. Always keep the heat pump upright. If the unit has been held at an angle, wait at least 24 hours before applying mains power to the heat pump.

## 5.1 Heat pump location

The unit will work properly in any desired location as long as the following three items are present:

> **1. Fresh air**
> **2. Electricity**
> **3. Swimming pool filters**

The unit may be installed in virtually any **outdoor** location as long as the specified minimum distances to other objects are maintained (see drawing below). Please consult your installer for installation with an indoor pool. Installation in a windy location does not present any problem at all.

**ATTENTION:** Never install the unit in a closed room with a limited air volume in which the air expelled from the unit will be reused, or close to shrubbery that could block the air inlet. Such locations impair the continuous supply of fresh air, resulting in reduced efficiency and possibly preventing sufficient heat output.
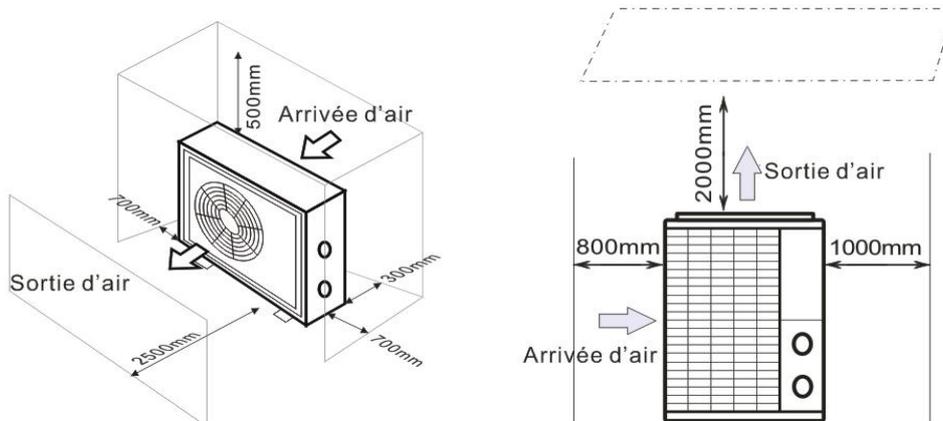
## 5.2 Check-valve installation

⚠ **NOTE**

Note: If automatic dosing equipment for chlorine and acidity (pH) is used, it is essential to protect the heat pump against excessively high chemical concentrations which may corrode the heat exchanger. For this reason, equipment of this sort must always be fitted in the piping on the **downstream** side of the heat pump, and it is recommended to install a check-valve to prevent reverse flow in the absence of water circulation.

Damage to the heat pump caused by failure to observe this instruction is not covered by the warranty.
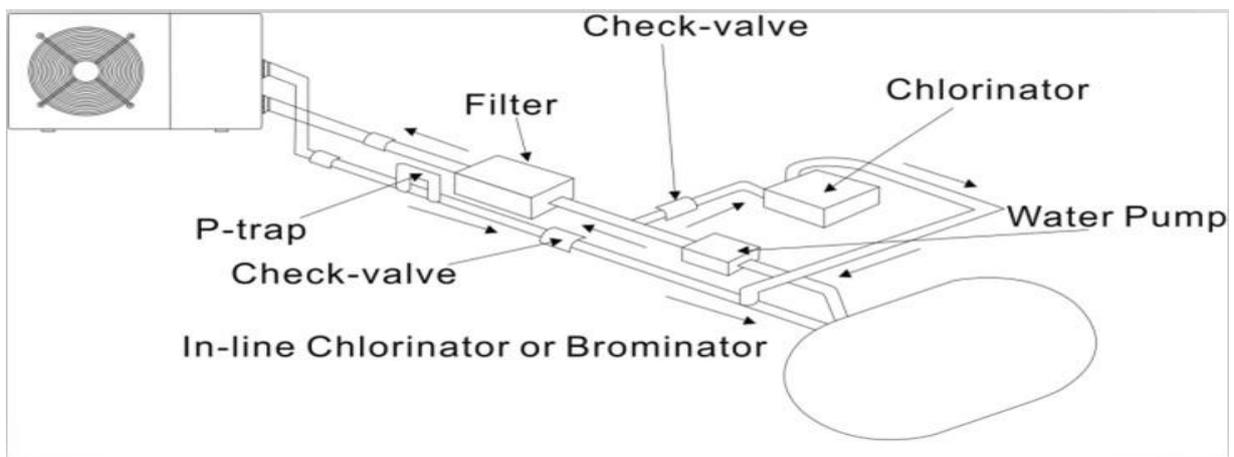


## 5.3 Typical arrangement
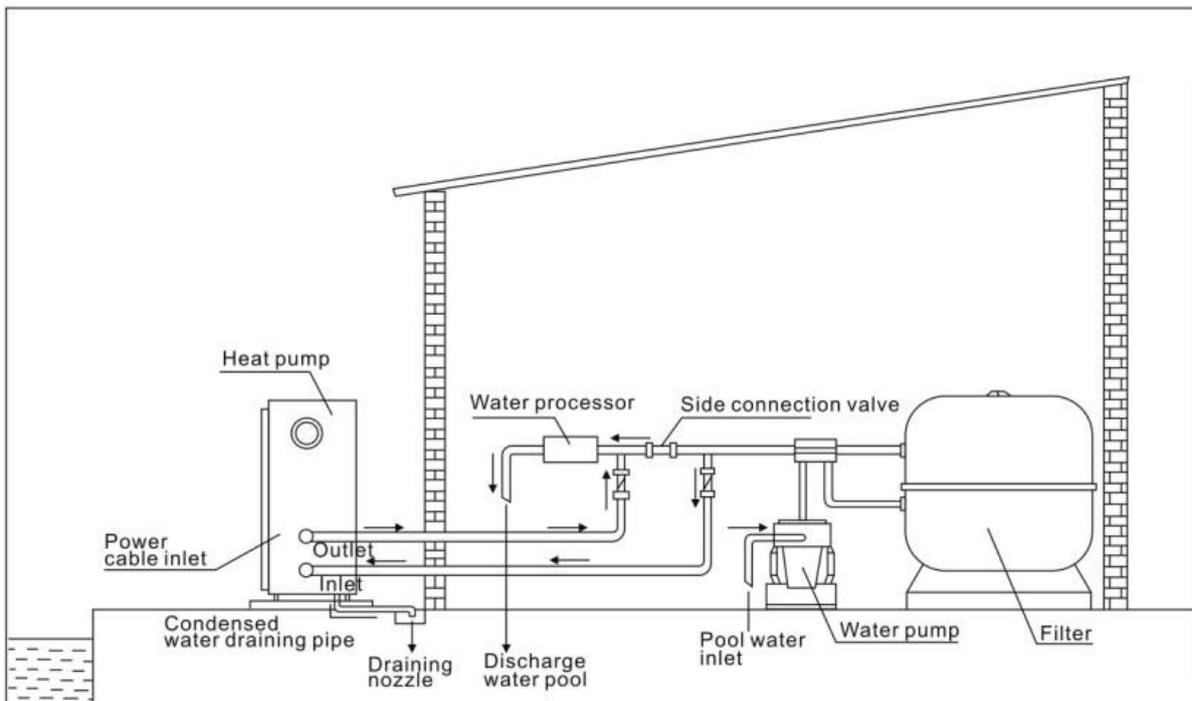


**This arrangement is only an illustrative example.**

**⚠ NOTE**

> The factory supplies only the heat pump. All other components, including a bypass if necessary, must be provided by the user or the installer.

**ATTENTION:**
**In order to heat the water in the pool (or hot tub), the filtration pump must be running so the water is circulating through the heat pump. The heat pump will not start up if the water is not circulating.**

## 5.4 Initial operation

After all connections have been made and checked, carry out the following procedure:

1. Switch on the filtration pump. Check for leaks and verify that water is flowing to and from the swimming pool.

2. Connect power to the heat pump and press the On/Off button ⏻ on the electronic control panel. The unit will start up after the time delay expires (see below).

3. After a few minutes, check whether the air blowing out of the unit is cooler.

4. When the filtration pump is turned off, the unit should also turn off automatically.

5. Allow the heat pump and the filtration pump to run 24 hours a day until the desired water temperature is reached. The heat pump will stop running at this point +1°C. After this, it will restart automatically (as long as the filtration pump is running) whenever the swimming pool water temperature drops 1 degree below the set temperature (for example, if you set the temperature 28°C, the heat pump will stop when the temperature at 29°C. While it will restart when the temperature of the water down to 27°C)

Depending on the initial temperature of the water in the swimming pool and the air temperature, it may take several days to heat the water to the desired temperature. A good swimming pool cover can dramatically reduce the required length of time.

**⚠ NOTE**

**Water Flow Switch:**
It is equipped with a flow switch for protecting the HP unit running with adequate water flow rate. It will turn on when the filtration pump runs and shut it off when the pump shuts off.

**Time delay -** The heat pump has a built-in 3-minute start-up delay to protect the circuitry and avoid excessive electrical contactor wear. The unit will restart automatically after this time delay expires. Even a brief power interruption will trigger this time delay and prevent the unit from restarting immediately. Additional power interruptions during this delay period do not affect the 3-minute duration of the delay.

## 5.5 Condensation

The air drawn into the heat pump is cooled by the operation of the heat pump for heating the pool water, which may cause condensation on the fins of the evaporator.

⚠ **NOTE**

The amount of condensation may be as much as several litters per hour at high humidity. The condensate will drain from the bottom of the heat pump. This is sometimes mistakenly regarded as a water leak.

## 5.6 Adjusting the bypass
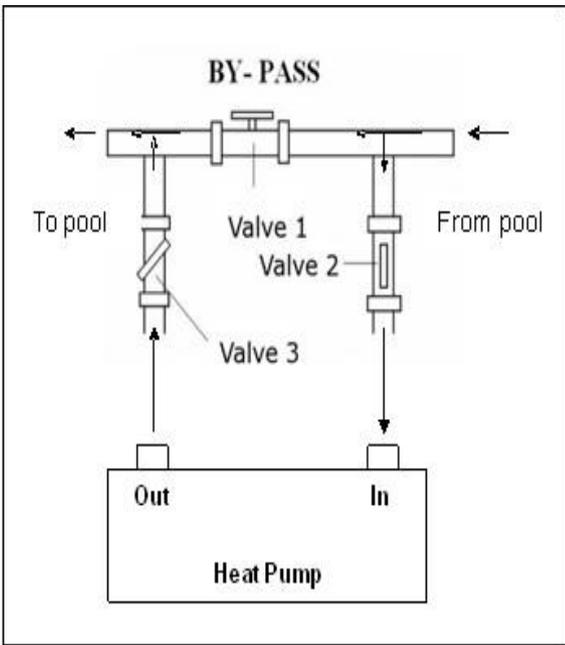


Please take below steps to adjust the by-pass:

1. Valve 1 wide open. Valve 2 & valve 3 closed.

2. Slowly open valve 2 & valve 3 by half, then close the valve 1 slowly to increase the water flow to valve 2 & valve 3.

If it shows 'ON' or 'EE3' on display, it means the water flow into heat pump is not enough, then you need adjust the valves to increase the water flow through the heat pump.

How to get the optimum water flow:

Please turn on the heat pump under heating function, firstly close the by-pass then open it slowly to start the heat pump (the machine can't start running when the water flow is insufficient).

Continue to adjust the by-pass, at the meantime to check the Inlet water temp. & Outlet water temp., it will be optimum when the difference is around 2 degree.

# 6. Electrical Wiring

## 6.1 Inverter swimming pool heat pump wiring diagram

Swimmax 07iPS/Swimmax 11iPS/Swimmax 17iPS/Swimmax 20iPS/Swimmax 25iPS
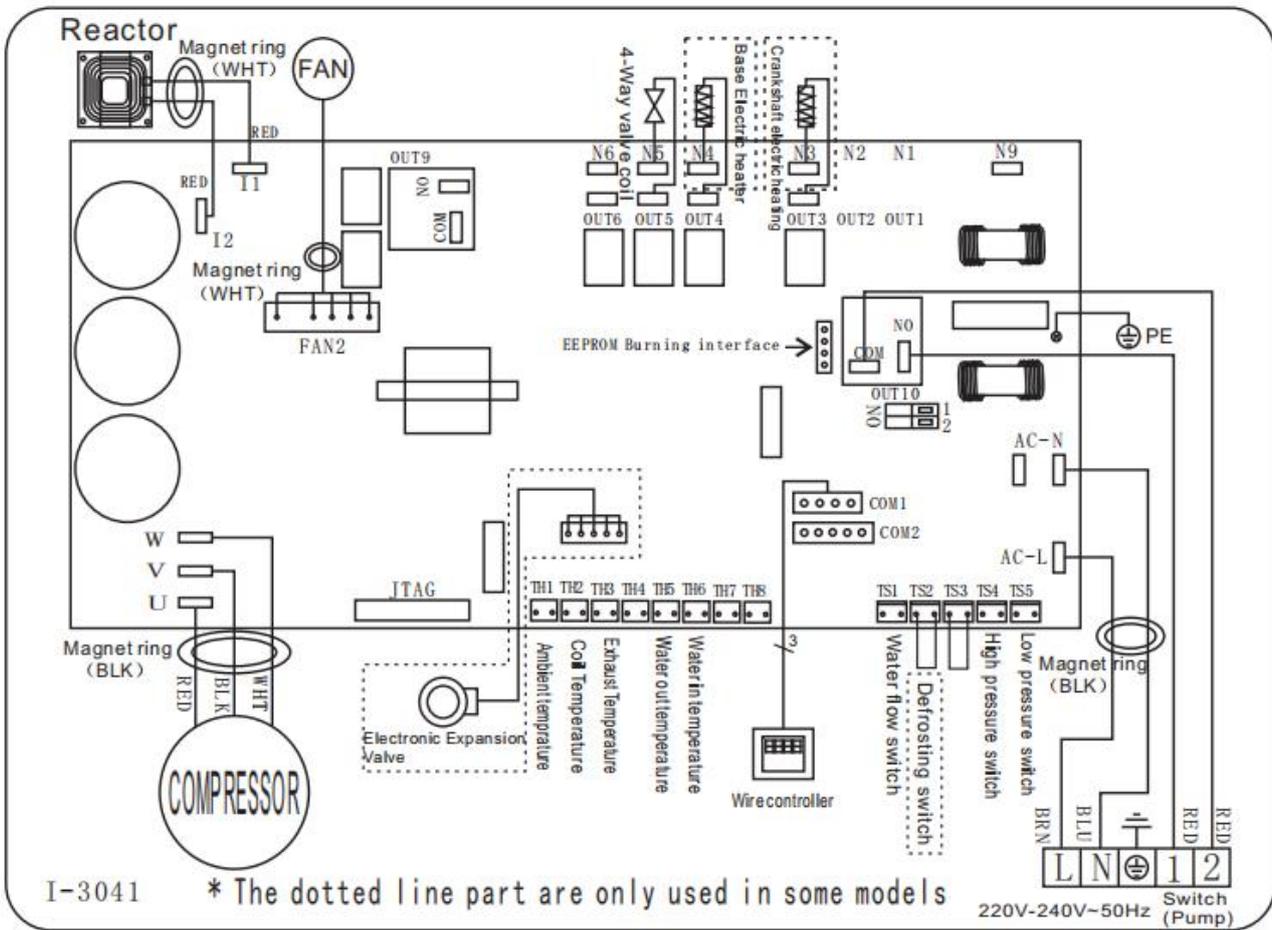


* Above electrical wiring diagram only for your reference, please subject machine posted the wiring diagram.

# Swimmax 30iPS



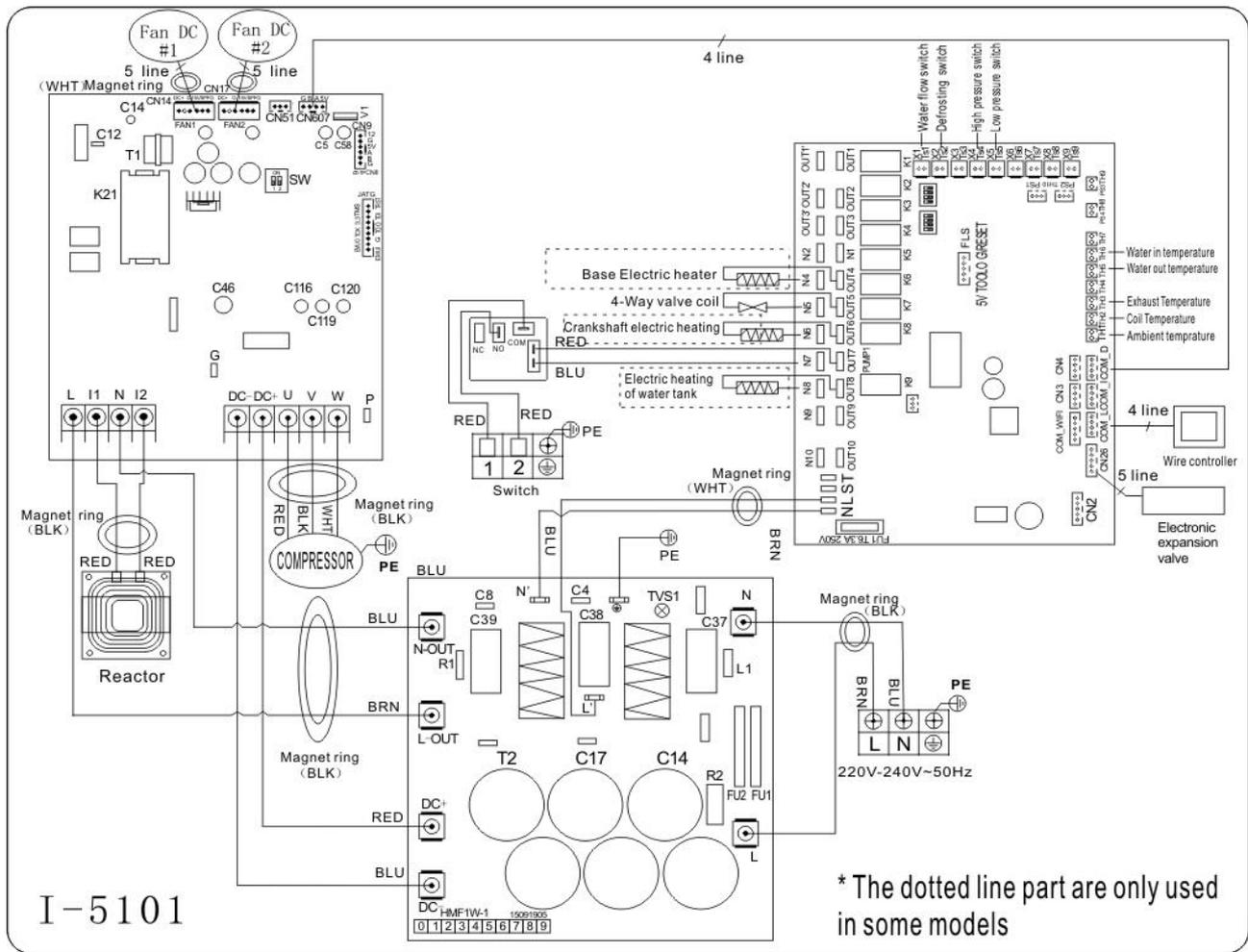* Above electrical wiring diagram only for your reference, please subject machine posted the wiring diagram.

## 6.2 Installation of the display deportee

Photo(1)      Photo(2)     Photo(3)      Photo(4)       Photo(5)
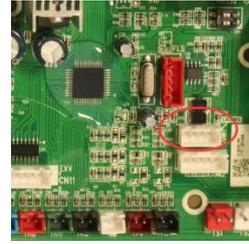


- The end with plug connects with the control panel (photo1)

- The other end of the signal wire. (photo2)

- Open the cover of the terminal box and pass through it the cable of the remote screen.(photo3,4)

**ATTENTION :**

**Disconnect:** A means to disconnect should be located within sight of and readily accessible from the unit(circuit breaker, fused or un-fused switch). This is common practice on commercial and residential heat pumps. It prevents remotely-energizing unattended equipment and permits turning off power at the unit while the unit is being serviced.

## Connection to pilot the water pump
## Dry contact timer connection
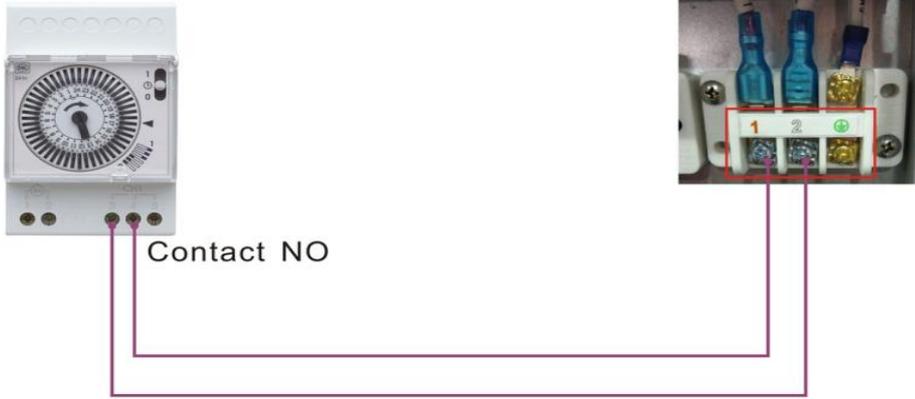
Contact NO

## Dry contact pump connection

Water pump
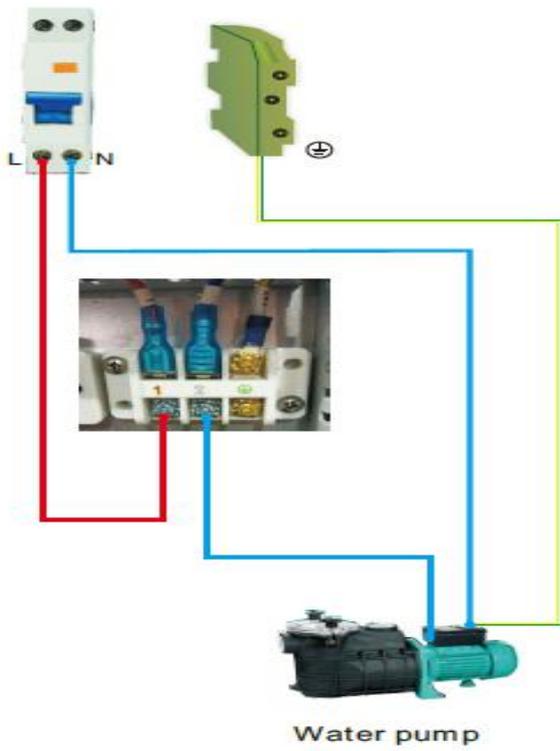
# 7.Display Controller Operation

## 7.1. Guide for operation



## 7.2 The keys and their operations

### 7.2.1  button

Press  to start the heat pump unit.

Press  to stop the heat pump unit.

### 7.2.2  and  button

*Water temperature setting:*

Press  or  to set the water temperature directly.

Heating mode and Auto mode setting range:6-41℃,Cooling mode setting range: 6-35℃

Press  and  at the same time to check water in temperature, water out temperature and set temperature.

Remark:

1) The buttons are locked if there is no operation on the display for 30 seconds

2) Hold  and  together for 5 seconds to unlock the buttons if necessary.

### 7.2.3  button

Press  to change the working mode, Powerful, silent and smart. The default mode is smart mode.

**7.2.4**  **button**

Press  for 2 seconds to enter secondary page.

Press  and  to select the functions and press  to enter.
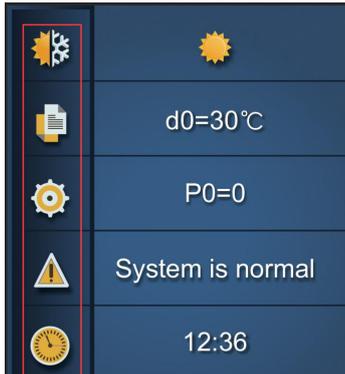


**7.2.5**  **Heating/Cooling/Auto mode**

Select  and press  to enter, press  and  to choose Heating/ Cooling/ Auto mode, press  again to exit. The default mode is Heating mode.

**Note:Under Automatic mode, it is useless to set parameter P1 .**

*Operation logic of Auto Mode:*

**T1=Water inlet temperature /Tset= set temperature=28℃**

| NO | Condition | Current working Status | Water inlet Temperature | Working mode |
|---|---|---|---|---|
| 1 | When the heat pump starts | Startup | 27℃≤T1<29℃ | Running heating mode |
| | When the heat pump is running | Heating mode | T1≥29℃, last for 3 minutes | Standby |
| | | Standby | T1≥30℃ | It switches to cooling mode |
| | | Cooling mode | T1=28℃, last for 3 minutes | Standby |
| | | Standby | T1≤27℃, last for 3 minutes | It switches to heating mode |

Logic of auto mode
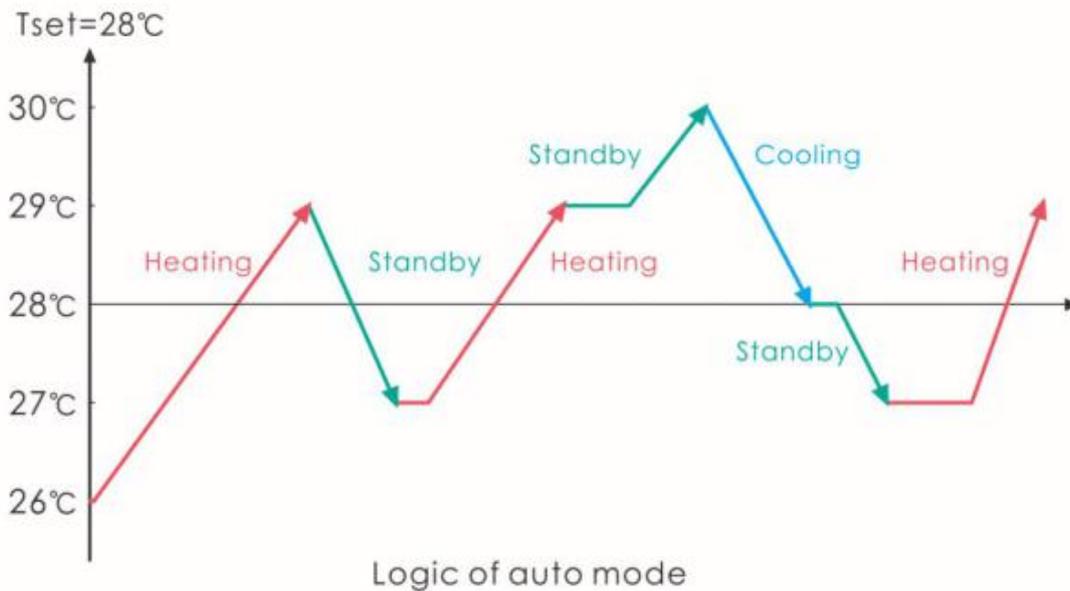
## 7.2.6  Parameter checking

Select  and press  to enter, press  and  to check d0-d11 value.

| Code | Condition | Scope | Remark |
|------|-----------|-------|--------|
| d0 | IPM mould temperature | 0-120°C | Real testing value |
| d1 | Inlet water temp. | -9°C～99°C | Real testing value |
| d2 | Outlet water temp. | -9°C～99°C | Real testing value |
| d3 | Ambient temp. | -30°C～70°C | flash if Real value<-9 |
| d4 | Frequency limitation code | 0,1,2,4,8,16 | Real testing value |
| d5 | Piping temp. | -30°C～70°C | flash if Real value<-9 |
| d6 | Gas exhaust temperature | 0°C～C5°C (125°C) | Real testing value |
| d7 | Step of EEV | 0～99 | N*5 |
| d8 | Compressor running frequency | 0～99Hz | Real testing value |
| d9 | Compressor current | 0～30A | Real testing value |
| d10 | Current fan speed | 0-1200 (rpm) | Real testing value |
| d11 | Error code for last time | All error code | |

**Remark:**

**d4:Frequency limitation code,**

**0: No frequency limit;**                                      **1:Coil pipe temperature limit;**

**2: Overheating or overcooling frequency limit; 4:Drive Current frequency limit;**

**8:Drive voltage frequency limit;**                     **16:Drive high temperature frequency limit**

## 7.2.7 ⚙️ Parameter setting

Select ⚙️ and press ⚙️ to enter, press ⌃ and ⌄ to set P0-P16 value.

| Code | Name | Scope | Default | Remark |
|------|------|-------|---------|--------|
| P0 | Mandatory defrosting | 0-1 | 0 | 0: Default normal operation<br>1: mandatory defrosting. |
| P3 | Water pump | 0-1 | 0 | 1:Always running;<br>0:Depends on the running of compressor |
| P7 | Water temp. calibration | -9～9 | 0 | Default setting: 0 |
| P14 | Reset factory setting | 0-1 | 0 | |
| P16 | CODE | | | Related with the model,Not adjustable |
| P18 | Product Range | | | Only for factory setting |

Note: Long press ⚙️ for 15s to set P14,.

P8,P9,P10,P11,P18 parameter is only for factory setting.

## 7.2.8 ⚠️ Error code

Select ⚠️ and press ⚙️ to check the error code. If the HP is normal, ⚙️ button is invalid.

EE17

Reason:DC fan fault

Solution:Electric control
or replacement
of overhaul

## 7.2.9 🕐 Time setting/Timer setting

Select 🕐 and press ⚙️ to enter, press ⚙️ again to Timer on/Timer off setting.

**Timer Setting**

**TIMER ON**

🕐 08:00

**TIMER OFF**

🕐 20:00
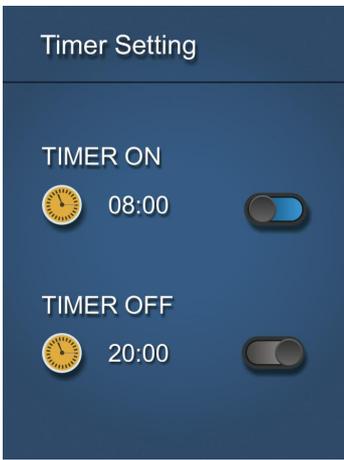
Press ⚙️ to enter and ⌃ and ⌄ to select Timer on or Timer off.

Press ⚙️ to select on/off and press ⌃ or ⌄ to set the time. Press 🎚️ to save the setting.

**Setting Time**

10      34

11      35

**12 : 36**

01      37

02      38

Long press ⚙️ for 5 seconds to set the current time.

# 8.Troubleshooting

## 8.1 Error code display on wire controller

| Malfunction | Error code | Reason | Solution |
|---|---|---|---|
| Inlet water temperature sensor failure T1 | PP01 | 1. The sensor in open or short circuit<br>2. The wiring of sensor is loose | 1. Check or change the sensor<br>2.Re-fix the wiring of the sensors |
| Outlet water temperature sensor failure T2 | PP02 | 1. The sensor in open or short circuit<br>2. The wiring of sensor is loose | 1. Check or change the sensor<br>2.Re-fix the wiring of the sensors |
| Heating piping sensor failure T3 | PP03 | 1. The sensor in open or short circuit<br>2. The wiring of sensor is loose | 1. Check or change the sensor<br>2.Re-fix the wiring of the sensors |
| Gas return sensor failure | PP04 | 1. The sensor in open or short circuit<br>2. The wiring of sensor is loose | 1. Check or change the sensor<br>2.Re-fix the wiring of the sensors |
| Ambient temperature sensor failure T5 | PP05 | 1. The sensor in open or short circuit<br>2. The wiring of sensor is loose | 1. Check or change the sensor<br>2.Re-fix the wiring of the sensors |
| Exhaust piping sensor failure T6 | PP06 | 1. The sensor in open or short circuit<br>2. The wiring of sensor is loose | 1. Check or change the sensor<br>2.Re-fix the wiring of the sensors |
| Antifreeze protection in Winter | PP07 | Ambient temperature or water inlet temperature is too low | Normal protection |
| Low ambient temperature protection | PP08 | 1.Beyond the scope of using environment<br>2. Sensor abnormality | 1. Stop using, beyond the scope of using<br>2.Change the sensor |
| Piping temperature too high protection under cooling mode T3 | PP10 | 1. Ambient temperature is too high or the water temperature is too high in cooling mode<br>2. Refrigeration system is abnormal | 1. Check the scope of using<br>2. Check refrigeration system |
| T2 water temp. Too low protection under cooling mode | PP11 | 1. Low water flow<br>2. T2 temperature sensor abnormal | 1. Check filtration pump and waterway system<br>2. Change T2 temperature sensor |
| High pressure failure TS4 | EE01 | 1. Ambient temperature is too high<br>2. Water temperature is too high<br>3. Water flow is too low<br>Fan motor speed is abnormal or fan motor has damaged | 1. Check the water flow or filtration pump<br>2. Check the fan motor<br>3. Check and repair the piping system |

| Malfunction | Error code | Reason | Solution |
|---|---|---|---|
| Low pressure failure TS5 | EE02 | 1. EEV has blocked or pipe system is jammed<br>2. Motor speed is abnormal or motor has damaged<br>3. Gas leakage | 1. Check the EEV and piping system Check the motor<br>2. Through the high pressure gauge to check the pressure value<br>3. Check refrigeration system |
| Water flow failure TS1 | EE03 Or" ON" | 1. Water flow switch is damaged<br>2. No/ Insufficient water flow. | 1. Change the water flow switch<br>2. Check the filtration pump or the waterway system |
| Over heating protection for water temperature (T2) in heating mode | EE04 | 1. Low water flow<br>2. Water flow switch is stuck and the water supply is cut off<br>3. T2 sensor is abnormal | 1. Check the water way system<br>2. Check the filtration pump or water flow switch<br>3. Check T2 sensor or replace |
| T6 Exhaust too high protection | EE05 | 1.Lack of gas<br>2.Low water flow<br>3.Piping system has been blocked<br>4.Exhaust temp. Sensor failure | 1. Check the high pressure gauge, if too low, fill with some gas<br>2. Check the waterway system and filtration pump<br>3. Check the piping system if there was any block<br>4. Change a new exhaust temp. sensor |
| Controller failure | EE06 | 1. Wire connection is not good, or damaged signal wire<br>2. Controller failure | 1. Check and re-connect the signal wire<br>2. Change a new signal wire<br>3. Turn off electricity supply and restart machine<br>4. Change anew controller |
| Compressor current protection | EE07 | 1. The compressor current is too large instantaneously<br>2. Wrong connection for compressor phase sequence<br>3.Compressor accumulations of liquid and oil lead to the current becomes larger<br>4. Compressor or driver board damaged<br>5. The water flow is abnormal<br>6. Power fluctuations within a short time | 1. Check the compressor<br>2. Check compressor phase<br>3. Check if the power in the normal range<br>4. Check the phase sequence connection<br>5. Check the waterway system and filtration pump<br>6. Check mains power input |

| Malfunction | Error code | Reason | Solution |
|---|---|---|---|
| Communication failure between controller and main board | EE08 | 1. Poor signal wire connection or damaged signal wire<br>2. Controller malfunction | 1. Check and re-connect the signal wire<br>2. Change a new signal wire<br>3. Turn off electricity supply and restart machine<br>4. Change controller |
| Communication failure between Main control board and Driving board | EE09 | 1. Poor connection of communication wire<br>2. The wire is damaged | 1. Check the wire connection<br>2. Change wire |
| VDC voltage too high protection | EE10 | 1. Line voltage is too high<br>2. Driver board is damaged. | 1. Check if the power is in the normal range<br>2. Change driver board or main board |
| IPM module protection | EE11 | 1. Data mistake<br>2. Wrong compressor phase connection<br>3. Compressor liquid and oil accumulation lead to the current becomes larger<br>4. Compressor or driver board damaged | 1. Program error, turn off electricity supply and restart after 3 minutes<br>2. Change driver board<br>3. Check compressor sequence connection |
| VDC voltage too low protection | EE12 | 1. Mother line voltage is too low<br>2. Driver board is damaged. | 1. Check if the power is in the normal range<br>2. Change driver board |
| Input current over high protection. | EE13 | 1. The compressor current is too large momentary<br>2. The water flow is abnormal<br>3. Power fluctuations within a short time<br>4. Wrong PFC inductor | 1. Check the compressor<br>2. Check the waterway system<br>3. Check if the power is in the normal range<br>4. Check if the correct PFC inductor is used |
| IPM module thermal circuit is abnormal | EE14 | 1. Output abnormity of IPM module thermal circuit<br>2. Fan motor is abnormal or damaged Fan blade is broken | 1. Change a driver board<br>2. Check if the motor speed is too low or fan motor damaged, change it<br>3. Change the fan blade |

| Malfunction | Error code | Reason | Solution |
|---|---|---|---|
| IPM module temperature too high protection | EE15 | 1. Output exception of IPM module thermal circuit<br>2. Motor is abnormal or damaged<br>3. Fan blade is broken | 1. Change a driver board<br>2. Check if the fan motor speed is too low or fan motor damaged, change it<br>3. Change the fan blade |
| PFC module protection | EE16 | 1. Output exception of PFC module<br>2. Motor is abnormal or damaged<br>3. Fan blade is broken<br>4. Input voltage leap, input power is abnormal | 1. Change a driver board<br>2. Check if the motor speed is too low or fan motor damaged, change it<br>3. Change the fan blade<br>4. Check the input voltage |
| DC fan motor failure | EE17 | 1. DC motor is damaged<br>2. Main board is damaged<br>3. The fan blade is stuck | 1. Detect DC motor, replace with a new one<br>2. Change a new main board<br>3. Find out the barrier and work it out |
| PFC module thermal circuit is abnormal | EE18 | The driver board is damaged | 1. Change a new driver board<br>2. Check if the fan motor speed is too low or fan motor damaged, change it |
| PFC module high temperature protection | EE19 | 1. PFC module thermal circuit output abnormal<br>2. Motor is abnormal or damaged<br>3. Fan blade is broken<br>4. The screw in the driver board is not tight | 1. Change a new driver board<br>2. Check if the motor speed is too low or fan motor damaged, change it<br>3. Change the fan blade<br>4. Check if the screw is loose |
| Input power failure | EE20 | The supply voltage fluctuates too much | Check whether the voltage is stable |

| Malfunction | Error code | Reason | Solution |
|---|---|---|---|
| Software control exception | EE21 | 1.Compressor runs out of step<br>2. Wrong program<br>3. Impurity inside compressor causes the unstable rotate speed | 1. Check the main board or change a new one<br>2. Enter correct program |
| Current detection circuit failure | EE22 | 1. Voltage signal abnormal<br>2. Driver board is damaged | 1. Check the main board or change a new one<br>2. Change a new driver board |
| Compressor start failure | EE23 | 1. Main board is damaged<br>2. Compressor wiring error or poor contact or unconnected<br>3. Liquid accumulation inside<br>4. Wrong phase connection for compressor | 1. Check the main board or change a new one<br>2. Check the compressor wiring according to the circuit diagram Check the compressor or change a new one |
| Ambient Temperature device failure on Driver board | EE24 | Ambient Temperature device failure | Change driver board or main board |
| Compressor phase failure | EE25 | Compressors U, V, W are connected to one phase or two phases. | Check the actual wiring according to the circuit diagram |
| Four-way valve reversal failure | EE26 | 1. Four-way valve reversal failure<br>2. Lack of refrigerant (no detect when T3 or T5 malfunction) | 1. Switch to Cooling mode to check the 4-way valve if it has been reversed correctly<br>2. Change a new 4-way valve<br>3. Fill with gas |
| EEPROM data read malfunction | EE27 | 1. Wrong EEPROM data in the program or failed input of EEPROM data<br>2. Main board failure | 1. Re-enter correct EEPROM data<br>2. Change a new main board |
| The inter-chip communication failure on the main control board | EE28 | Main board failure | 1. Turn off electricity supply and restart it<br>2. Change a new main board |

**Remarks:**

1. In heating mode, if the water out temperature is higher than the set temperature over 7℃, controller displays EE04 for water over-heating protection.

2. In cooling mode, if the water out temperature is lower than the set temperature over 7℃, controller displays PP11 for water over-cooling protection.
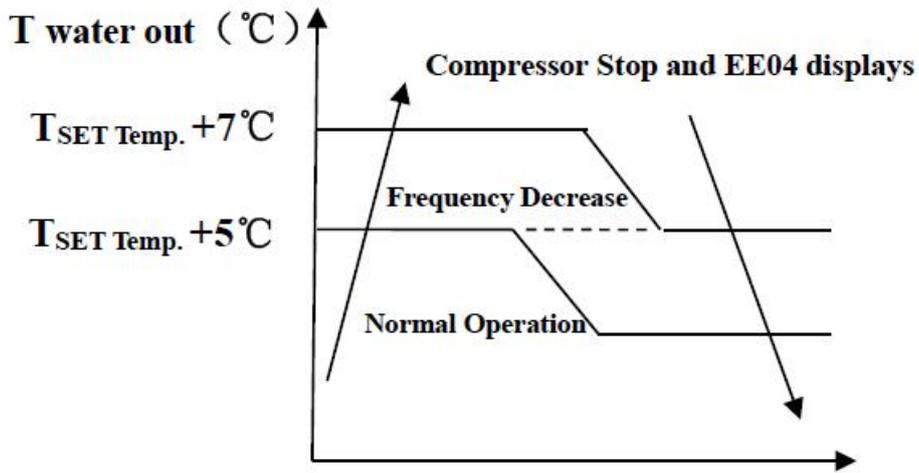


**EE04 Water Overheating Protection**
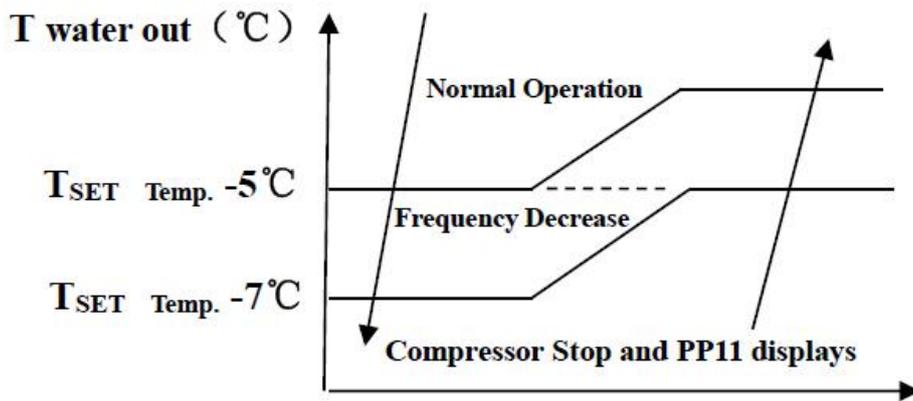


**PP11 Water Overcooling Protection**

**For example as below:**

| Mode | Output water temperature | Set point temperature | Condition | Malfunction |
|---|---|---|---|---|
| Heating mode | **36**℃ | **29**℃ | Tout -Tset ≧ **7**℃ | EE04 Overheating protection for water temperature (T2) |
| Cooling mode | **23**℃ | **30**℃ | Tset -Tout ≧ **7**℃ | PP11 Too low protection for water temperature (T2) |

**Water pump running logic and error code EE03 or 'ON'.**

There are two options for water pump running.

Option 1:Water pump starts or stops in relation to heat pump operation.

Water pump starts 60s before compressor, water pump start 30s and then detect the water flow switch. When the heat pump meet the requirement of standby mode, water pump will stop 5mins after compressor stops. Water flow switch won't be detected in 1H standby of heat pump. Even if the water flow switch is manually removed, the EE03/ON error will not be reported. Water pump will restart to running for 5mins to check the water temp. when the standby time is over 1 hours.

| HP working mode | Condition (Tset:Setting water temp. T1: Inlet water temp.) | Example: Tset = 28°C, | Water pump working logic |
|---|---|---|---|
| Heating mode | T1>=Tset-0.5, and last for 30 min | T1>=27.5℃, last for 30 minutes | If heat pump enter standby mode for 1 hours, water Pump will start 5mins to check whether T1>Tset-1,if so,heat pump will go into standy again. If T1<=Tset-1,heat pump will restart. |
| Cooling mode | T1<=Tset+0.5, And last for 30 min | T1<=28.5℃, last for 30 minutes | If heat pump enter standby mode for 1 hours, water Pump will start 5mins to check whether T1<Tset+1,if so,heat pump will go into standy again. If T1>=Tset+1,heat pump will restart. |

In this case, it is unnecessary to deal with Error code 'ON' if 'ON' occurs in 1 hours standby period.

Option 2

No matter when the heat pump is on (running or standby), water pump will always be running.

Water pump will run for 1 minute after manually turn off.

## 8.2 Other Malfunctions and Solutions (No display on wire controller)

| Malfunctions | Observing | Reasons | Solution |
|---|---|---|---|
| Heat pump is not running | LED wire controller no display. | No power supply | Check cable and circuit breaker if it is connected |
| | LED wire controller. Displays the actual time. | Heat pump under standby status | Startup heat pump to run. |
| | LED wire controller displays the actual water temperature. | 1. Water temperature is reaching to setting value, HP under constant temperature status. 2. Heat pump just starts to run. 3. Under defrosting. | 1. Verify water temperature setting. 2. Startup heat pump after a few minutes. 3. LED wire controller should display "Defrosting". |
| Water temperature is cooling when HP runs under heating mode | LED wire controller displays actual water temperature and no error code displays. | 1. Choose the wrong mode. 2. Figures show defects. 3. Controller defect. | 1. Adjust the mode to proper running 2. Replace the defect LED wire controller, and then check the status after changing the running mode, verifying the water inlet and outlet temperature. 3. Replace or repair the heat pump unit |
| Short running | LED displays actual water temperature, no error code displays. | 1. Fan NO running. 2. Air ventilation is not enough. 3. Refrigerant is not enough. | 1. Check the cable connections between the motor and fan, if necessary, it should be replaced. 2. Check the location of heat pump unit, and eliminate all obstacles to make good air ventilation. 3 Replace or repair the heat pump unit. |
| Water stains | Water stains on heat pump unit. | 1. Concreting. 2. Water leakage. | 1. No action. 2. Check the titanium heat exchanger carefully if it is any defect. |
| Too much ice on evaporator | Too much ice on evaporator. | | 1. Check the location of heat pump unit, and eliminate all obstacles to make good air ventilation. 2. Replace or repair the heat pump unit. |

# 9.Exploded Diagram

## 7. Exploded Diagram

Mode: Swimmax 07iPS
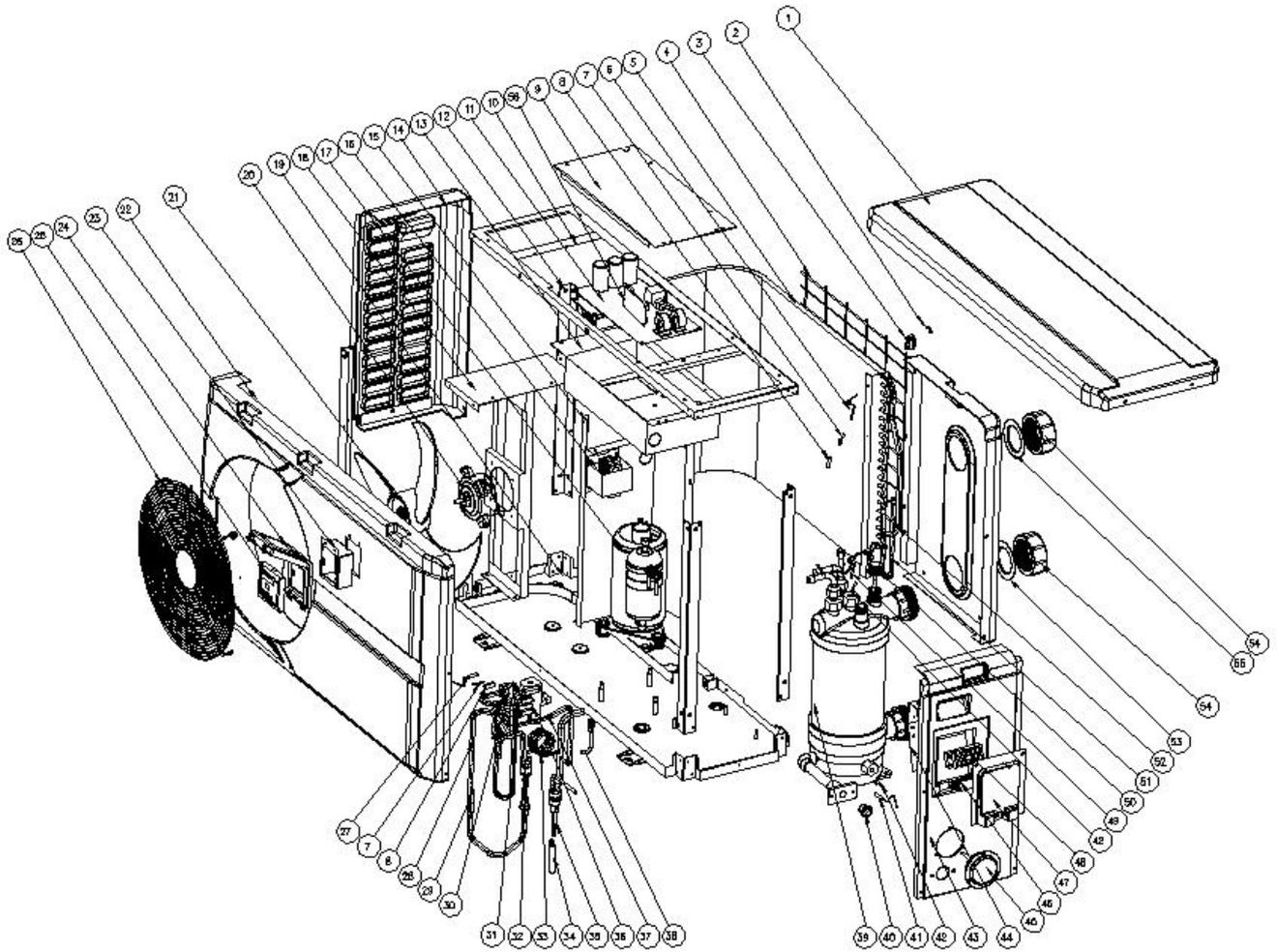
**Model : Swimmax 07iPS**

| No. | Part name | No. | Part name |
|-----|-----------|-----|-----------|
| 1 | Top cover | 29 | High pressure switch |
| 2 | Ambient temp. sensor T5-TH1 | 30 | Discharge pipe |
| 3 | Ambient temp. sensor clip | 31 | 4-way valve to exchanger |
| 4 | Back grill | 32 | Low pressure switch |
| 5 | Evaporator | 33 | Main capillary |
| 6 | Evaporator temperature sensor T3-TH2 | 34 | Pipe |
| 7 | Clip | 35 | Pipe |
| 8 | Sensor holder | 36 | 4 way valve |
| 9 | Electric box cover | 37 | Pipe |
| 10 | Top frame | 38 | Needle valve |
| 11 | PCB | 39 | Titanium heat exchanger |
| 12 | Pilar | 40 | Drainage plug |
| 13 | Electric box | 41 | Water inlet temp. sensor T1-TH6 |
| 14 | Left panel | 42 | Exchanger temperature sensor clip |
| 15 | Isolation panel | 43 | Right panel |
| 16 | Reactor | 44 | Terminal board |
| 17 | Compressor | 45 | Pressure gauge |
| 18 | Fan motor support | 46 | Clip |
| 19 | Base tray | 47 | Terminal board cover |
| 20 | Fan motor | 48 | 5-ways terminal block |
| 21 | Fan blade | 49 | Water outlet temp. sensor T2-TH5 |
| 22 | Front panel | 50 | Red rubber ring |
| 23 | Waterproof controller box | 51 | Evaporator pipe |
| 24 | Controller box cover | 52 | Distribution piping |
| 25 | Controller | 53 | Blue rubber ring |
| 26 | Front grill | 54 | Water connection sets |
| 27 | Discharge temp. sensor T6-TH3 | 55 | Red rubber ring |
| 28 | Gas return piping | 56 | WIFI Module |

**Model: Swimmax 11iPS/ Swimmax 17iPS**
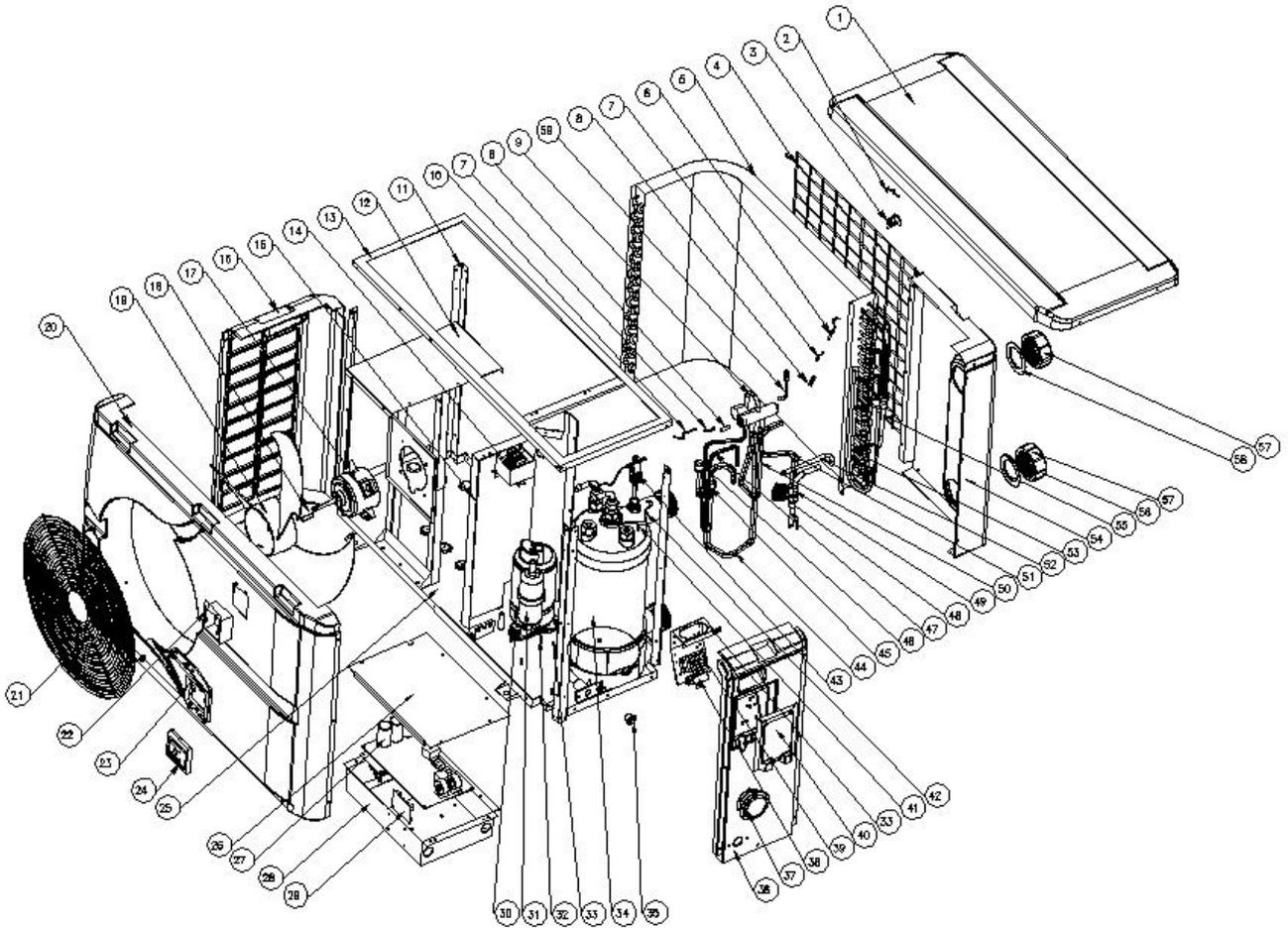
**Spare parts list: Swimmax 11iPS/ Swimmax 17iPS**

| No. | Part name | No. | Part name |
|-----|-----------|-----|-----------|
| 1 | Top cover | 31 | Compressor |
| 2 | Ambient temp. sensor T5-TH1 | 32 | Water inlet temp. sensor T1-TH6 |
| 3 | Ambient temp. sensor clip | 33 | Exchanger temperature sensor clip |
| 4 | Back grill | 34 | Titanium heat exchanger |
| 5 | Evaporator | 35 | Drainage plug |
| 6 | Evaporator temperature sensor T3-TH2 | 36 | Right panel |
| 7 | Sensor holder | 37 | Pressure gauge |
| 8 | Clip | 38 | Clip |
| 9 | 4 way valve | 39 | 5-ways terminal block |
| 10 | Discharge temp. sensor T6-TH3 | 40 | Terminal board cover |
| 11 | Pillar | 41 | Terminal board |
| 12 | Fan motor support | 42 | Water outlet temp. sensor T2-TH5 |
| 13 | Top frame | 43 | Water flow switch |
| 14 | Reactor | 44 | Gas return piping |
| 15 | Isolation panel | 45 | Low pressure switch |
| 16 | Left panel | 46 | High pressure switch |
| 17 | Fan motor | 47 | Discharge pipe |
| 18 | Fan motor assemble | 48 | EEV |
| 19 | Fan blade | 49 | Pipe |
| 20 | Front panel | 50 | Pipe |
| 21 | Front grill | 51 | Pipe |
| 22 | Waterproof controller box | 52 | Pipe |
| 23 | Controller box cover | 53 | Evaporator pipe |
| 24 | Controller | 54 | Back panel |
| 25 | Base tray | 55 | Distribution piping |
| 26 | Electric box cover | 56 | Blue rubber ring |
| 27 | PCB | 57 | Water connection sets |
| 28 | Electric box | 58 | Red rubber ring |
| 29 | Wifi module | 59 | Needle valve |
| 30 | Compressor heating resistor | | |

**Model:Swimmax 20iPS/Swimmax 25iPS**
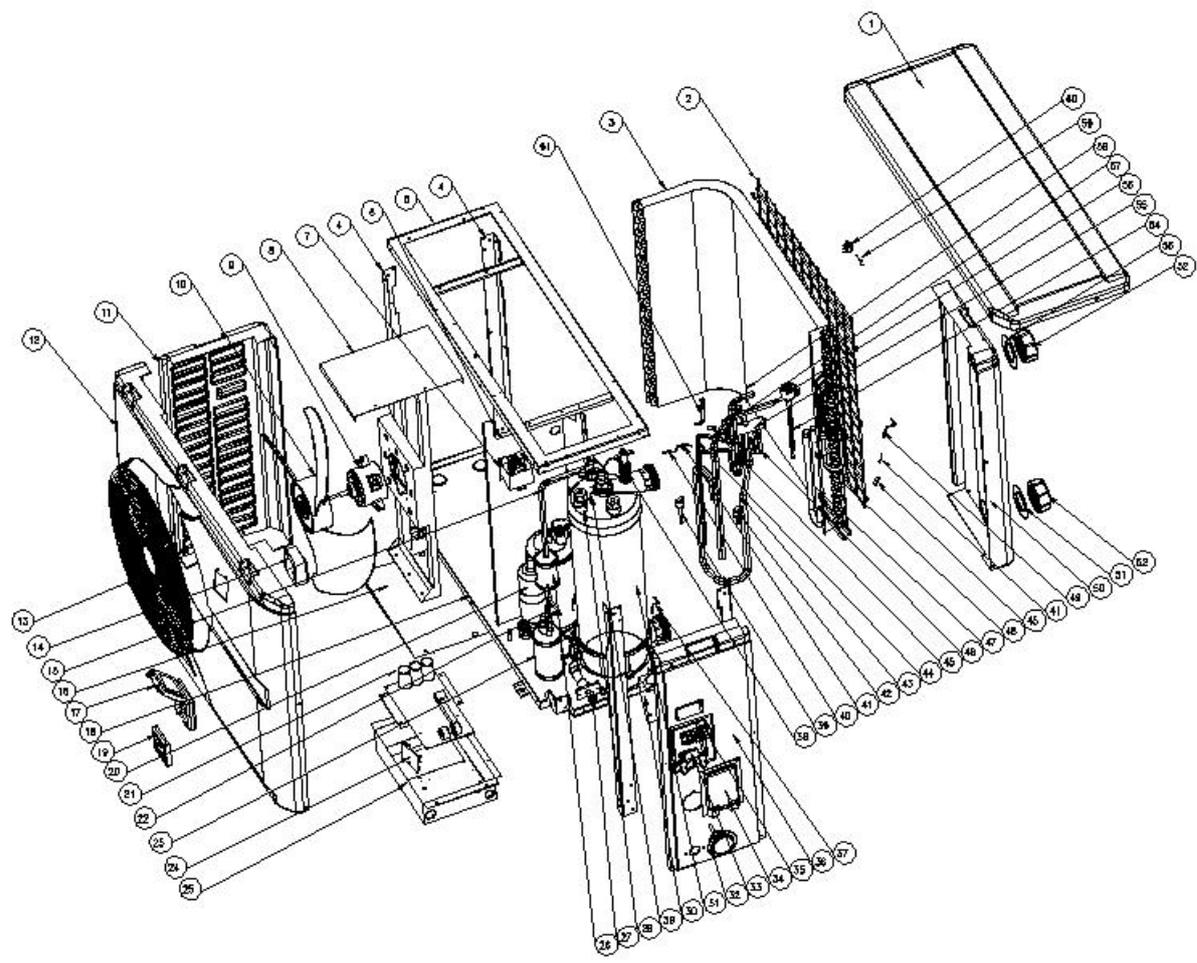
**Spare parts list: Swimmax 25iPS**

| No. | Part Name | No. | Part Name |
|---|---|---|---|
| 1 | Top cover | 32 | Pressure gauge |
| 2 | Back grill | 33 | Clip |
| 3 | Evaporator | 34 | Terminal board cover |
| 4 | Pillar | 35 | 5-ways terminal block |
| 5 | Top frame | 36 | Right panel |
| 6 | Isolation panel | 37 | Water outlet temp. sensor T2-TH5 |
| 7 | Reactor | 38 | Water flow switch |
| 8 | Fan motor support | 39 | High pressure switch |
| 9 | Fan motor | 40 | Discharge temp. sensor T6-TH3 |
| 10 | Fan blade | 41 | Clip |
| 11 | Left panel | 42 | Low pressure switch |
| 12 | Front panel | 43 | Gas return piping |
| 13 | Back grill | 44 | Discharge pipe |
| 14 | Waterproof controller box | 45 | Sensor holder |
| 15 | Pipe | 46 | Pipe |
| 16 | Controller box cover | 47 | Evaporator pipe |
| 17 | Electric box cover | 48 | Distribution piping |
| 18 | Base tray | 49 | Evaporator temperature sensor T3-TH2 |
| 19 | Controller | 50 | Back panel |
| 20 | Compressor | 51 | Blue rubber ring |
| 21 | PCB | 52 | Water connection sets |
| 22 | Pipe | 53 | Red rubber ring |
| 23 | Liquid Reservoir | 54 | Pipe |
| 24 | Wifi module | 55 | 4 way valve |
| 25 | Electric box | 56 | EEV |
| 26 | Filter | 57 | Pipe |
| 27 | Drainage plug | 58 | Pipe |
| 28 | Exchanger temperature sensor clip | 59 | Ambient temp. sensor T5-TH1 |
| 29 | Water inlet temp. sensor T1-TH6 | 60 | Ambient temp. sensor clip |
| 30 | Terminal board | 61 | Needle valve |
| 31 | Titanium heat exchanger | | |

**Model: Swimmax 30iPS**
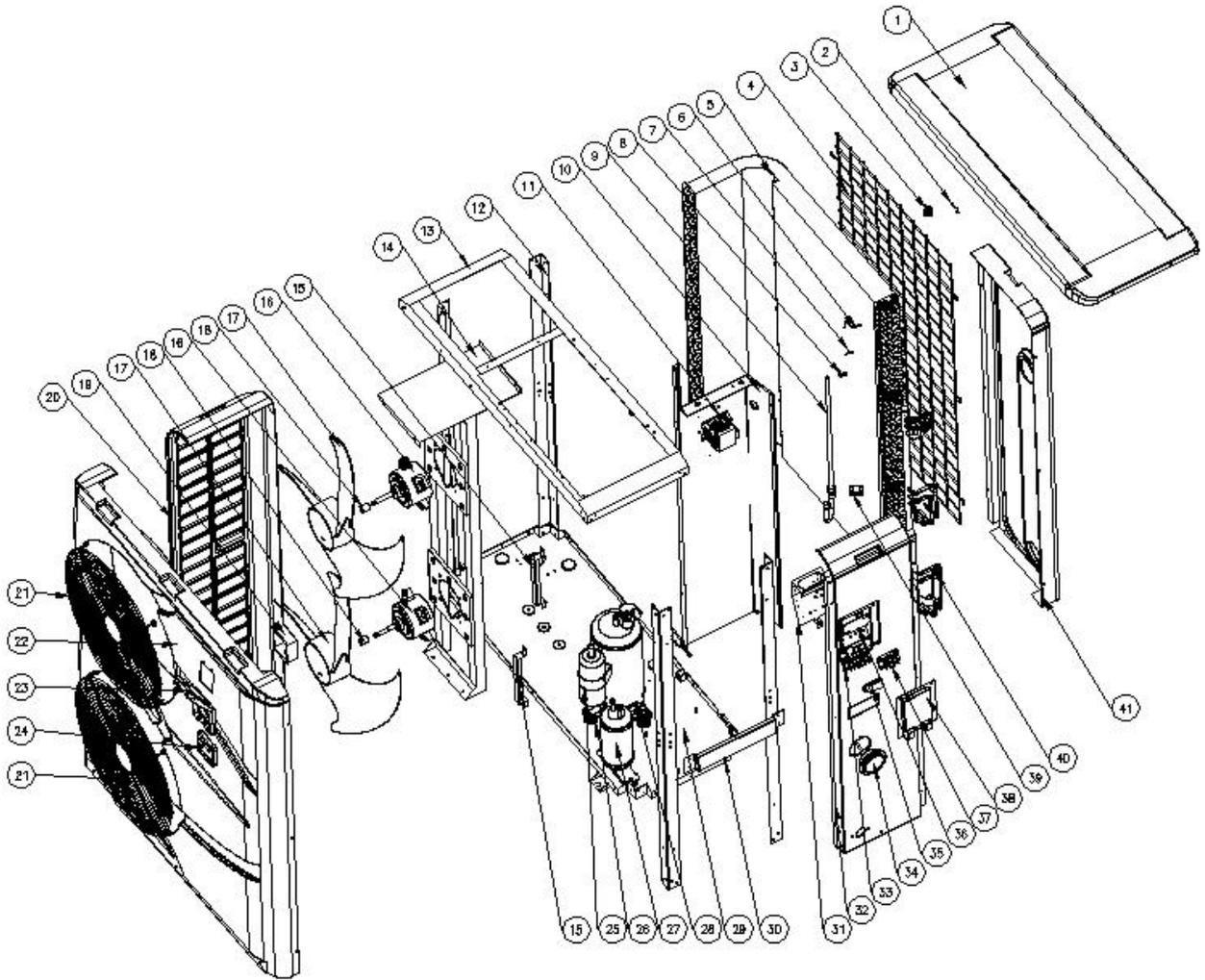
**Spare parts list: Swimmax 30iPS**

| No. | Part Name | No. | Part Name |
|---|---|---|---|
| 1 | Top cover | 40 | Evaporator pipe |
| 2 | Ambient temp. sensor T5-TH1 | 41 | Back panel |
| 3 | Ambient temp. sensor clip | 42 | Needle valve |
| 4 | Back grill | 43 | Gas return piping |
| 5 | Evaporator | 44 | Low pressure switch |
| 6 | Evaporator temperature sensor T3-TH2 | 45 | Pipe |
| 7 | Clip | 46 | Discharge pipe |
| 8 | Sensor holder | 47 | Pipe |
| 9 | Distribution piping | 48 | 4 way valve |
| 10 | Isolation panel | 49 | High pressure switch |
| 11 | Reactor | 50 | Discharge temp. sensor T6-TH3 |
| 12 | Pillar | 51 | Pipe |
| 13 | Top frame | 52 | Pipe |
| 14 | Fan motor support | 53 | Pipe |
| 15 | Front panel support | 54 | EEV |
| 16 | Fan motor | 55 | Filter |
| 17 | Fan blade | 56 | Pipe |
| 18 | Fan motor assemble | 57 | Water flow switch |
| 19 | Waterproof controller box | 58 | Water outlet temp. sensor T2-TH5 |
| 20 | Left panel | 59 | Exchanger temperature sensor clip |
| 21 | Front grill | 60 | Titanium heat exchanger |
| 22 | Front panel | 61 | Water connection sets |
| 23 | Controller box cover | 62 | Blue rubber ring |
| 24 | Controller | 63 | Connector sealing ring |
| 25 | Compressor | 64 | Water inlet temp. sensor T1-TH6 |
| 26 | Compressor damping feet | 65 | Drainage plug |
| 27 | Liquid Reservoir | 66 | Red rubber ring |
| 28 | Compressor heating resistor | 67 | Sealing ring |
| 29 | Base tray | 68 | Electric box cover |
| 30 | Handler panel | 69 | Driver board |
| 31 | Terminal board support | 70 | Relay |
| 32 | Right panel | 71 | Filter board |
| 33 | 3-ways power terminal block | 72 | Magnetic ring |
| 34 | Pressure gauge | 73 | PCB |
| 35 | Clip | 74 | Electric box |
| 36 | Terminal board support | 75 | Magnetic ring |
| 37 | 3-ways terminal block | 76 | Wifi module |
| 38 | Terminal board cover | 77 | Scale panel |
| 39 | Rubber block | | |

## 10. Maintenance

(1) You should check the water supply system regularly to avoid air entering the system and creation of low water flow, because it would reduce the performance and reliability of HP unit.

(2) Clean your pools and filtration system regularly to avoid the damage of the unit.

(3) Only a qualified technician is authorized to operate the cooling system pressure. You should drain the water from the heat pump if it will stop running for a long time (especially during the winter season or when the ambient temperature drops below 0ºC).

(4) Check the water levels before the unit start after a long break in usage.

(5) When the unit is running, there will be condensate water discharging from the bottom of the unit. This is normal.

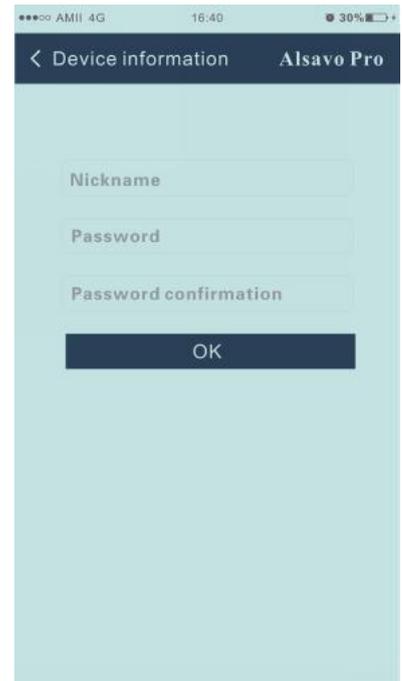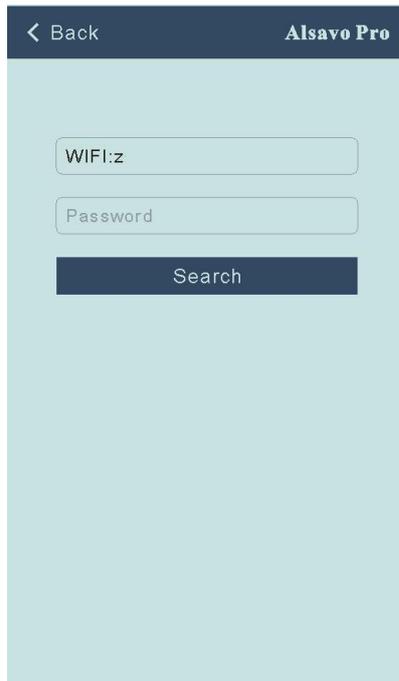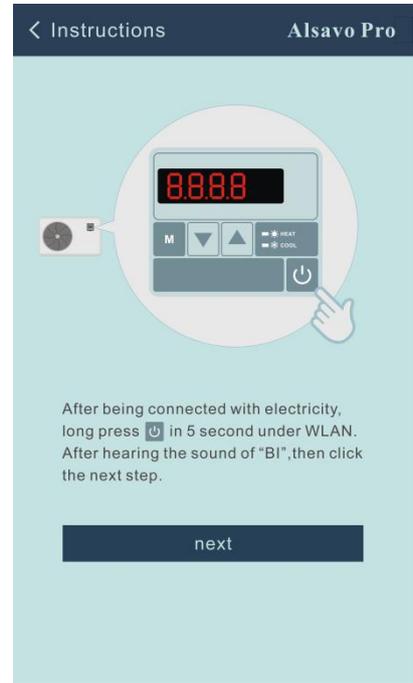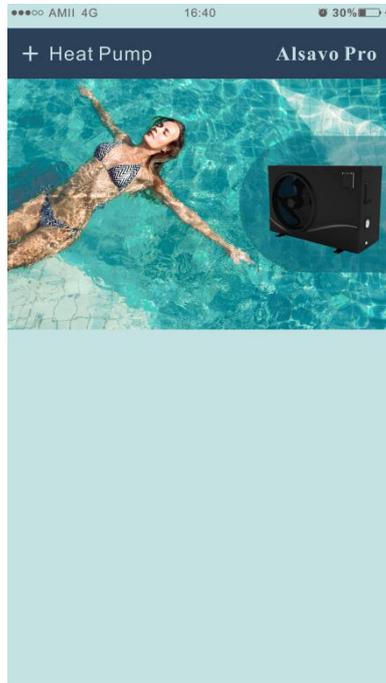# 11. WIFI function- 'Alsavo Pro'APP operation

## 11.1 operation

1. Firstly download "Alsavo Pro" APP from App store or Google play in your smart phone.
    Parameter P17=1 (WIFI function) could be auto recognition in the controller if the machine already install WIFI
      PCB.

2. Open "Alsavo Pro" APP, click "+" on the upper left and select "New device". Then Click "Next" and enter the current WIFI password to connect. Press "⏻" 5S on the display no matter it's ON or OFF. Or you can press "⏻" 5S on the display first, then enter the current WIFi password. The display will show F1 1,F1 2, until F1 6, which means the connect is OK.
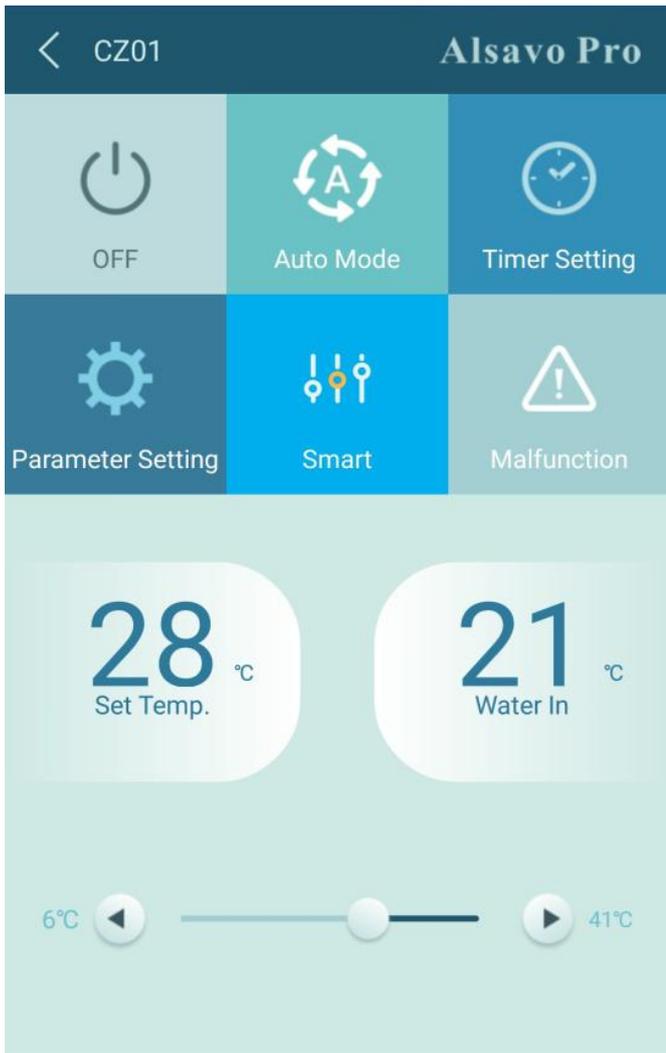
If the connection fails, the APP will indicate "Failed to connect device".

"Nickname and password" interface only appear one time when a new heat pump is connected successfully.    You can name and add encrypt this unit. (This interface may be missing if the wifi network is not steady. You will miss the chance to name and encrypt it. In this case, default password "123456" is available.)

If someone's APP is in the same WIFI network as yours, his APP could automatically identify your heat pump. And he can operate your heat pump after inputting your password.

**Alsavo Pro**

+ Heat Pump — Alsavo Pro

‹ Instructions — Alsavo Pro

After being connected with electricity, long press in 5 second under WLAN. After hearing the sound of "BI",then click the next step.

next

‹ Back — Alsavo Pro

WIFI:z

Password

Search

‹ Device information — Alsavo Pro

Nickname

Password

Password confirmation

OK

3. The main interface



1) Turn ON/OFF

Click "  " to turn on or off heat pump.

2) Switch mode

There are there modes (Auto mode, cooling or heating) for the invertboost unit. Click its icons to switch (Auto
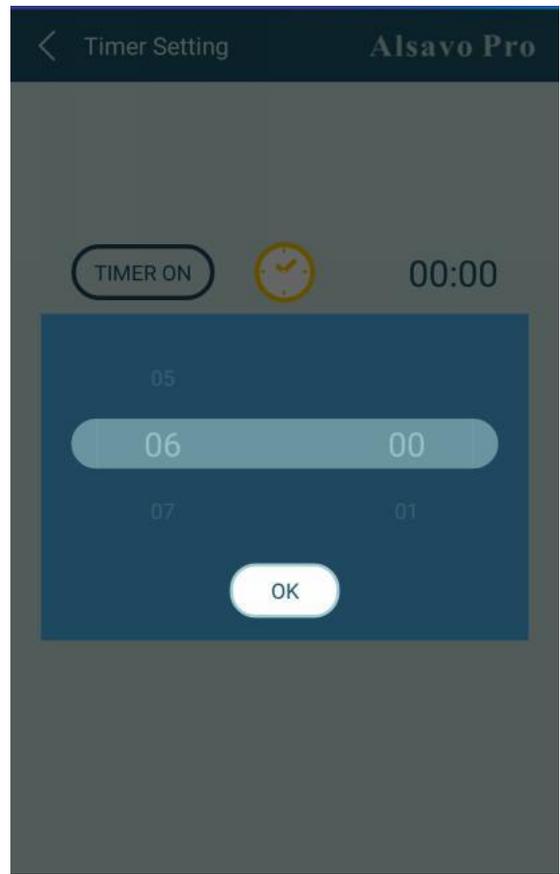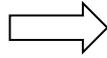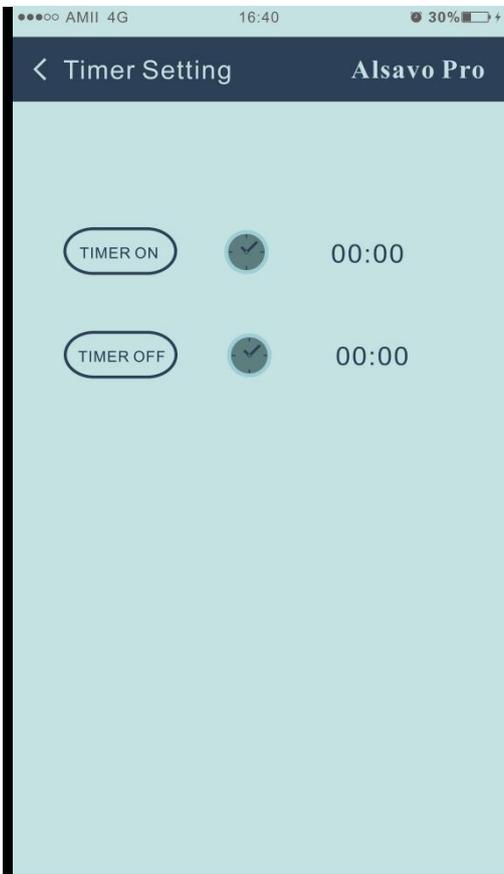
mode  , heating  , cooling  )

3) Timer setting

Click  , it turns  . Timer on and off will be activated together. Then choose desired time in "timer on"

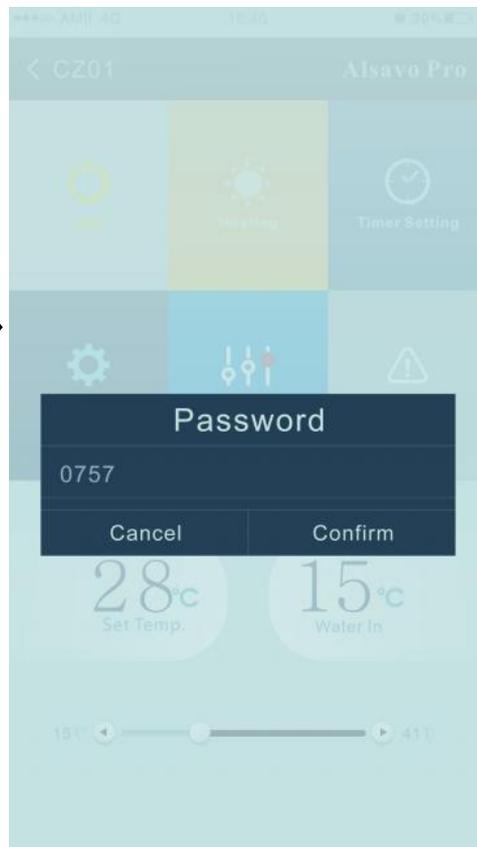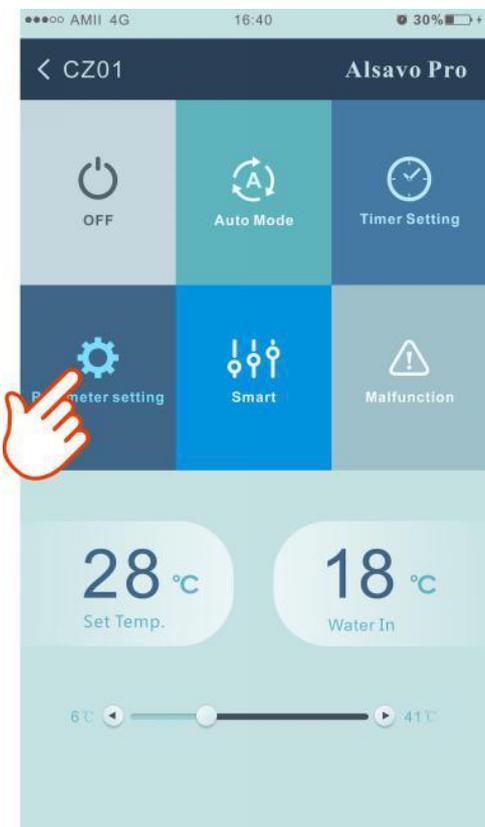and "timer off", lastly click "OK" to confirm.

Click"  " again to cancel.

4) Parameter checking and setting

Click Parameter , then enter the password "0757".

| Parameter | Alsavo Pro |
| --- | --- |
| Parameter Query | Default |
| Water In | 22℃ |
| Water Out | 22℃ |
| Heating piping temperature | 22℃ |
| Limited frequency code | 0 |
| Ambient temperature | 23℃ |
| Exhaust temperature | 21℃ |
| Actual steps of electronic expansion valve | 350 |
| IPM module temperature | 25℃ |
| Compressor running frequency | 0Hz |
| Compressor current | 0A |
| DC fan motor speed | 0RPM |
| Parameter Setting | Range |
| Water Pump Operating Mode | 0 (0~1) |
| Water Temperature Calibration | 8.5℃ (-9.9℃~9.9℃) |
| Re-set to factory default setting | |

Parameter setting:

(1) There are 2 modes optional for water pump operation (1: Always running, 0: Depends on the running of compressor)

(2) Inlet water temperature calibration. (-9.0 to 9.0℃)

(3) Temperature unit: ℃ or ℉.

(4) When you want to reset to factory default setting, tips as below pop up .

5)Switch running modes

In heating or cooling mode, there are 3 running modes(Silent, Smart, Powerful) for options
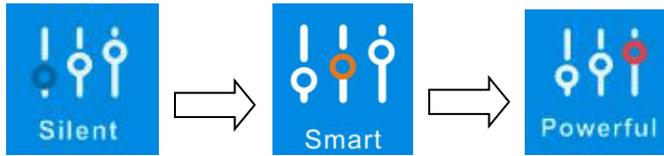


While in Auto mode, its default running mode is Smart.

6) Malfunction

If error occurs, the malfunction icon turns red . Click it to check the error.

| ‹ Malfunction | Alsavo Pro |
| --- | --- |
| Error code | Malfunction |
| PP01 | Inlet water temperature sensor failure |
| PP02 | Outlet water temperature sensor failure |
| PP03 | Heating coil pipe sensor failure |
| PP04 | Gas return sensor failure |
| PP05 | Ambient temperature sensor failure |
| PP06 | Exhaust temperature sensor failure |
| PP07 | Anti-freezing protection in Winter |
| PP08 | Low ambient temperature protection |
| PP10 | Coil pipe temperature too high protection under Cooling mode |
| PP11 | T2 too low water temperature protection under cooling mode |
| EE01 | High pressure failure |
| EE02 | Low pressure failure |
| EE03 | Water flow failure |
| EE04 | Water temperature overheating protection under heating mode |
| EE05 | Exhaust temperature too high failure |
| EE06 | Controller malfunction or communication failure |
| EE07 | Compressor current protection |
| EE08 | Communication failure between controller and PCB |

| Error code | Malfunction |
| --- | --- |
| EE09 | Communication failure between PCB and driver board |
| EE10 | VDC Voltage too high protection |
| EE11 | IPM Module protection |
| EE12 | VDC Voltage too low protection |
| EE13 | Input current too strong protection |
| EE14 | IPM module thermal circuit is abnormal |
| EE15 | IPM module temperature too high protection |
| EE16 | PFC module protection |
| EE17 | DC fan failure |
| EE18 | PFC module thermal circuit is abnormal |
| EE19 | PFC module high temperature protection |
| EE20 | Input power failure |
| EE21 | Software control failure |
| EE22 | Current detection circuit failure |
| EE23 | Compressor start failure |
| EE24 | Ambient temperature device failure on Driving board |
| EE25 | Compressor phase failure |
| EE26 | 4-way valve reversal failure |
| EE27 | EEPROM data reading failure in Transfer board |
| EE28 | The inter-chip communication failure on the main control board |

7) Temperature setting



You can set the target water temperature by adjusting the slider or press "  " or "  ". The setting water temperature on the controller display correspondingly changes after letting go. When the setting water temperature on the display changes, it will be synchronously updated to the APP.

8)Check device information
In the main interface, click the upper right "Alsavo Pro". The Device information will show up.



9) Revise the heat pump info in the homepage

Click "  " , you could rename, change its password and delete the device.

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