

# INSTRUCTION MANUAL



## MINI SERIES

Residential Swimming Pool Heat Pump

# CONTENT

|   |    |
|---|----|
| 1. FOREWARD.....                              | 1  |
| 1.1 The Symbol Description of the Device..... | 1  |
| 1.2 Statement.....                            | 1  |
| 1.3 Safety Factors.....                       | 1  |
| 1.4 Warning.....                              | 3  |
| 2. SYSTEM SPECIFICATION.....                  | 4  |
| 2.1 Specification.....                        | 4  |
| 2.2 Unit Dimensions.....                      | 5  |
| 2.3 Explosion View.....                       | 6  |
| 3. INSTALLATION INSTRUCTION.....              | 7  |
| 3.1 Pre-Requirements.....                     | 7  |
| 3.2 Location.....                             | 7  |
| 3.3 Installation Layout.....                  | 8  |
| 3.4 Electrical Connection.....                | 9  |
| 4. RUNNING TEST.....                          | 9  |
| 4.1 Inspection Before Running Test.....       | 9  |
| 4.2 Control Function Description.....         | 10 |
| 4.2.1 The buttons of LED wire controller..... | 10 |
| 4.2.2 Controller display instructions.....    | 10 |
| 4.2.3 Definition of function keys.....        | 10 |
| 4.2.4 Reset operation.....                    | 10 |
| 4.2.5 Parameter checking.....                 | 10 |
| 4.2.6 Parameter list.....                     | 11 |
| 4.2.7 Error Code.....                         | 11 |
| 5. MAINTENANCE.....                           | 12 |

## 1.FOREWARD

### 1.1 The Symbol Description of the Device

The precautions listed here are divided into the following types. They are quite important, so be sure to follow them carefully. Meanings of DANGER, WARNING, CAUTION and NOTE symbols.



### 1.2 Statement

To keep users under safe working condition and property safety, please follow the instructions below.

- Wrong operation may result in injury or damage;
- Please install the unit in compliance with local laws, regulations and standards;
- Confirm power voltage and frequency;
- The unit is only used with grounding sockets;
- Independent switch must be offered with the unit.

### 1.3 Safety Factors

The following safety factors need to be considered:

- Please read the following warnings before installation;
- Be sure to check the details that need attention, including safety factors;
- After reading the installation instructions, be sure to save them for future reference.

## Warning

- Make sure that the unit is installed safely and reliably.
- If the unit is not secure or not installed, it may cause damage. The minimum support weight required for installation is 21g/mm<sup>2</sup>.
- If the unit was installed in a closed area or limited space, please consider the size of room and ventilation to prevent suffocation caused by refrigerant leakage.
- Use a specific wire and fasten it to terminal block so that the connection will prevent pressure from being applied to parts.

- Wrong wiring will cause fire.

Please connect power wire accurately according to wiring diagram on the manual to avoid burnout of the unit or fire.

- Be sure to use correct material during installing.

Wrong parts or wrong materials may result in fire, electric shock, or falling of the unit.

- Install on the ground safely, please read installation instructions.

Improper installation may result in fire, electric shock, falling of the unit, or water leaking.

- Use professional tools for doing electrical work.

If power supply capacity is insufficient or circuit is not completed, it may cause fire or electric shock.

- The unit must have grounding device.

If power supply does not have grounding device, be sure not to connect the unit.

- The unit should be only removed and repaired by professional technician.

Improper movement or maintenance of the unit may cause water leakage, electric shock, or fire. Please find a professional technician to do.

- Don't unplug or plug power during operation. It may cause fire or electric shock.

- Don't touch or operate the unit when your hands are wet. It may cause fire or electric shock.

- Don't place heaters or other electrical appliances near the power wire. It may cause fire or electric shock.

- The water must not be poured directly from the unit. Do not let water to permeate into the electrical components.

## 1.4 Warning

- **Do not install the unit in a location where there may be flammable gas.**

- **If there is flammable gas around the unit, it will cause explosion.**

According to the instruction to carry out drainage system and pipeline work. If drainage system or pipeline is defective, water leakage will occur. And it should be disposed immediately to prevent other household products from getting wet and damage.

- **Do not clean the unit while power is on. Turn off power before cleaning the unit. If not it may result in injury from a high-speed fan or electric shock.**
- **Stop operating the unit once there is a problem or a fault code.**

Please turn off power and stop running the unit. Otherwise, it may cause electric shock or fire.

- **Be careful when the unit is not packed or not installed.**

Pay attention to sharp edges and fins of heat exchanger.

- **After installation or repair, please confirm refrigerant is not leaking.**

If refrigerant is not enough, the unit will not work properly.

- **The installation of external unit must be flat and firm.**

Avoid abnormal vibration and noise.

- **Don't put your fingers into fan and evaporator.**

High-speed running fan will result in serious injury.

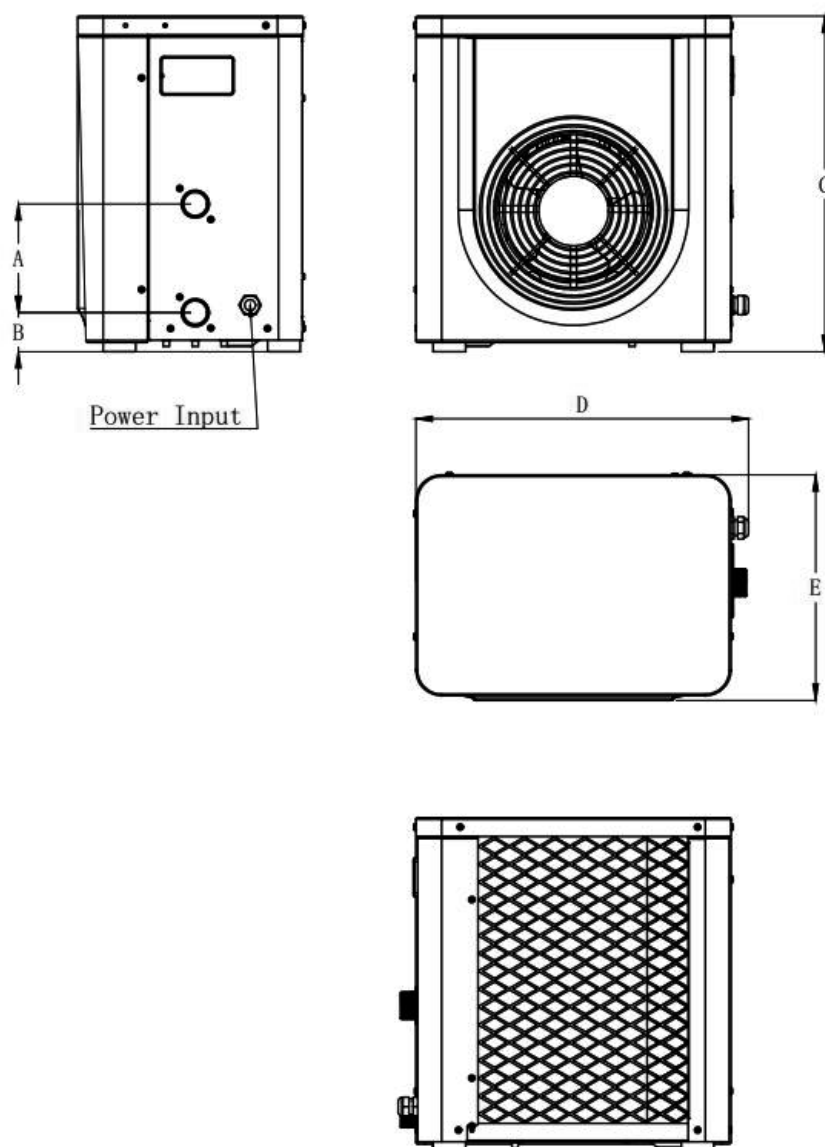
- **This device is not designed for people who is physically or mentally weak (including children) and who does not have experience and knowledge of heating and cooling system. Unless it is used under direction and supervision of professional technician, or has received training on the using of this unit. Children must use it under supervision of an adult to ensure that they use the unit safely. If power wire is damaged, it must be replaced by a professional technician to avoid danger.**

## 2. SYSTEM SPECIFICATION

### 2.1 Specification

| Model   | PSL-150-0256            | PSL-150-0257            |
|---|-------------------------|-------------------------|
| Heating Capacity: Ambient 26℃, Inlet/Outlet: 26/28℃, Humidity 80% |                         |                         |
| Heating Capacity (kW)   | 3                       | 5                       |
| Power Input (kW)  | 0.57                    | 0.806                   |
| COP   | 5.2                     | 6.2                     |
| Heating Capacity: Ambient 15℃, Inlet/Outlet: 26/28℃, Humidity 70% |                         |                         |
| Heating Capacity (kW)   | 2.2                     | 3.68                    |
| Power Input (kW)  | 0.53                    | 0.78                    |
| COP   | 4.1                     | 4.7                     |
| Max Power Input (kW)  | 0.9                     | 1.5                     |
| Max Current (A)   | 4.1                     | 7.1                     |
| Recommended pool size (m³)  | 10~15                   | 10~20                   |
| Controller  | LED Controller          | LED Controller          |
| Power Supply  | 220-240V~/50Hz          | 220-240V~/50Hz          |
| Running temp.range (Heating) (℃)                                  | 15~40                   | 15~40                   |
| Ambient Temp.range (℃)  | -5~43                   | -5~43                   |
| Refrigerant   | R32                     | R32                     |
| Compressor Type   | Rotary                  | Rotary                  |
| Gas Control   | Capillary               | Capillary               |
| Four Way Valve  | Yes                     | Yes                     |
| Heat Exchanger  | Titanium Heat Exchanger | Titanium Heat Exchanger |
| Water Pipe Connection (mm)  | 32 or 38                | 32 or 38                |
| Casing Material   | ABS                     | ABS                     |
| Water Flow (m³/h)   | 2                       | 2.5                     |
| Water Pressure Drop (kPa)   | 10                      | 10                      |
| Net Dimension (mm)  | 425x290x431             | 505x360x545             |
| Packing Dimension (mm)  | 470x315x465             | 560x390x555             |

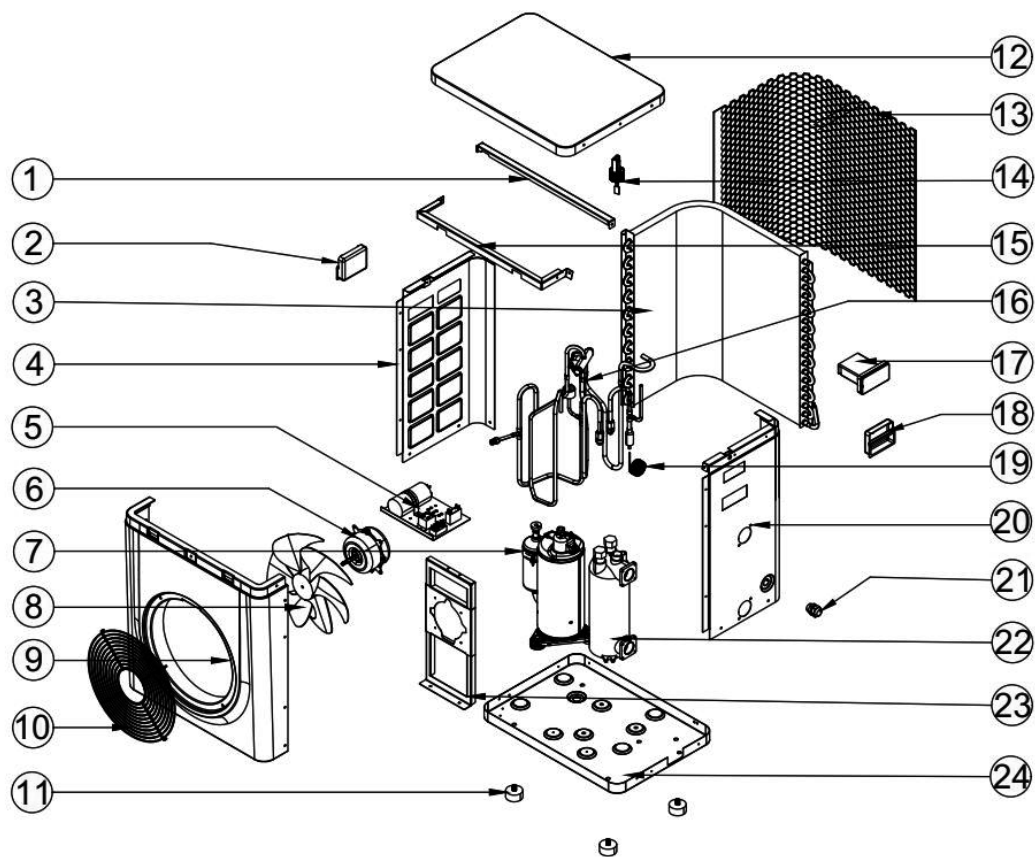
## 2.2 Unit Dimensions



Dimension Unit: (mm)


| Model               | A   | B  | C   | D   | E   |
|---------------------|-----|----|-----|-----|-----|
| <b>PSL-150-0256</b> | 140 | 51 | 431 | 425 | 290 |
| <b>PSL-150-0257</b> | 220 | 54 | 545 | 505 | 360 |

## 2.3 Explosion View



|   |             |   |                   |   |                         |
|---|-------------|---|-------------------|---|-------------------------|
| ① | Back Beam   | ⑨ | Front Plate       | ⑰ | Wire Controller         |
| ② | Left Handle | ⑩ | Fan Cover         | ⑱ | Right Handle            |
| ③ | Evaporator  | ⑪ | Rubber feet       | ⑲ | Snubber                 |
| ④ | Left Plate  | ⑫ | Top Cover         | ⑳ | Right Plate             |
| ⑤ | Capacitor   | ⑬ | Guard Net         | ㉑ | Connector               |
| ⑥ | Fan Motor   | ⑭ | Water Flow Switch | ㉒ | Titanium Heat Exchanger |
| ⑦ | Compressor  | ⑮ | Front Beam        | ㉓ | Motor Support           |
| ⑧ | Fan Blade   | ⑯ | 4-Way Valve       | ㉔ | Chassis                 |

### 3. INSTALLATION INSTRUCTION

 **WARNING:** Installation must be carried out by a qualified engineer. This section is provided for information purpose only and must be checked and adapted if necessary, according to actual installation condition.

#### 3.1 Pre-Requirements

1. Needed equipment for installation of heat pump:
2. Suitable power supply cable for unit's power.
3. A by-pass kit and an assembly of PVC tube, stripper, PVC adhesive and sandpaper.
4. A set of walls plug and expansion screw.
5. We recommend to use flexible PVC pipe in order to reduce transmission of vibration.
6. Suitable fastening studs may be used to raise unit

#### 3.2 Location

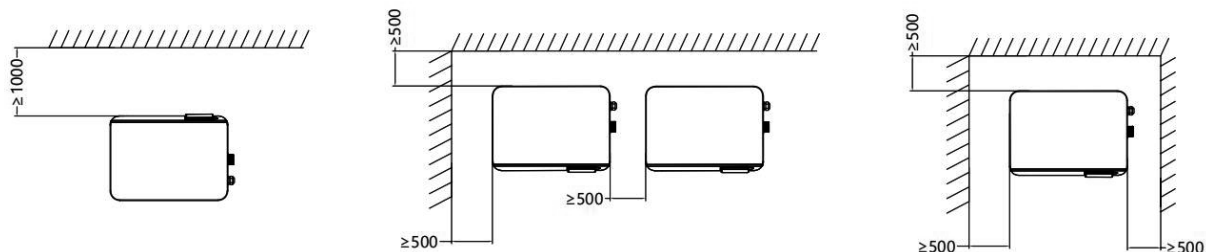
Please comply with the following rules about heat pump location choosing.

1. The unit's location must be convenient for operation and maintenance in the future.
2. It must be installed and fixed on flat concrete floor. The floor is stable to support the weight of the unit.
3. A water drainage device must be provided close to the unit in order to protect the area where it is installed.
4. If necessary, mounting pads could be used to support the weight of unit.
5. Confirm the unit is under well-ventilated condition; air outlet port is not facing to the windows of nearby buildings and the outlet air cannot be returned. In addition, provide enough space around the unit for repair and maintenance.
6. The unit must not be installed in an area exposed to oil, flammable gases, corrosive products, sulphurous compounds or close to high frequency equipment.
7. To prevent mud splashes, do not install the unit near road or track.
8. To avoid noise to neighbors, please make sure the unit is installed in less noise sensitivity area or good sound isolation area.

9. Keep the unit as far as possible away from children.

10. Installation space

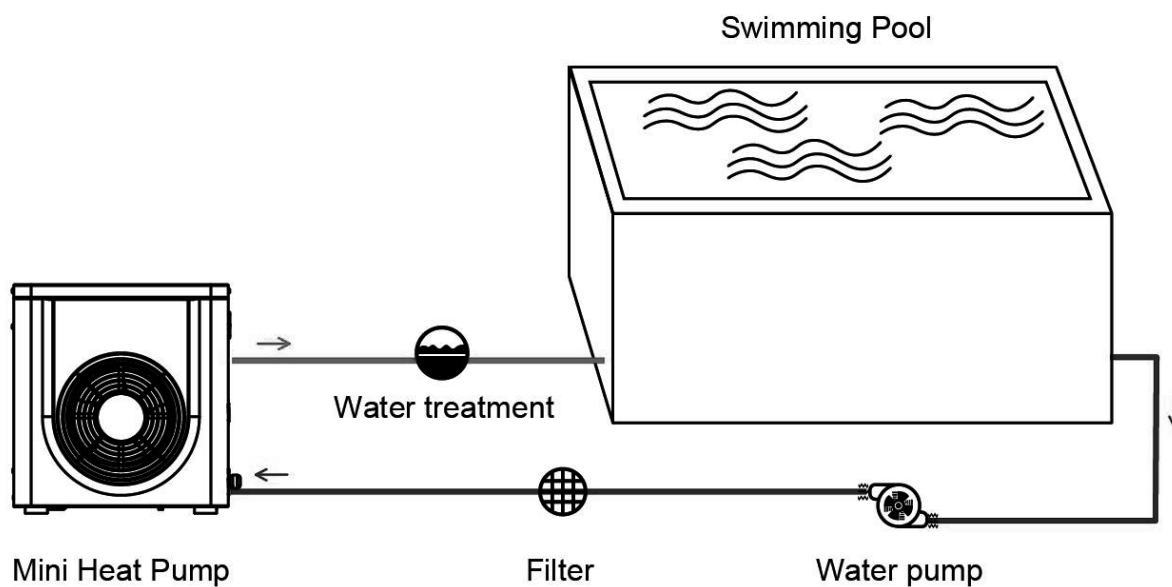
Unit: mm



Note:

- ① Anything could not be placed within at least 1m in front of heat pump.
- ② Leave at least 500mm of empty space around the sides and rear of heat pump.
- ③ Do not put any stuff on or in front of heat pump!

### 3.3 Installation Layout



\* The installation diagram is for reference only, please refer to the actual installation situation.

### 3.4 Electrical Connection

Power Supply Wires Size

| Model                     | Power Supply Wires |                      |               |
|---------------------------|--------------------|----------------------|---------------|
|                           | Electricity Supply | Cable Diameter       | Specification |
| PSL-150-0256/PSL-150-0257 | 220-240V~/50Hz     | 3×1.5mm <sup>2</sup> | AWG 14        |

**⚠ WARNING: Power supply of heat pump must be disconnected before any operation.**

- Please comply with the following instruction to connect heat pump.
- Step 1: Detach electrical side panel by a screwdriver to access electrical terminal block.
- Step 2: Insert cable into heat pump unit port.
- Step 3: Connect power supply cable to terminal block.

## 4. RUNNING TEST

### 4.1 Inspection Before Running Test

- a. Running test can begin after completing all installation;
- b. Before running test, confirm below items and write √ in block;

|                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Correct unit installation                              |
| <input type="checkbox"/> | Power supply voltage is the same as unit rated voltage |
| <input type="checkbox"/> | Correct piping and wiring                              |
| <input type="checkbox"/> | Air inlet & outlet port of unit is unblocked           |
| <input type="checkbox"/> | Drainage and venting is unblocked and no water leaking |
| <input type="checkbox"/> | Leakage protector is working                           |
| <input type="checkbox"/> | Piping insulation is working                           |
| <input type="checkbox"/> | Ground wire is connected correctly                     |

- c. All wiring and piping should be connected well and carefully checked, then fill water tank with water before power is switched on;
- d. Emptying all air within pipes and water tank, press “on-off” button on control panel to run the unit at setting temperature;
- e. Items need to be checked during running test:
- ◆ During the first running, unit current is normal or not;
  - ◆ Each function button on control panel is normal or not;
  - ◆ Display screen is normal or not;
  - ◆ Are there any leakage in the whole heating circulation system;
  - ◆ Condensate drain is normal or not;
  - ◆ Are there any abnormal sound or vibration during run

## 4.2 Control Function Description

### 4.2.1 The buttons of LED wire controller



### 4.2.2 Controller display instructions

The red light lights up when heating mode

The green light flashes when defrosting

### 4.2.3 Definition of function keys

"Prg"  key

Under the main interface, press this button to turn on or off the heat pump.

Under the parameter checking interface, press this button to return to the main interface.

"▲"  and "▼"  key



Under the main interface, you can use these keys to adjust the current set point of target water temperature.

"Sel"  key

Press the "Sel" button for 5 seconds to check the parameters. And you can press "▲" and "▼" to turn the pages to check different parameters.

Press "Sel" button under the parameter-checking status to enter the status of parameters setting. Press "▲" and "▼" to change the parameter value. Press "Sel" button to confirm the parameter value and return to the parameter-checking status.

### 4.2.4 Reset operation

When pressing the  +  for 10 seconds, the parameter values can be recover to default values.

### 4.2.5 Parameter checking

Press the "Sel" button for 5 seconds to check the parameters. And you can press "▲" and "▼" to turn the pages to check different parameters.

## 4.2.6 Parameter lists

| Parameter | Description   | Range    | Default Value | Remarks    |
|-----------|---|----------|---------------|------------|
| A         | Inlet water temperature                               | -19~99℃  |               | Measured   |
| b         | Coil temperature                                      | -19~99℃  |               | Measured   |
| c         | Ambient temperature                                   | -19~99℃  |               | Measured   |
| d         | Inlet water temperature setting value when heating    | 15℃~40℃  | 27℃           | Adjustable |
| E         | Interval time of defrosting                           | 10~80min | 40 min        | Adjustable |
| F         | Exit time of defrosting                               | 5~30min  | 8 min         | Adjustable |
| H         | Heat pump restart temperature difference              | 1℃~10℃   | 2℃            | Adjustable |
| J         | Power off protection                                  | 0~1      | 1 (Yes)       | Adjustable |
| O         | Ambient temperature of antifreeze protection          | -10℃~15℃ | -5℃           | Adjustable |
| P         | Coil temperature of entering defrosting               | -19℃~0℃  | -3℃           | Adjustable |
| U         | Coil temperature of exiting defrosting                | 1℃~30℃   | 20℃           | Adjustable |
| t         | Inlet water temperature of antifreezing (Reservation) | 1℃~15℃   | 4℃            | Adjustable |

## 4.2.7 Error Code

| Fault  | Code                               | Solution   |
|--|------------------------------------|--|
| Inlet water temperature sensor's fault                             | P 1                                | Check the connection, change the sensor if necessary.  |
| Coil temperature sensor's fault                                    | P 3                                |  |
| Ambient temperature sensor's fault                                 | P 5                                |  |
| The ambient temperature around the pool is too low/high protection | P 7                                | 1. Exceeding the operating ambient temperature range,<br>2. The ambient temperature sensor is faulty, replace the sensor.  |
| Water flow/Low pressure protection                                 | P L                                | 1. Water flow switch problem. Need to replace the water flow switch.<br>2. The water system is blocked. Clean or replace the blocked part.<br>3. The valve is not open. Open the valve.<br>4. The water pump is not working. Need to replace the water pump.<br>5. There is something wrong with low pressure switch.<br>6. Low ambient temperature. |
| Defrost  | Defrosting indicator (Green light) |  |

## 5. MAINTENANCE

- You should check the water supply system regularly to avoid the air entering into water system and occurrence of low water flow, it would reduce the performance and reliability of the heat pump.
- Clean your pools and filtration system regularly to avoid the damage of the unit because of a dirty or clogged filter.
- Discharge the water from the bottom of the water pump if the heat pump will stop running for a long time (specially in winter).
- On any other moment, check the water flow to confirm there is enough water before the unit starts to run again.

After the unit is conditioned in winter, it is preferred to cover the unit with the special winter heat pump cover.

