



# HEAT PUMP

for swimming pool water  
heating & cooling

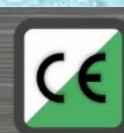
## Installation and user manual



**HP COMMERCIAL Inverter iMAX60**

**HP COMMERCIAL Inverter iMAX110**

*Version: 04/2020 (last update: 2020-04-24)*





**Thank you** for purchasing Microwell swimming pool heat pump. Before you use this device, it is necessary to carefully read the entire Installation and user manual. It is not allowed to commence the heat pump installation or operation unless full content of this Installation and user manual is understood and acknowledged. Please keep the Installation and user manual available in the case of any future reference is required. Please provide this information also to each user of the device. Please mind local regulations in your country regarding installation and usage of this heat pump which are valid in

addition to this User manual.

We hope you'll enjoy using our heat pumps.

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## 1. Safety Precautions

We have provided important safety messages in this manual and on your heater.  
Please always read and obey all safety messages.

### 1.1 Warning



The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury or injury to a third party. These signs are rare, but are extremely important.

### 1.2 Attention

- Set proper temperature in order to get comfortable water temperature to avoid overheating or overcooling.
- Please don't stack substances, which will block air flow near inlet or outlet area, otherwise the efficiency of the heater will be reduced or even stopped.
- Don't use or stock combustible gas or liquid such as thinners, paint and fuel to avoid fire.
- In order to optimize the heating effect, please install heat preservation insulation on pipes between swimming pool and the heater, and please use a recommended cover on the swimming pool.
- Connecting pipes of the swimming pool and the heater should be  $\leq 10\text{m}$ .

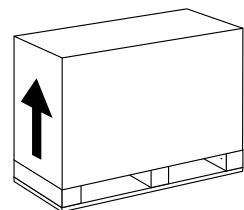
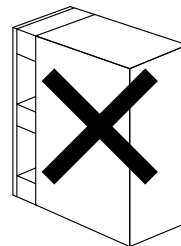
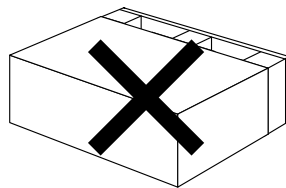
### 1.3 Safety

- Please keep the main power supply switch far away from the children.
- When a power cut happens during operating, and later the power is restored, the heater will start up.
- Please switch off the main power supply in lightening and storm weather to prevent from machine damage that caused by lightning.
- Installation and any repairing should be conducted in the area with good ventilation. The ignition source is prohibited during the operation.

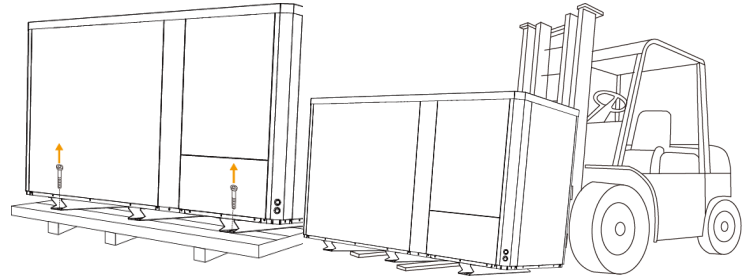
## 2. About your heat pump

### 2.1 Transportation

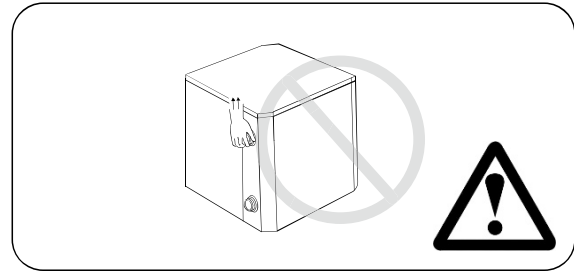
- Always keep upright



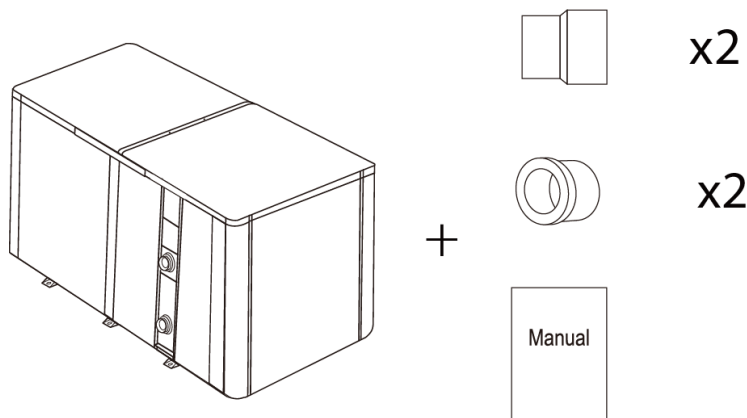
Loose the screws in the bottom, and use the forklift to transport.



- b. Do not lift the water union, otherwise, the titanium heat exchanger inside the heat pump may be damaged)



## 2.2 Accessories



## 2.3 Operating condition and range


To provide you comfort and pleasure, please set swimming pool water temperature efficiently and economically.

The heat pump can work between air  $-10^{\circ}\text{C} \sim 43^{\circ}\text{C}$ , and its ideal operation range is between air  $15^{\circ}\text{C} \sim 25^{\circ}\text{C}$ .

## 2.4 Introduction of different modes

- a) The heat pump has two modes: Boost and Silence.
- b) They have different strengths under different conditions.

| Mode | Modes      | Strength   |
|------|------------|--|
|      | Boost mode | Heating capacity: 20% to 100% capacity<br>Intelligent optimization<br>Fast heating |

|   |              |   |
|---|--------------|---|
|  | Silence mode | Heating capacity: 20% to 80% capacity<br>Sound level: 3dB (A) lower than Boost mode |
|---|--------------|---|

## 2.5 Technical parameters

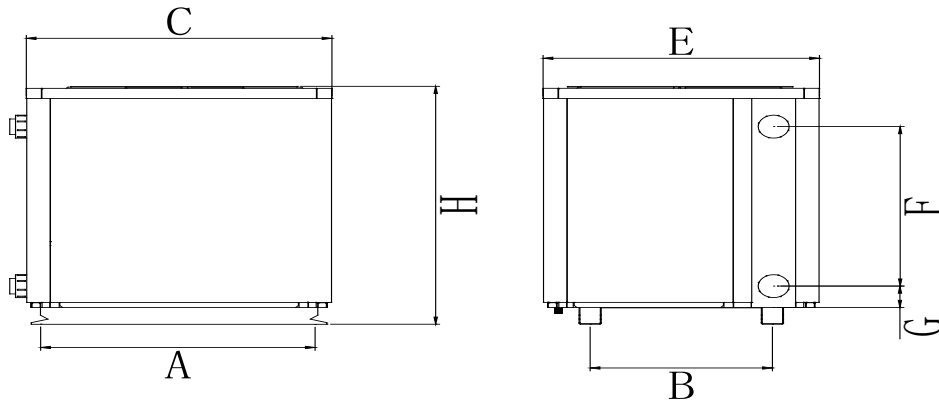
| Model  | iMAX60         | iMAX110        |
|--|----------------|----------------|
| <b>PERFORMANCE CONDITION: Air 27°C/ Water 27°C/ Humid. 80%</b> |                |                |
| Heating capacity (kW)  | 60.2           | 115.0          |
| Average COP at 50% Speed                                       | 10.5           | 10.0           |
| <b>PERFORMANCE CONDITION: Air 15°C/ Water 26°C/ Humid. 70%</b> |                |                |
| Heating capacity (kW)  | 40.1           | 80.8           |
| Average COP at 50% Speed                                       | 7.0            | 7.0            |
| <b>TECHNICAL SPECIFICATIONS</b>                                |                |                |
| Advised pool volume (m <sup>3</sup> ) *                        | 125~260        | 250~520        |
| Operating air temperature (°C)                                 | -10°C~43°C     |                |
| Fan direction  | Vertical       |                |
| Power supply   | 400V/3Ph/50Hz  |                |
| Rated input power (kW)   | 2.26~8.90      | 4.68~17.5      |
| Rated input current (A)  | 3.27~12.9      | 6.78~25.3      |
| Sound level at 10m dB(A)                                       | 33.0~41.0      | 35.0~44.0      |
| Advised water flux (m <sup>3</sup> /h)                         | 20~25          | 40~50          |
| Water connection (mm)  | 75             | 110            |
| Net dimension LxWxH (mm)                                       | 1000x1110x1260 | 2100x1090x1280 |
| Net Weight (kg)  | 212            | 459            |

**Remarks:**

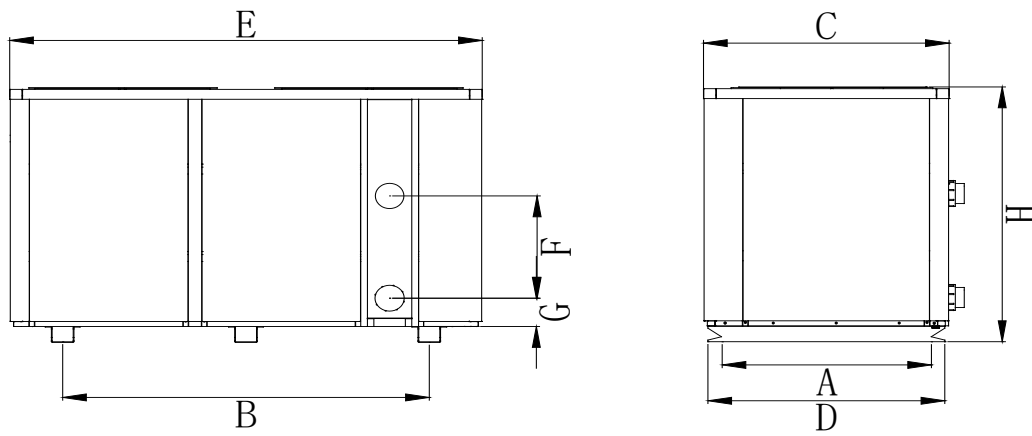
This heat pump is able to perform normal within air temp -10°C ~43°C, efficiency will not be guaranteed out of this range. Please take into consideration that the pool heater performance and parameters are different under various conditions.

Related parameters are subject to adjustment periodically for technical improvement without further notice. For details please refer to nameplate.

## 2.6 Dimensions



| Size (mm) / Name | A    | B   | C    | D    | E    | F   | G   | H    |
|------------------|------|-----|------|------|------|-----|-----|------|
| Model            |      |     |      |      |      |     |     |      |
| iMAX60           | 1000 | 660 | 1110 | 1070 | 1000 | 780 | 105 | 1260 |




| Size (mm) / Name | A    | B    | C    | D    | E    | F   | G   | H    |
|------------------|------|------|------|------|------|-----|-----|------|
| Model            |      |      |      |      |      |     |     |      |
| iMAX110          | 1000 | 1630 | 1090 | 1050 | 2100 | 515 | 140 | 1280 |

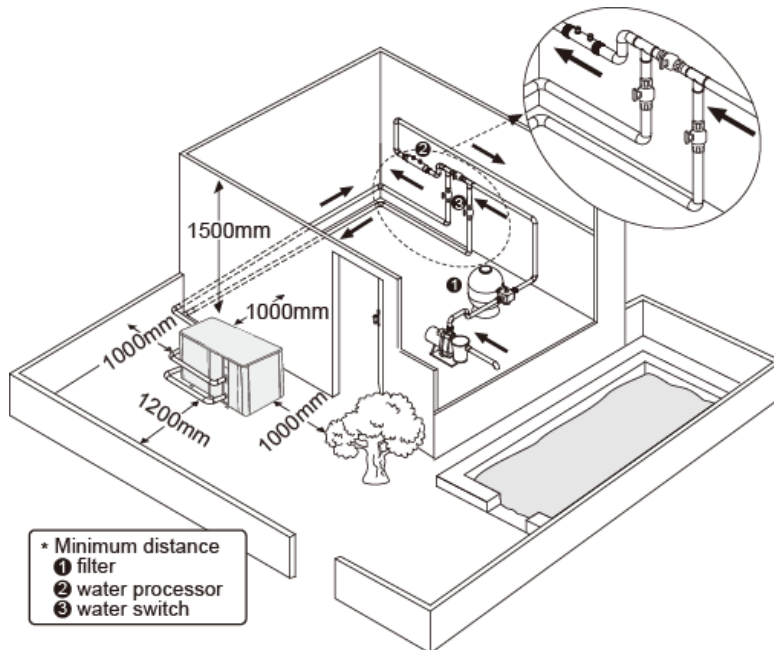
### 3. INSTALLATION GUIDANCE

#### 3.1 Installation reminder

Only a professional staff is allowed to install the heat pump. The users are not qualified to install by themselves, otherwise the heat pump might be damaged and risky for users' safety.

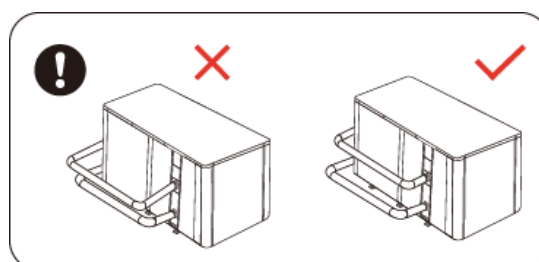
a. Location and water pipe connection

 The inverter pool heat pump should be installed in a good ventilation place.



- 1) The frame must be fixed by bolts (M10) to concrete foundation or brackets. The concrete foundation must be solid and fastened; the bracket must be strong enough and antirust treated;
- 2) Please don't stack substances that will block air flow near inlet or outlet area, and there is no barrier within 50cm behind the main machine, or the efficiency of the heater will be reduced or even stopped;
- 3) The machine needs an appended pump (Supplied by the user). The recommended pump specification-flux: refer to Technical Parameter, Max. lift  $\geq 10\text{m}$ ;
- 4) When the machine is running, there will be condensation water discharged from the bottom, please pay attention to it. Please hold the drainage nozzle (accessory) into the hole and clip it well, and then connect a pipe to drain the condensation water out.

b. The inlet and outlet water unions can't stand the weight of soft pipes. The heat pump must be connected with hard pipes!

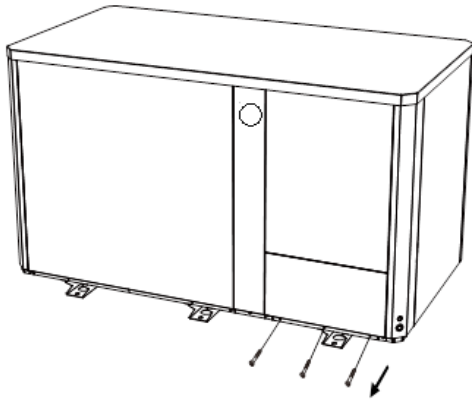




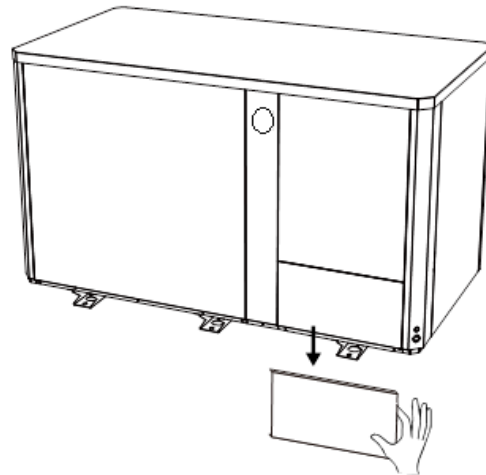
**⚠ 1. How to connect to the terminal board of iMAX60**

**Step 1. open the maintenance panel**

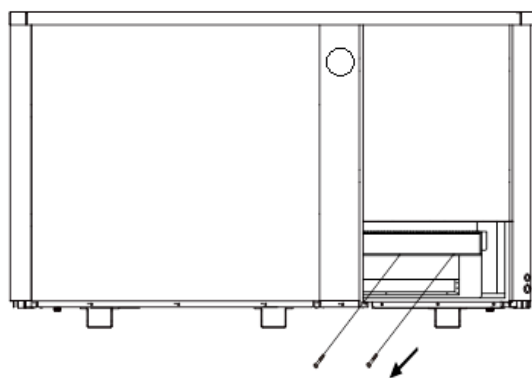
① Remove three screws outside



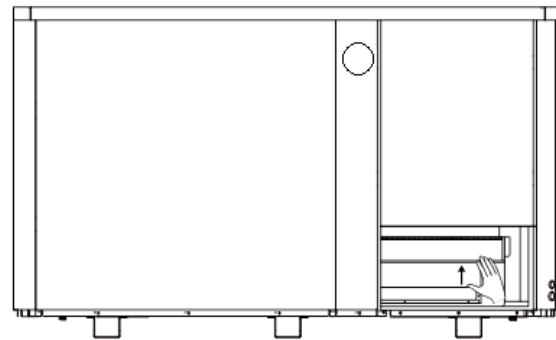
② Open the panel



③ Remove two screws inside

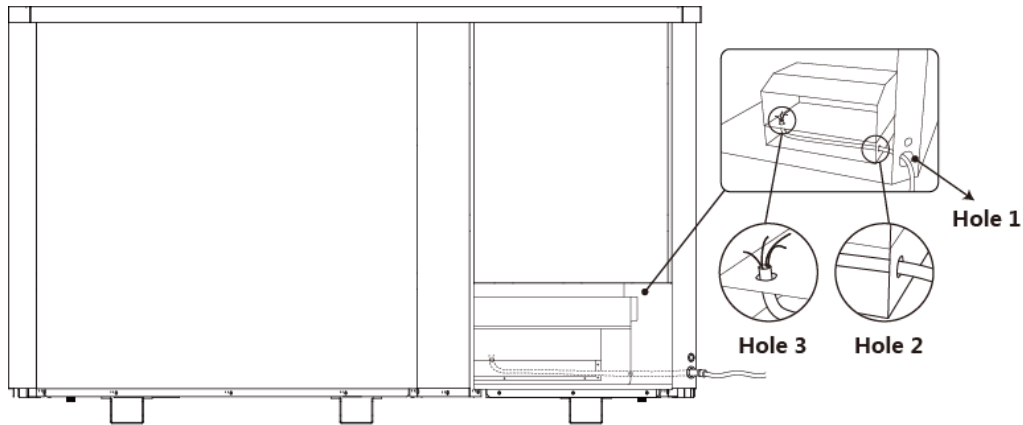


④ Open the internal

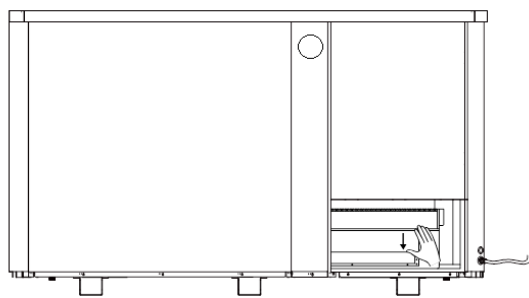


## Step 2. Power cord must be passed through below 3 holes

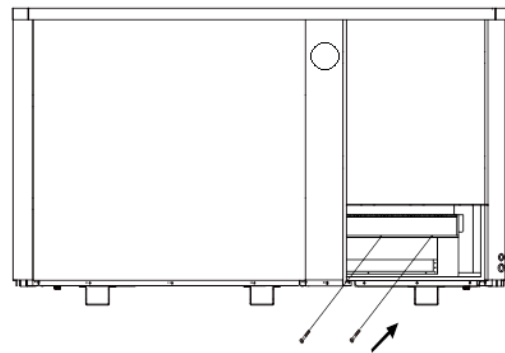
- ① Connect the wire through three holes



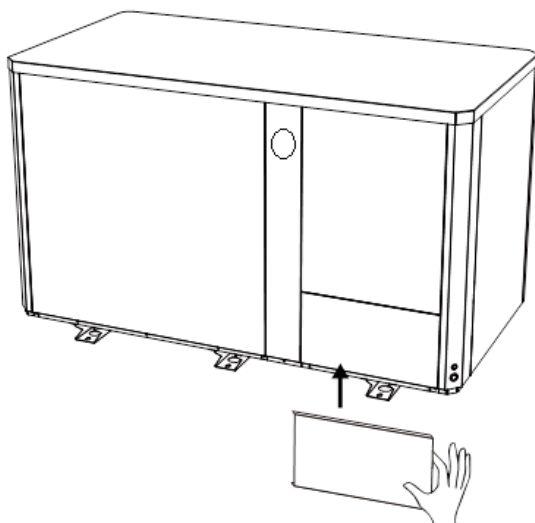
- ② Restore the internal panel



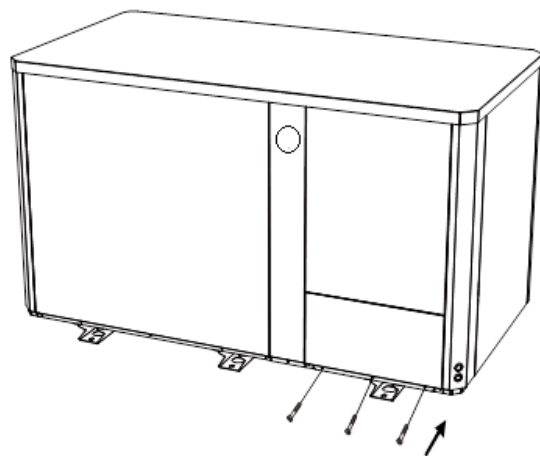
- ③ Fix the internal panel by two screws



- ④ Restore the panel



- ⑤ Fix the panel by three screws

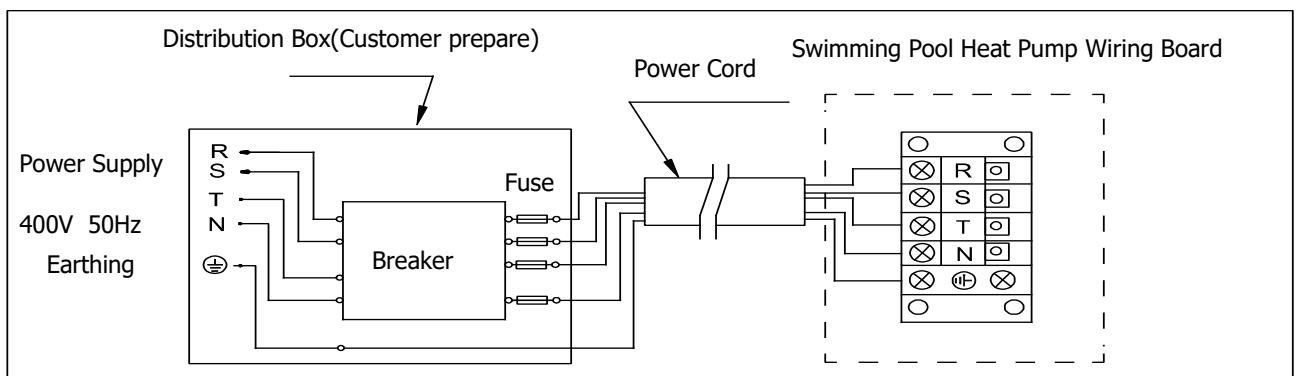



### 3.2 Wiring

- Connect to appropriate power supply, the voltage should comply with the rated voltage of the products.
- Earth the machine well.
- Wiring must be handled by a professional technician according to the circuit diagram.
- Set leakage protector according to the local code for wiring (leakage operating current  $\leq 30\text{mA}$ ).
- The layout of power cable and signal cable should be orderly and not affecting each other.

### 3.3 Electric wiring Diagram

For power supply: 400V 50Hz



Note: 1)  Must be hard wired, plug is not allowed.

2) The swimming pool heat pump must be earthed well.

### 3.4 References for protecting devices and cable specification

| MODEL                           |                                      | iMAX60 | iMAX110 |
|---------------------------------|--------------------------------------|--------|---------|
| Breaker                         | Maximum Current (A)                  | 23     | 45      |
|                                 | residual-current circuit breaker (A) | 30     | 30      |
| Fuse (A)                        |                                      | 23     | 45      |
| Power Cord (mm <sup>2</sup> )   |                                      | 5×6    | 5×16    |
| Signal cable (mm <sup>2</sup> ) |                                      | 3×0.5  | 3×0.5   |

※ Above data is subject to modification without notice.

**Note:** The above data is adapted to power cord  $\leq 10\text{m}$ . If power cord is  $>10\text{m}$ , wire diameter must be increased.  
The signal cable can be extended to 50m maximumly.

### 3.5 Connection to PV

This section is for all users or applications where photovoltaic panels are installed and used as energy source.

Your Microwell heat pump is equipped with PV Ready solution enabling you to minimize your energy bill by powering your heat pump from photovoltaic energy source. You have several options how to operate your heat pump:

**1. Maximum comfort** – heat pump works as per your request on desired water temperature. This is recommended for users who target to achieve desired water temperature at all times.

Advantage: water temperature is always at your requested °C value.

Disadvantage: energy bill may be higher since system's priority is water temperature

Technical set up: heat pump is connected and operated as described in User's manual. Power generated from PV panels is used to lower monthly energy consumption but it is not necessary used to power the heat pump. The heat pump will work even if there isn't enough power generated by PV panels.

Connection: On/off contacts 5-6 aren't connected to gateway.

Compatibility PV: All ON-GRID, OFF-GRID or HYBRID PV systems.

Compatibility heat pump: all Microwell heat pumps

**2. Maximum savings** – heat pump will only work while there is enough power generated by PV panels.

Advantage: minimum energy bill.

Disadvantage: water temperature may not always be at your requested °C value.

Technical set up: heat pump is connected and operated as described in User's manual. Power generated from PV panels is used directly to power your heat pump and your heat pump will not work unless there is sufficient power from PV panels.

Connection: On/off contacts 5-6 are connected to gateway or alternative and system is set to close (C) the contacts if PV generated power surpasses the power input of the heat pump.

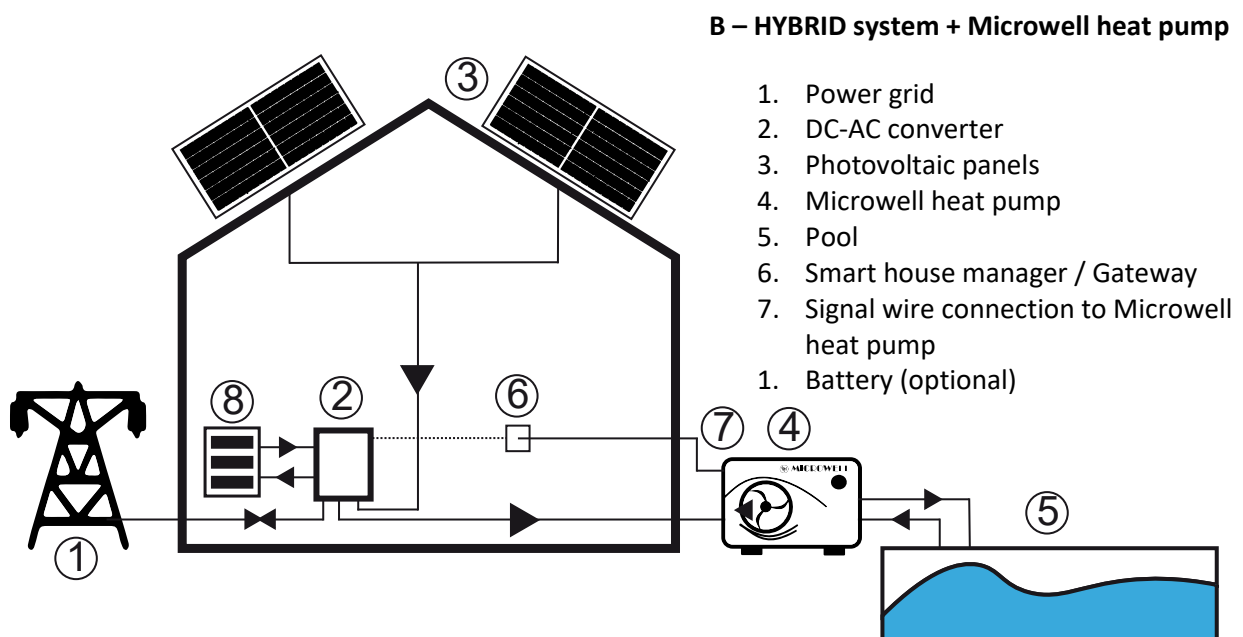
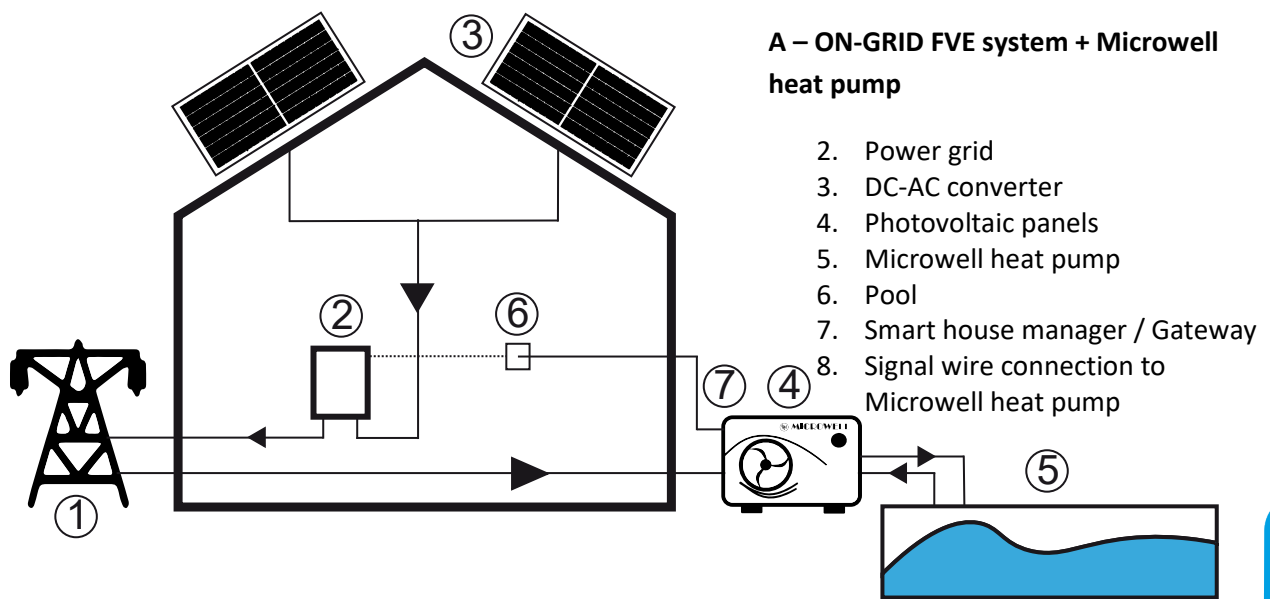
In the case of sudden interruption in generated power (e.g. sudden clouds), the heat pump will slowly decrease its speed. If the power comes back on, the heat pump will increase its speed again to

requested set point. If the power keeps on being low, then the heat pump will be turned off. It is save to operate your Microwell heat pump in this way.

Please note that even in the case PV panels generate enough power, your heat pump may be off and not working. This can be the case if your requested water temperature is reached and there is no need for the heat pump to continue heating.

Compatibility PV: All OFF-GRID or HYBRID PV systems.

Compatibility heat pump: all Microwell heat pumps



## 4. OPERATION GUIDANCE

### 4.1 Key Function



| Symbol | Heating & cooling models  |
|--------|---|
|        | i. Power On/Off<br>ii. Wi-Fi setting  |
|        | i. Lock/Unlock Screen<br>ii. Heating mode (18-40°C)<br>iii. Cooling mode (12-30°C)<br>iv. Auto mode (12-40°C) |
|        | i. Boost<br>ii. Silence   |
|        | Temperature Setting   |

#### Attention:

- i. The controller has power-down memory function.
- ii. The buttons will turn dark when it's locked.

### 4.2 Operation Instruction



#### a. Screen Lock

- 1) Press for 3 seconds to lock or unlock the screen
- 2) Automatic Lock Period: 30 seconds if no operation

#### b. Power On





Press for 3 seconds to unlock screen, Press to power on machine.

**c. Temperature Setting**

Press  and  to display and adjust set temperature.

**d. Mode Selection**

1) Heating/Cooling/Auto

Press " M" to switch among heating "" , cooling "" and auto mode "".

Heating mode "" : Water temperature setting range(18-40°C)




Cooling mode "" : Water temperature setting range(12~30°C)

Auto mode "" : Water temperature setting range(12~40°C)


\* When water inlet temperature is higher than setting point, automatic cooling mode starts.

\* When water inlet temperature is lower than setting point, automatic heating mode starts.



2) Silence/Boost mode selection

Press " M" to switch among boost mode , silence mode 


Default mode: boost 

Please choose boost mode  for initial heating


**e. WIFI **





When the screen is on, press " M" for 3 seconds, after " M" flashing, enter Wi-Fi connection.

Connect Wi-Fi on mobile phone and input password, and then control equipment by Wi-Fi.

When APP connects Wi-Fi successfully, " M" lights on.

**f. Defrosting**

1) Automatic defrosting: When machine is auto defrosting,  will flash, and return to previous working mode when it finishes.

2) Manual Defrosting: To enter forced defrosting mode, the compressor must be working more than 10 minutes. in heating mode, press " M" and " M" on touch controller simultaneously for 5 seconds to start forced defrosting, " M" is flashing and defrost starts, " M" stop flashing and defrosting stops. (Remarks: the interval between manual defrosting should be more than 30 minutes.)

## 5. TESTING

### 5.1 Inspect heat pump before use

- The ventilating device and outlets are operating adequately and are not obstructed.
- It's prohibited to install refrigeration pipe or components in corrosive environment.
- Inspect the electric wiring on basis of the electric wiring diagram and earthing connection.
- Double confirm the main machine power switch should be off.
- Inspect the air inlet and outlet.

### 5.2 Trial

- The user must "Start the Pump before the Machine, and Turn off the Machine before the Pump", or the machine will be damaged.
- Before start the heat pump, please check for any leakage of water.
- In order to protect the swimming pool heat pump, the machine is equipped with a time lag starting function, the fan will run 1 minute earlier than the compressor when starting the machine, and it will stop running 1 minute later than the compressor when power off the machine.
- After the swimming pool heat pump start up, please kindly checking for any abnormal noise from the machine.

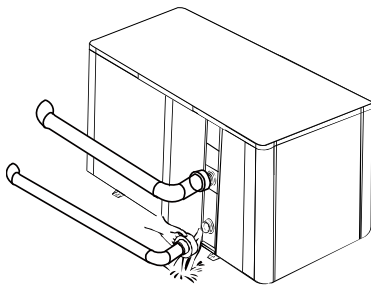
## 6. MAINTENANCE



**"CUT OFF" power supply of the heater before cleaning, examination and repairing**

6.1 In winter season when you don't swim:

- Cut off power supply to prevent any machine damage.
- Drain water clear of the machine.
- Cover the machine body when not in use.



**Important:**

Unscrew the water nozzle of inlet pipe to let the water flow out.

*When the water in machine freezes in winter season, the titanium heat exchanger may be damaged.*



- 6.2 Please clean this machine with household detergents or clean water, NEVER use gasoline, thinners or any similar fuel.
- 6.3 Check bolts, cables and connections regularly.
- 6.4 If repair or scrap is required, please contact authorized service center nearby.
- 6.5 Do not attempt to work on the equipment by yourself. Improper operation may cause danger.

## 7. TROUBLE SHOOTING FOR COMMON FAULTS

### 7.1 Failure solution and code

| Failure  | Reason                | Solution                      |
|--|-----------------------|-------------------------------|
| Heat pump doesn't run  | No power              | Wait until the power recovers |
|  | Power switch is off   | Switch on the power           |
|  | Fuse burned           | Check and change the fuse     |
|  | The breaker is off    | Check and turn on the breaker |
| Fan running but with insufficient heating  | evaporator blocked    | Remove the obstacles          |
|  | Air outlet blocked    | Remove the obstacles          |
|  | 3 minutes start delay | Wait patiently                |
| Display normal, but no heating   | Set temp. too low     | Set proper heating temp.      |
|  | 3 minutes start delay | Wait patiently                |
| If above solutions don't work, please contact your installer with detailed information and your model number. Don't try to repair it yourself. |                       |                               |

**Note:** If the following conditions happen, please stop the machine immediately, and cut off the power supply immediately, then contact your dealer:

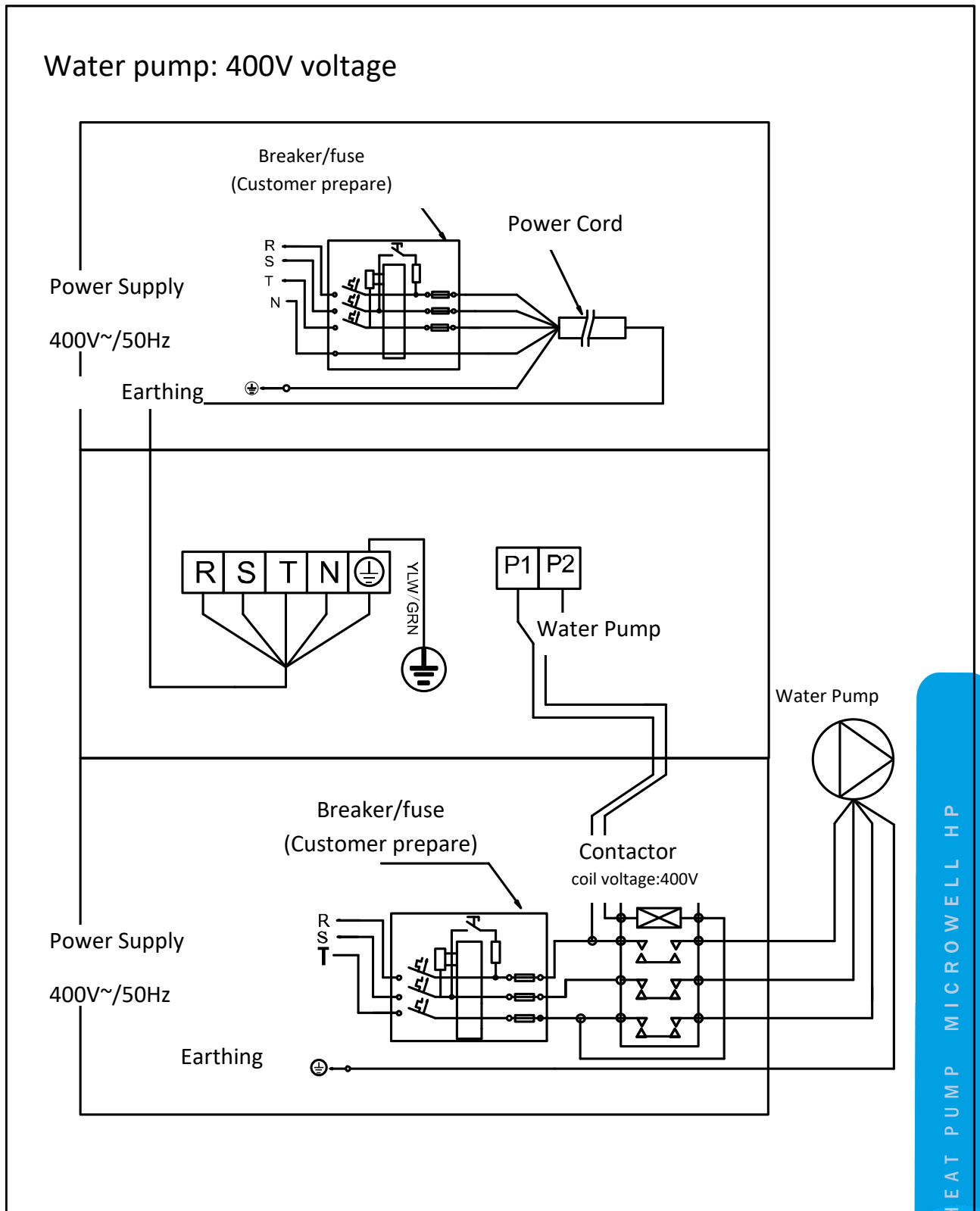
1. Inaccurate switch action.
2. The fuse is frequently broken or leakage circuit breaker jumped.

#### Protection & Failure code

| NO. | Display | Protection code description  |
|-----|---------|--|
| 1   | E3      | No water protection  |
| 2   | E5      | Power supply excesses operation range  |
| 3   | E6      | Excessive temp difference between inlet and outlet water(Insufficient water flow protection) |
| 4   | Eb      | Ambient temperature too high or too low protection   |
| 5   | Ed      | Anti-freezing reminder   |
| NO. | Display | Failure code description   |
| 1   | E1      | High pressure protection   |
| 2   | E2      | Low pressure protection  |
| 3   | E4      | 3 phase sequence protection (three phase only)   |

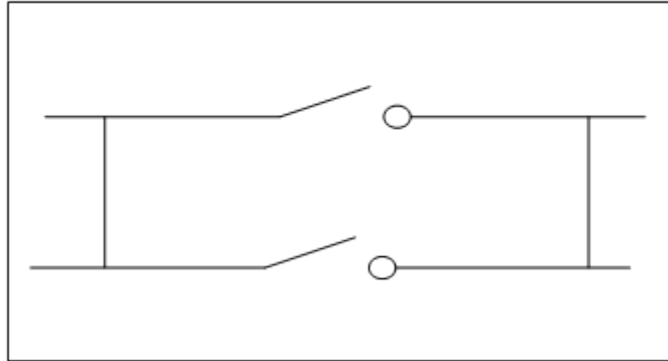
|    |    |   |
|----|----|---|
| 4  | E7 | Water outlet temp too high or too low protection      |
| 5  | E8 | High exhaust temp protection                          |
| 6  | EA | Evaporator overheat protection (only at cooling mode) |
| 7  | EC | System communication failure                          |
| 8  | P0 | Controller communication failure                      |
| 9  | P1 | Water inlet temp sensor failure                       |
| 10 | P2 | Water outlet temp sensor failure                      |
| 11 | P3 | Gas exhaust temp sensor failure                       |
| 12 | P4 | Evaporator coil pipe temp sensor failure              |
| 13 | P5 | Gas return temp sensor failure                        |
| 14 | P6 | Cooling coil pipe temp sensor failure                 |
| 15 | P7 | Ambient temp sensor failure                           |
| 16 | P8 | Cooling plate sensor failure                          |
| 17 | P9 | Current sensor failure                                |
| 18 | PA | Restart memory failure                                |
| 19 | F1 | Compressor drive module failure                       |
| 20 | F2 | PFC module failure                                    |
| 21 | F3 | Compressor start failure                              |
| 22 | F4 | Compressor running failure                            |
| 23 | F5 | Inverter board over current protection                |
| 24 | F6 | Inverter board overheat protection                    |
| 25 | F7 | Current protection                                    |
| 26 | F8 | Cooling plate overheat protection                     |
| 27 | F9 | Fan motor failure                                     |
| 28 | Fb | Power filter plate No-power protection                |
| 28 | FA | PFC module over current protection                    |
| 29 | FA | PFC module over current protection                    |
| 30 | FC | AC fan motor overcurrent protection                   |
| 31 | Fd | AC fan motor overheat protection                      |
| 32 | FE | AC fan motor phase protection                         |

### 8. Electrical wiring schematic (optional)



## Water pump control and timer connection

### 1: Water pump timer



### 2: Water pump wiring of Heat Pump

*Note: The installer should connect 1 parallel with 2 (as above picture). To start the water pump, condition 1 or 2 is connected. To stop the water pump, both 1 and 2 should be disconnected.*

## 9. Wi-Fi operation

### 1 APP Download



Android please download from



iPhone please download from



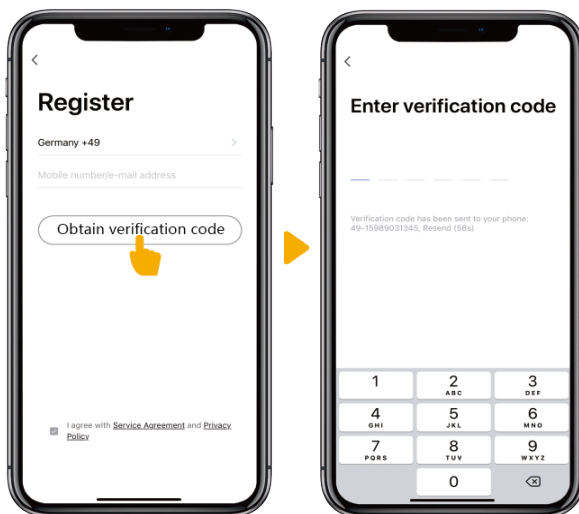
### 2 Account Registration

1. Register by mobile or email



By downloading and using this application You accept that Microwell, spol. s r.o. is a third-party application broker and is not responsible for any technical conditions of its use.

### 2. Create your password



### 3 APP Binding

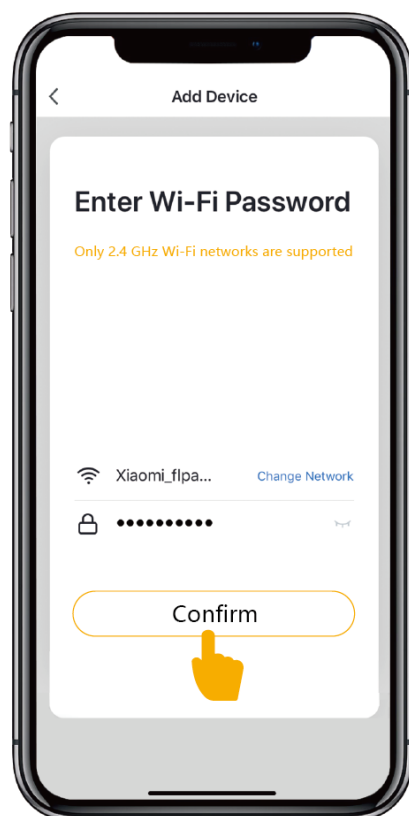
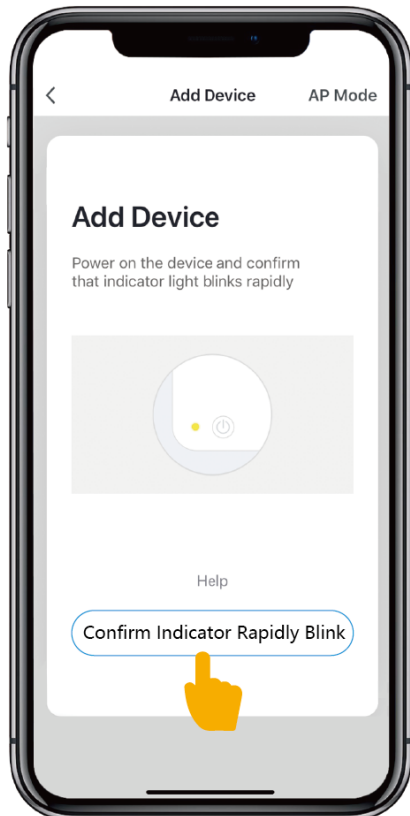
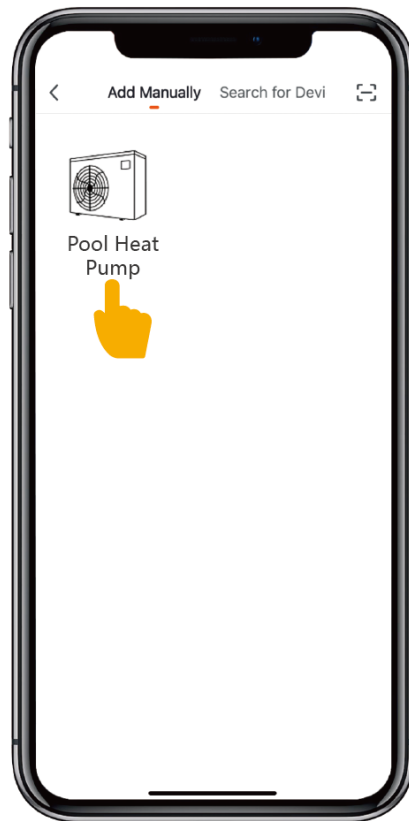
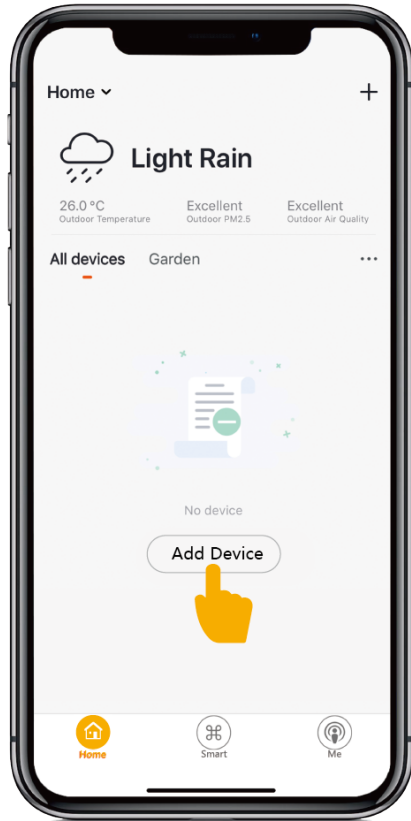
Please make sure you are connected to the Wi-Fi.

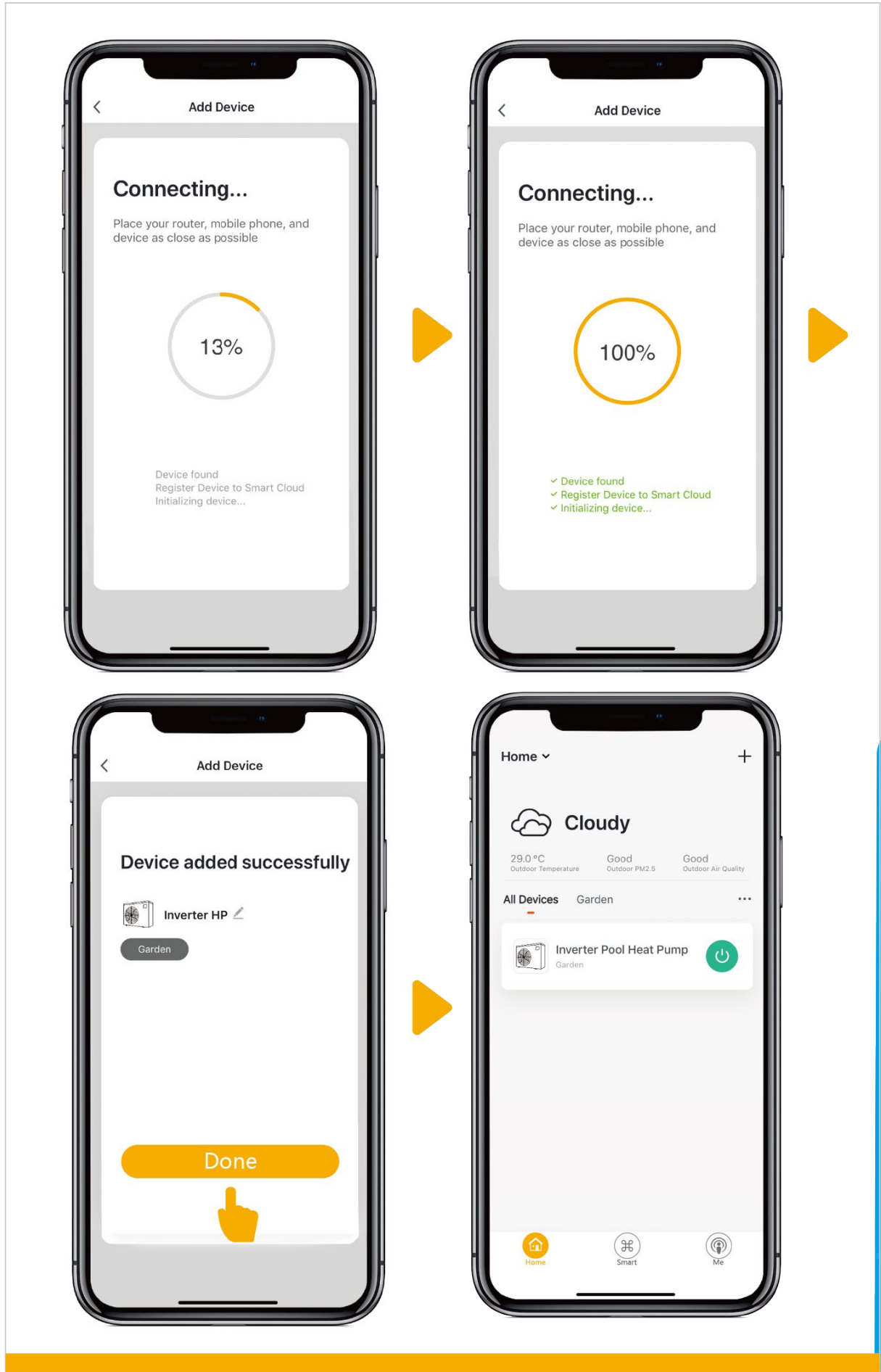
Press "⏻" for 3 seconds to unlock the screen, press "0" for 3 seconds then release, after hearing "Beep".

Enter Wi-Fi code. During connection, "📶" flashes. When the APP connects to the Wi-Fi successfully, the "📶" will display



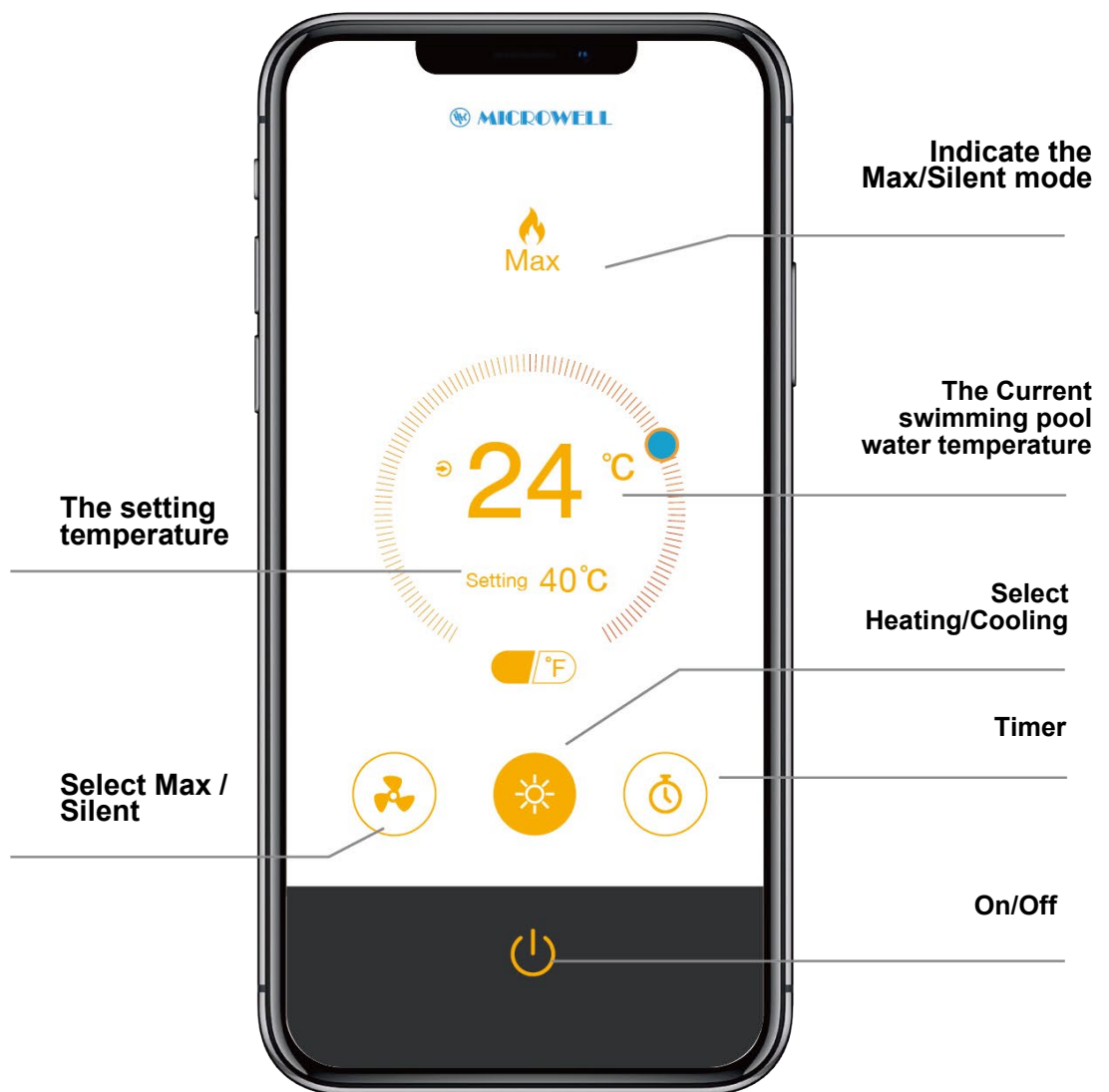
Click "Add device", and then follow instructions to pair device.





## 4 Operation

For heat pump with Heating & Cooling function :



### Notice:

- 1.The weather forecast is just for reference.
- 2.APP is subject to updating without notice.



Notes:



Distributed by:

**Manufacturer:**



MICROWELL, spol. s r.o.  
SNP 2018/42, 927 01 Sala, Slovakia



tel.: +421/31/770 70 82



e-mail: [microwell@microwell.sk](mailto:microwell@microwell.sk)

[www.microwell.eu](http://www.microwell.eu)

Made in Slovakia

