



PREMIUM INVERTER POOL HEAT PUMP



USER MANUAL

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A. Foreword

Thank you for choosing a Sensa-Heat inverter pool heat pump, which is designed for more silent and energy saving user experience. It is an ideal way for green pool heating.

We hope you will enjoy using our heat pumps.

Thank you!

B. Safety Precautions

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

Environment friendly R32 Refrigerant is used for this heat pump

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.

	a. Keep the heat pump away from any potential fire source.
	b. It must be placed in well ventilated area; indoor or closed area is not allowed.
	c. Repair and disposal must be carried out by trained service personnel
	d. Vacuumize completely before welding. Welding can only be carried out by professional personnel in the service center.

2. Attention

- a. Please read the following instructions before installation, use and maintenance.
- b. Installation must be done by professional staff only in accordance with this manual.
- c. A leakage test must be performed after installation.
- d. Except for the methods recommended by the manufacturer, do not use any methods to accelerate the defrosting process or clean the frosted parts.
- e. If a repair is required, please contact the nearest after-sales service center. The repair process must be strictly in accordance with this manual. Repairs undertaken by non-professionals is prohibited.
- f. Set a comfortable water temperature to avoid overheating or overcooling.
- g. Please do not stack substances which will block air flow near the inlet or outlet area, otherwise the efficiency of the heat pump will be reduced or even stopped.
- h. Do not use or stock combustible gas or liquid such as thinners, paint, and fuel near the heat pump.
- i. To optimize the heating effect, please install heat preservation insulation on pipes between swimming pool and heat pump and use a recommended cover on the swimming pool.
- j. Connecting pipes between the swimming pool and heat pump should be $\leq 10\text{m}$.

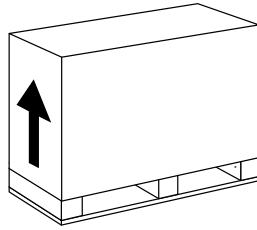
3. Safety

- a. Please keep the main power supply isolation switch out of reach of children.
- b. If power is cut during operation, and later power is restored, the heat pump will start up.
- c. Please isolate the main power supply during severe weather to prevent damage that may be caused by a lightning strike.
- d. Installation and repairs should be conducted in an area with good ventilation. Any ignition sources are prohibited during operation.
- e. A safety inspection must be carried out before the maintenance or repair of heat pumps with R32 gas to minimize risk.
- f. If R32 gas leaks during the installation process, cease all operations and call the service center.

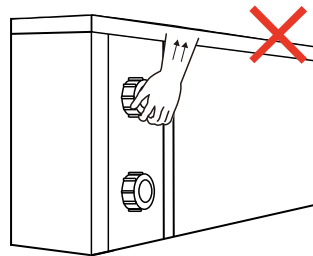
C. About Your Heat Pump

1. Transportation

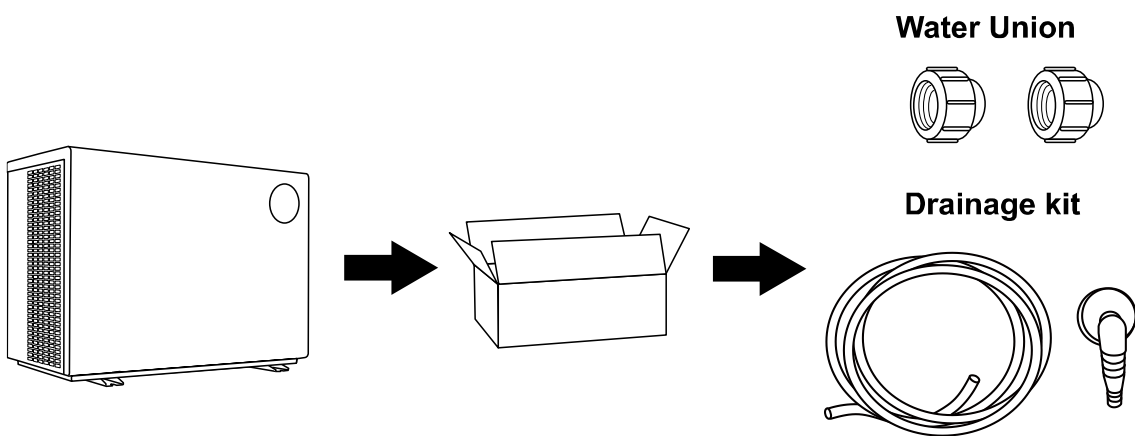
- a. Always keep upright



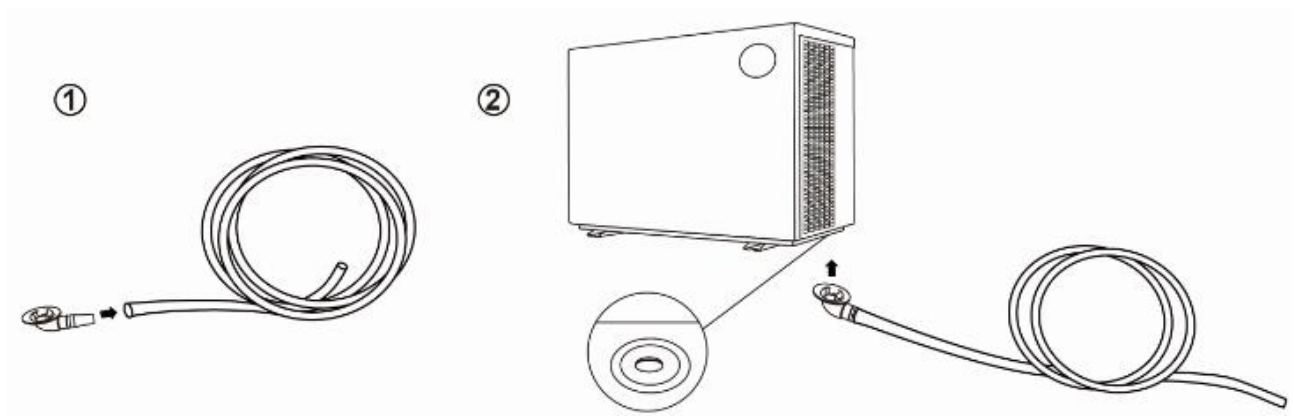
- b. Do not lift heat pump by the water unions
(The titanium heat exchanger inside the heat pump may be damaged)



2. Accessories



Connection of the condensate drainage kit:



3. Features

- a. DC Twin-rotary inverter compressor from Mitsubishi
- b. DC Brushless fan motor
- c. EEV Technology
- d. Reverse cycle defrosting
- e. High efficiency twisted titanium heat exchanger
- f. Sensitive and accurate temp control and water temp display
- g. High pressure and low-pressure protection
- h. Full protection on electrical system



4. Operating conditions and range

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

The heat pump will operate across an air temp range of $-10^{\circ}\text{C} \sim 43^{\circ}\text{C}$, (ideal operation range is between $15^{\circ}\text{C} \sim 25^{\circ}\text{C}$).

5. Introduction of different modes

- a. The heat pump has two modes: Boost and Silence.
- b. Both have different heating capacities.

Mode	Modes	Capacity
	Boost mode	Heating capacity: 20% to 100% capacity Intelligent optimization Fast heating
	Silence mode	Heating capacity: 20% to 80% capacity Sound level: 3dB (A) lower than Boost mode

6. Technical parameters

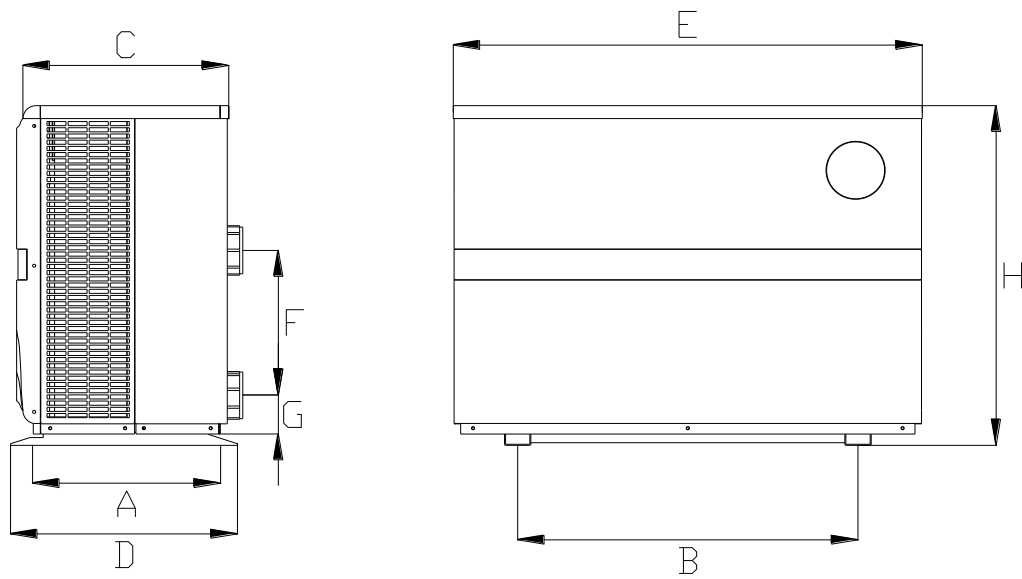
Model	HPPI09	HPPI13	HPPI17	HPPI21	HPPI28
PERFORMANCE CONDITION: Air 27°C/ Water 27°C/ Humid. 80%					
Heating capacity (kW)	9.0	13.0	17.5	20.8	27.8
COP Range	14~7.4	14.5~7.1	15.6~6.9	14.6~7.0	15.8~7.2
PERFORMANCE CONDITION: Air 15°C/ Water 26°C/ Humid. 70%					
Heating capacity (kW)	6.5	8.9	12.3	14.3	18.8
COP Range	7.3~4.7	7.5~4.9	7.7~4.9	6.9~4.9	7.8~4.9
TECHNICAL SPECIFICATIONS					
Advised pool volume (m ³)	20~45	35~65	40~80	50~95	60~120
Operating air temperature (°C)	-10°C~43°C				
Power supply	230V 1PH				
Rated input power(kW)	0.19~1.38	0.26~1.82	0.32~2.51	0.38~2.92	0.5~3.84
Rated input current(A)	0.83~5.98	1.13~7.83	1.39~10.9	1.65~12.7	2.17~16.7
Power cord(mm ²)	3X2.5	3X2.5	3X4	3X4	3X6
Sound level at 10m dB(A)	16.8~26.1	20.1~28.7	21.1~31.8	18.9~32.2	21.5~32.9
Advised water flux(m ³ /h)	2~4	4~6	6~8	8~10	10~12
Water connection (mm)	50				

Remarks:

This heat pump can 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 heat pump 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.

7. Dimensions



Size(mm) / Name / Model	A	B	C	D	E	F	G	H
HPPI09	410	645	390	430	890	250	75	657
HPPI13	410	645	390	430	890	280	75	657
HPPI17	410	710	390	430	1060	320	75	657
HPPI21	410	710	390	430	1060	390	75	757
HPPI28	410	710	390	430	1060	640	75	957

※ Above data is subject to modification without notice.

Note: The picture above is the specification diagram of the pool heat pump for technician's installation and layout reference only. The product is subject to adjustment periodically for improvement without further notice.

D. Installation Guidance

1. Installation reminder

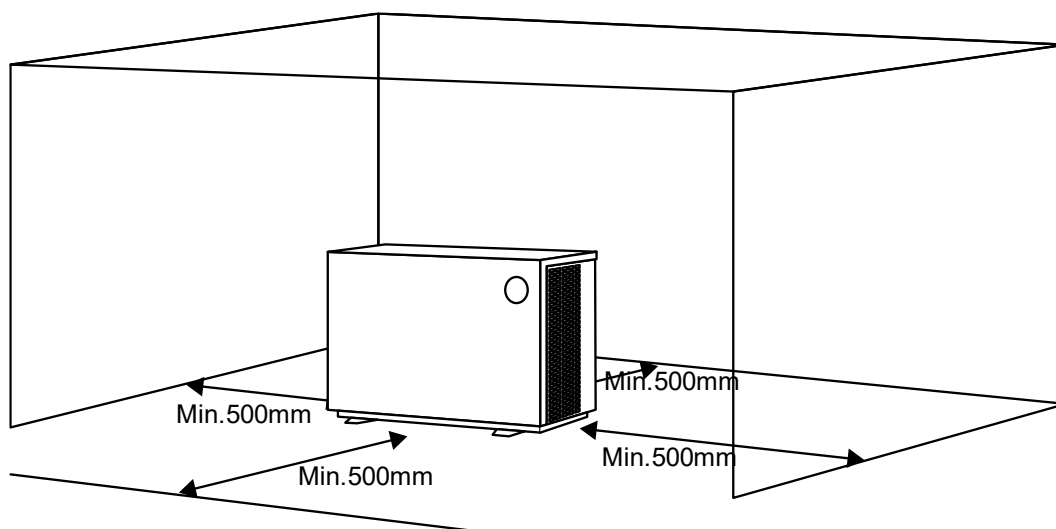
Only suitably qualified staff can install this heat pump. End users are not qualified to install by themselves, otherwise the heat pump may be damaged and pose a risk to the user's safety.

a. Location and clearances

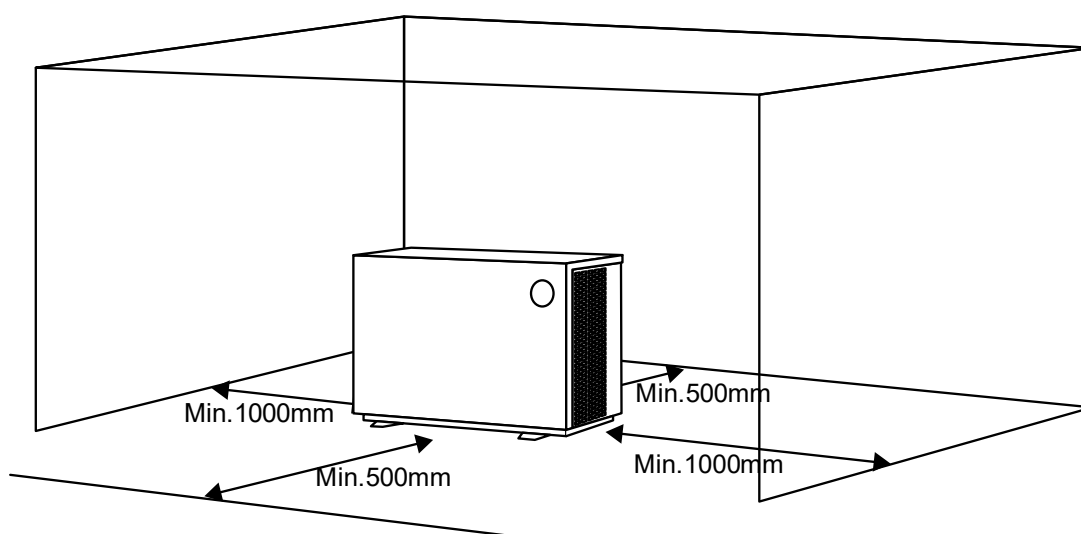


The inverter pool heat pump must be installed in a well-ventilated space.

For 17kw and below models



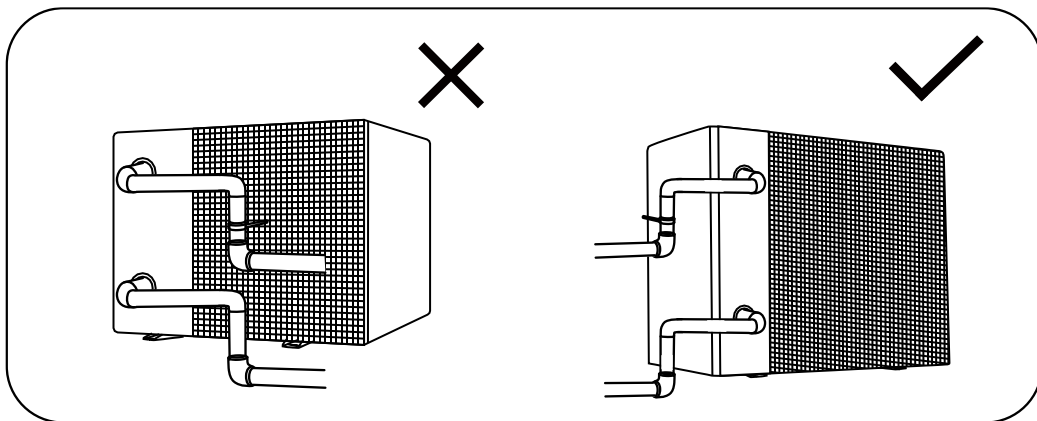
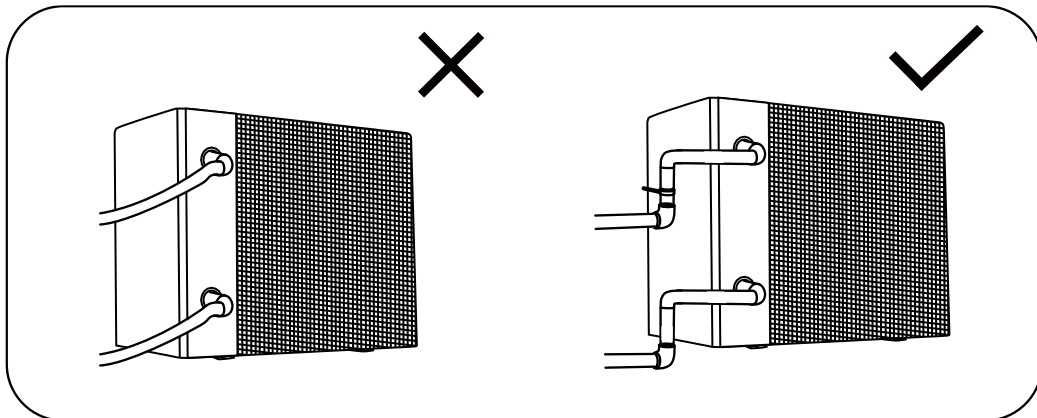
For 21kw and above models



b. Water pipe connections

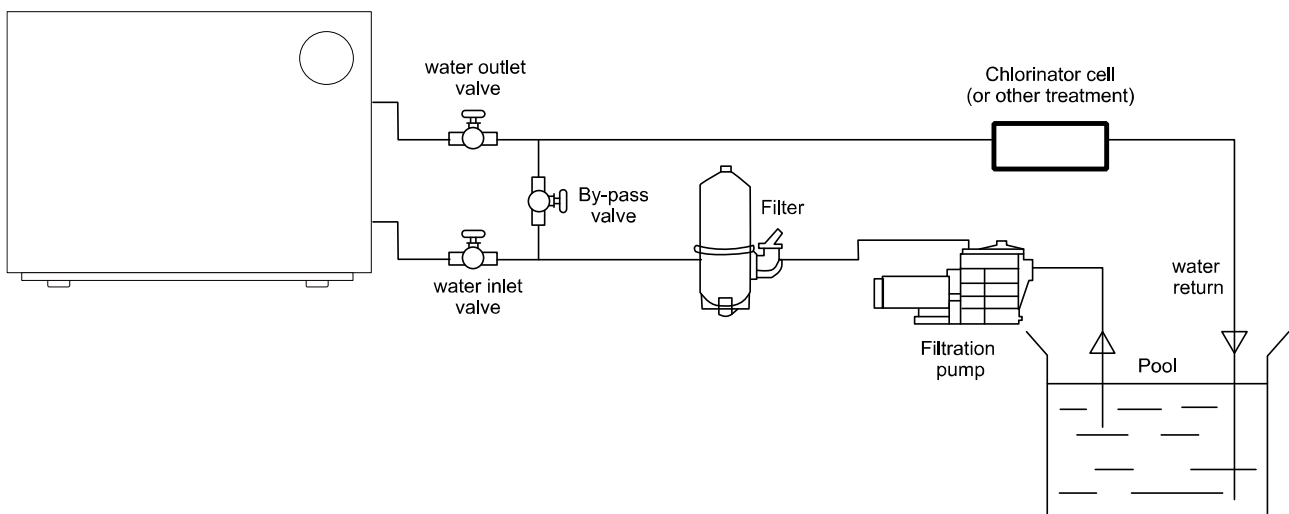


The inlet and outlet water unions must be connected using hard pipe with a PN12 rating.



DO NOT install water pipes in such a way that they pass behind the heat pump's evaporator. In the case this cannot be avoided, cover the pipes with thermal insulation foam.

c. Typical installation diagram



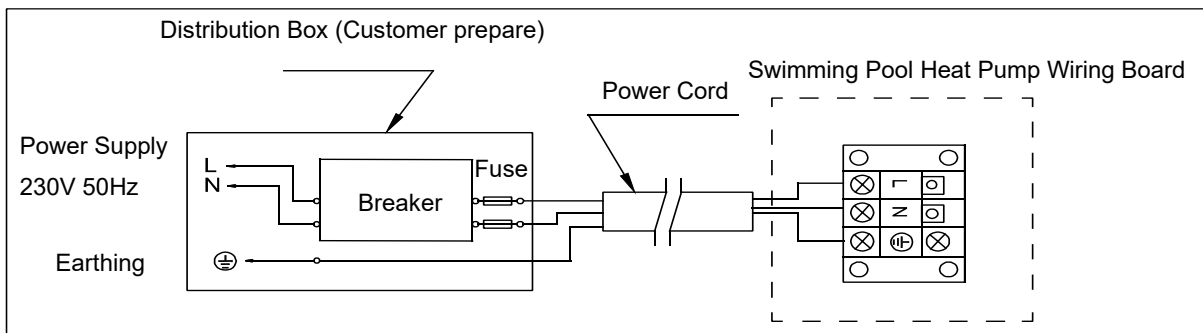
- 1) The mounting feet must be fixed by bolts (M10) to a concrete foundation or brackets. The concrete foundation must be solid and fastened; the bracket must be of the correct rating and antirust treated.
- 2) Please do not stack substances that will block air flow near the inlet or outlet area, and ensure no barrier is within 50cm behind the heat pump. Efficiency of the heat pump will be reduced or even stopped.
- 3) The machine needs an appended pump (supplied by the user). For recommended pump specifications please refer to the Technical Parameters.
- 4) When the machine is running, there will be condensation water discharged from the bottom, please pay attention to it. Place the drainage nozzle (accessory) into the hole and clip it in and connect a pipe to drain the condensation water out.

2. Wiring

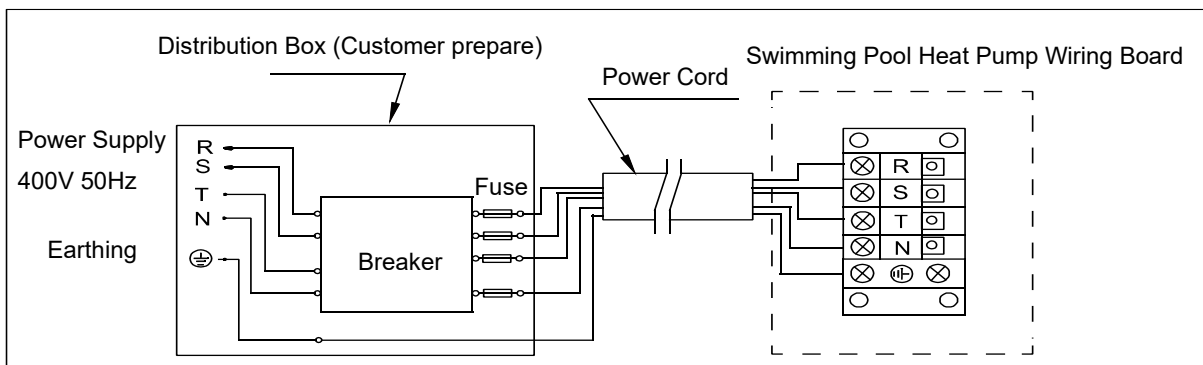
- a. Connect to an appropriate power supply, the voltage should comply with the rated voltage of the heat pump.
- b. Ensure the heat pump is earthed.
- c. Wiring must be handled by a professional technician according to the circuit diagram.
- d. Set leakage protector according to the local code for wiring (leakage operating current $\leq 30\text{mA}$).
- e. The layout of power cable and signal cable should ensure they do not cause interference.

3. Electrical wiring diagram


a. For power supply: 230V 50Hz



b. For power supply: 400V 50Hz



Note:

- 1)  Must be hard wired, plug is not allowed.
- 2) The swimming pool heat pump must be earthed.

4. References for protecting devices and cable specification

MODEL		HPPI09	HPPI13	HPPI17	HPPI21	HPPI28
Breaker	Rated Current (A)	10.5	14.5	18	21	24
	Rated Residual Action Current (mA)	30	30	30	30	30
Fuse (A)		10.5	14.5	18	21	24
Power Cord (mm ²)		3 x 2.5	3 x 2.5	3 x 4	3 x 4	3 x 6
Signal cable (mm ²)		3x0.5	3x0.5	3x0.5	3x0.5	3x0.5

※ Above data is subject to modification without notice.

Note: The above data is relevant to a 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 maximum.

E. Operation Guidance

1. Key function




Symbol	Heating & cooling models
	1. Power On/Off 2. Wi-Fi setting
	1. Lock/Unlock Screen 2. Heating mode (18-40°C) 3. Cooling mode (12-30°C) 4. Auto mode (12-40°C)
	1. Boost 2. Silence
	Temperature Setting

Attention:



- The controller has power-down memory function.
- The buttons will turn dark when it is locked.

2. Operating instructions



a. Screen Lock

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

b. Power On





Press “M” for 3 seconds to unlock screen, then press “” to power on machine.

c. Temperature Setting


Press “” and “” to display and set temperature.


d. Mode Selection

1) Heating/Cooling/Auto mode

Press “M” to switch among heating “”, cooling “” and automatic “” mode.

Heating mode “”: Water setting range(18-40℃)

Cooling mode “”: Water setting range(12~30℃)


Automatic heating/cooling mode “”: Water setting range(12~40℃)

* 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) Press “” to switch among boost mode “”, silence mode “”.

Default mode: boost 


Please choose boost mode  for initial heating





e. Wi-Fi “”

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

Connect Wi-Fi on mobile phone and input password, then control equipment by Wi-Fi. When APP connects Wi-Fi successfully, “” 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 “” and “” on touch controller simultaneously for 5 seconds to start forced defrosting, “” is flashing and defrost starts, “” stop flashing and defrosting stops.



(Remarks: the interval between manual defrosting should be more than 30 minutes.)

g. Round Controller Running Status Checking

1. Press “” for 5 seconds, it will enter running status checking.
2. During this time, the display will show the status symbol “C0” and its corresponding value.
3. Change status through “” and “”, the corresponding value also changes.
4. Press “” to quit “Running Status Checking” mode
5. Running status checking table:

Symbol	Content	Unit
C0	Inlet water temp	°C
C1	Outlet water temp	°C
C2	Ambient temp	°C
C3	Exhaust gastemp	°C
C4	Evaporator coil pipe temp	°C
C5	Return gas temp	°C
C6	Cooling coil pipe temp	°C
C9	Cooling plate temp	°C
C10	EEV opening angle	P

6. Temperature display conversion (Celsius/Fahrenheit)

When the screen is on, Press “” and “” simultaneously for 5 seconds to switch the display between degrees Celsius and degrees Fahrenheit.

Attention: The controller has power-down memory function.

F. Testing

1. Inspect heat pump before use

- a. Ensure ventilating device and outlets are operating adequately and are not obstructed.
- b. It is prohibited to install refrigeration pipe or components in corrosive environments.
- c. Inspect the electric wiring on basis of the electric wiring diagram and earthing connection.
- d. Confirm the main machine power switch is off.
- e. Inspect the air inlet and outlet.

2. Leakage detection notice and method

- a. Leakage checking is prohibited in closed areas.
- b. Any ignition source is prohibited during leakage inspection. A halide torch (or any other detector using a naked flame) shall not be used.
- c. Leakage detection fluids can be applied with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe.
- d. Vacuumize completely before welding. Welding can only be carried out by professional personnel in the service center.
- e. Please cease use when gas leakage occurs and contact an authorized service center nearby.



3. Trial

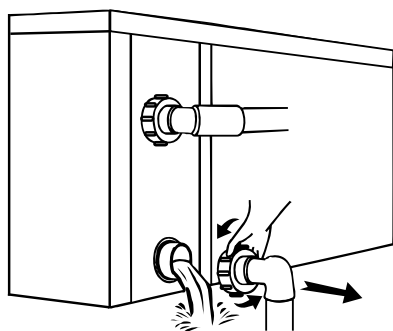
- a. The user must “Start the Water Pump before the Heat Pump”, and “Turn off the Heat Pump before the Water Pump”, or the machine may be damaged.
- b. Before starting the heat pump, please check for any leakage of water; and set suitable temperature in the thermostat, and then switch on power supply.
- c. To protect the swimming pool heat pump, the machine is equipped with a time delay start function, the fan will run 1 minute earlier than the compressor when starting the machine, and it will stop running 1 minute after the compressor when powering off the machine.
- d. After heat pump start up, check for any abnormal noise from the machine.

G. Maintenance



Isolate power supply before cleaning, examination and repairing

1. In winter season when you do not swim:
 - a. Cut off power supply to prevent any machine damage.
 - b. Drain water clear of the machine.
 - c. Cover the machine body when not in use.



!! Important:

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

If water in the machine freezes during winter season, the titanium heat exchanger may be damaged.

2. Please only clean this machine with household detergents or water.
3. Check bolts, cables, and connections regularly.
4. If repair is required, please contact authorized service center nearby.
5. Do not attempt to work on the equipment by yourself. Improper operation may cause damage.
6. To reduce risk, a safety inspection must be carried out before the maintenance or repairing of heat pumps with R32 gas.

H. Trouble Shooting for Common Faults

1. Repair Guidance

WARNING:



- a. If repair is required, please contact authorized service center nearby.
- b. Requirements for Service Personnel
- c. Any person who is involved with working on a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
- d. Do not attempt to work on the equipment by yourself. Improper operation may cause damage.
- e. Strictly comply with the manufacturer's requirements when charging R32 gas and equipment maintenance. This chapter focuses on special maintenance requirements for swimming pool heat pump with R32 gas. Please refer to the technical service manual for detailed maintenance operation.
- f. Vacuumize completely before welding. Welding can only be carried out by professional personnel in the service center

2. Failure codes and solution

Failure	Reason	Solution
Heat pump does not 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 do not work, please contact your installer with detailed information and your model number. Do not try to repair it yourself.		

Note: If the following conditions occur, please cease operation of the machine immediately, turn off the power supply and contact your dealer:

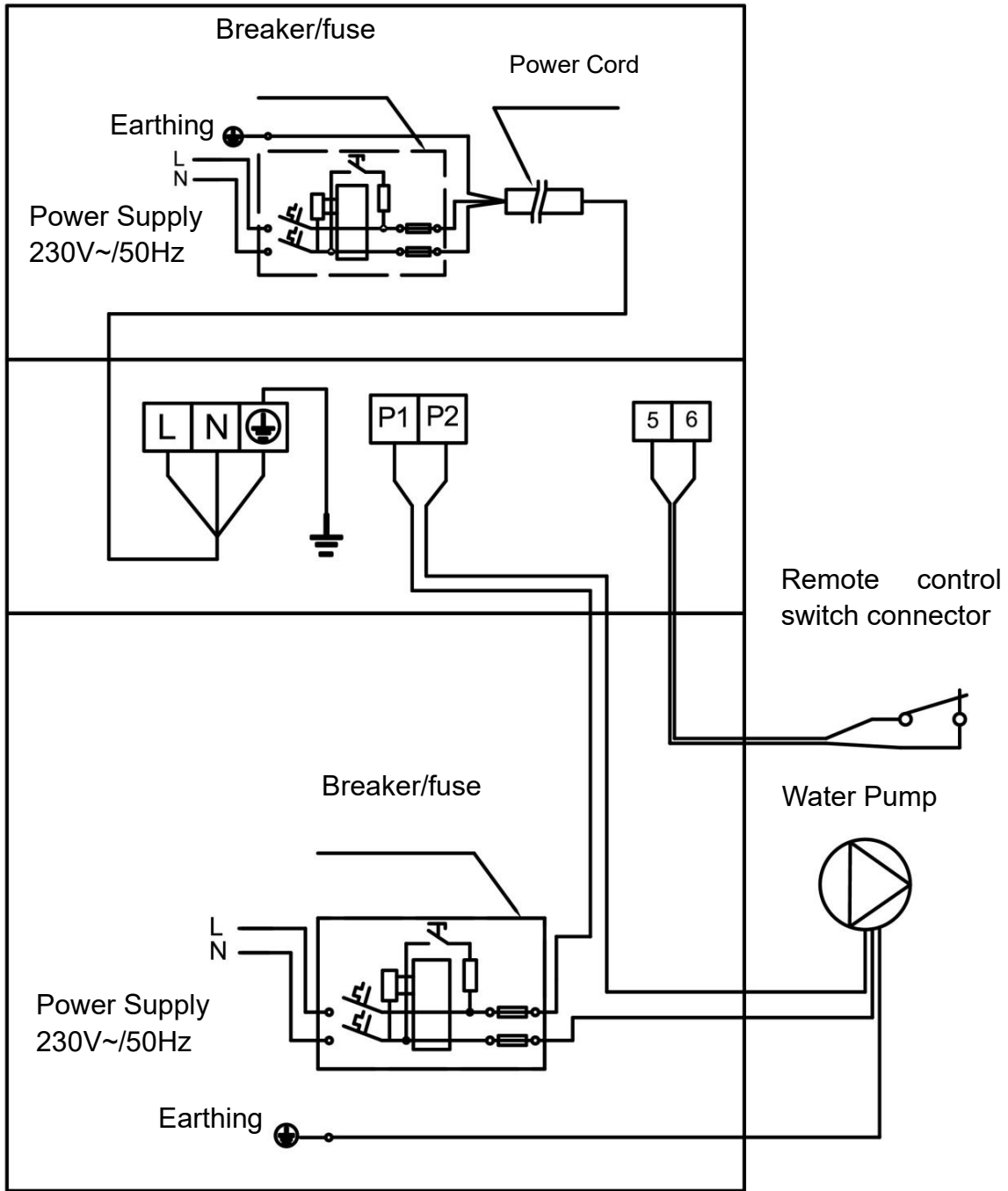
1. Inaccurate switch action.
2. The fuse is frequently broken, or leakage circuit breaker tripped.

Protection & Failure codes

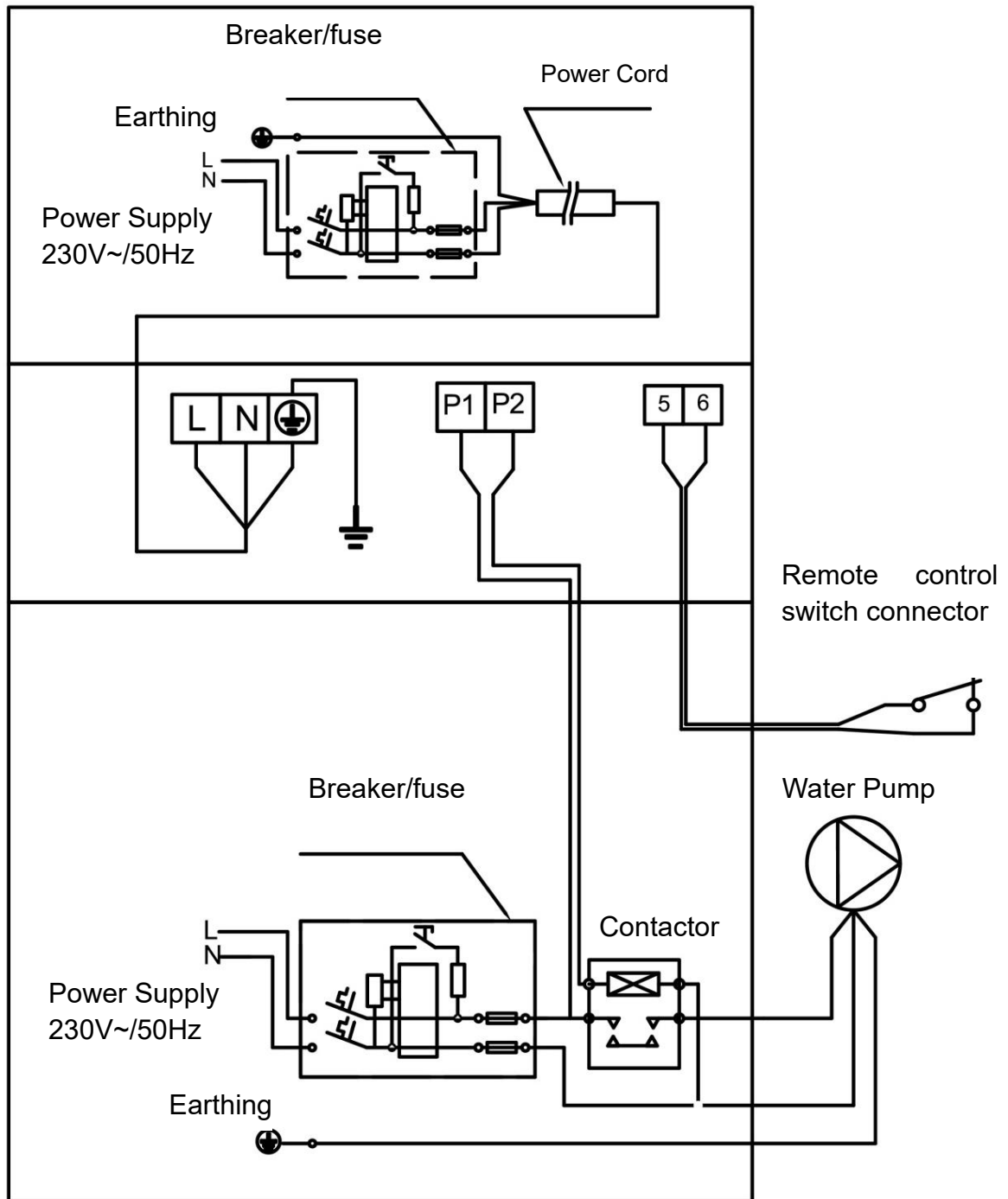
NO.	Display	Protection code description
1	E3	No water protection
2	E5	Power supply excess operation range
3	E6	Excessive temp difference between inlet and outlet water (Insufficient water flow protection)
4	Eb	Ambient temperature too high or too low protection
5	Ed	Anti-freezing reminder
NO.	Display	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	P0	Controller communication failure
8	P1	Water inlet temp sensor failure
9	P2	Water outlet temp sensor failure
10	P3	Gas exhaust temp sensor failure
11	P4	Evaporator coil pipe temp sensor failure
12	P5	Gas return temp sensor failure
13	P6	Cooling coil pipe temp sensor failure
14	P7	Ambient temp sensor failure
15	P8	Cooling plate sensor failure
16	P9	Current sensor failure
17	PA	Restart memory failure
18	F1	Compressor drive module failure
19	F2	PFC module failure
20	F3	Compressor start failure
21	F4	Compressor running failure
22	F5	Inverter board over current protection
23	F6	Inverter board overheat protection
24	F7	Current protection
25	F8	Cooling plate overheat protection
26	F9	Fan motor failure
27	Fb	Power filter plate No-power protection
28	FA	PFC module over current protection

I. Water Pump Control Connection

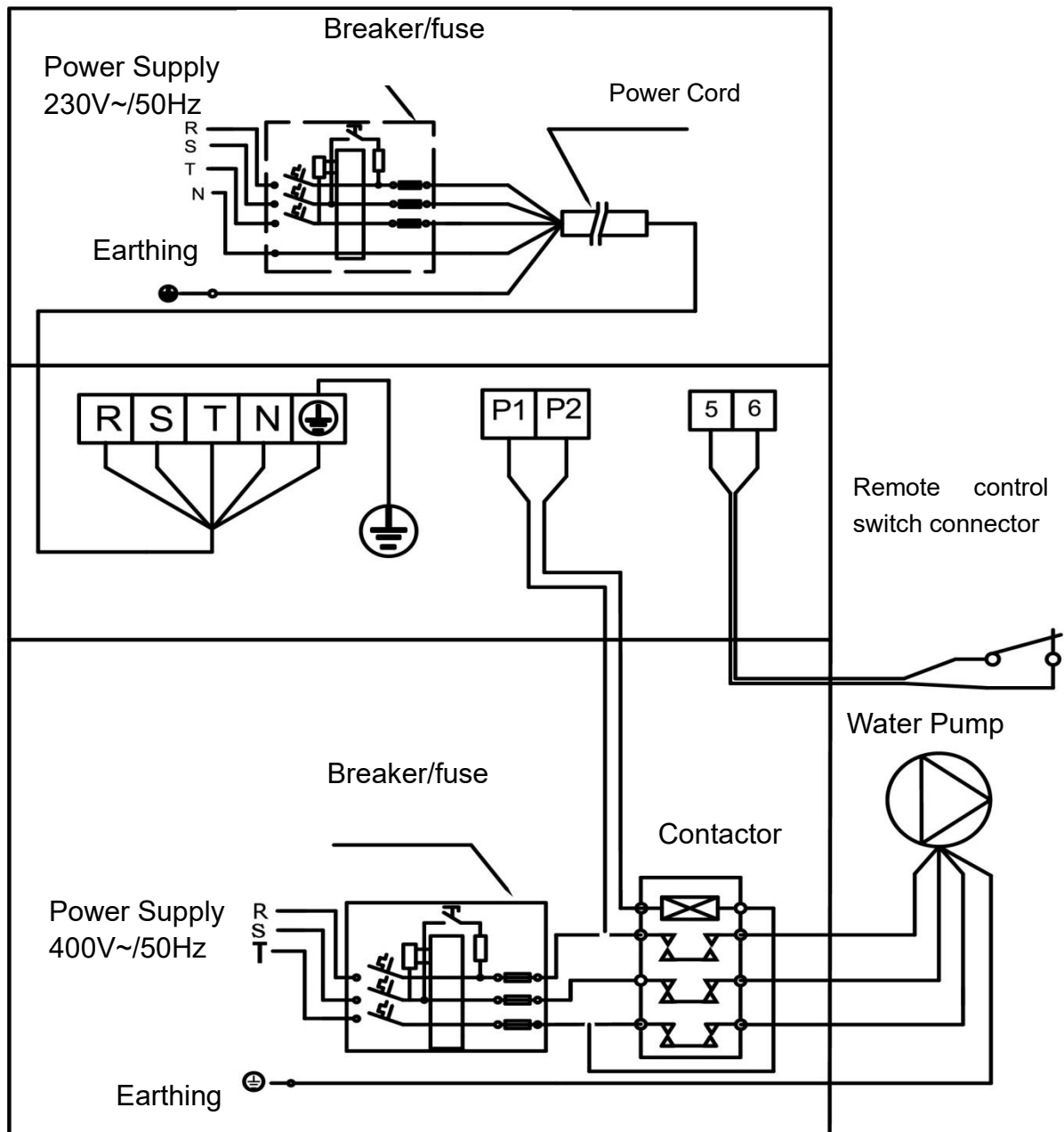
Water pump: 230V voltage, $\leq 500\text{W}$ capacity



Water pump: 230V voltage, $>500W$ capacity

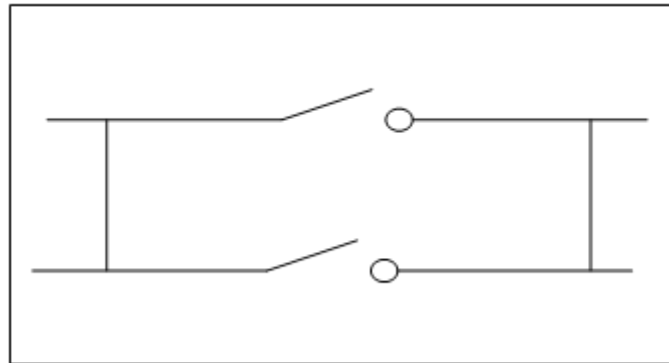


Water pump: 400V voltage



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.

J. Wi-Fi Operation

① APP Download



Android please download from

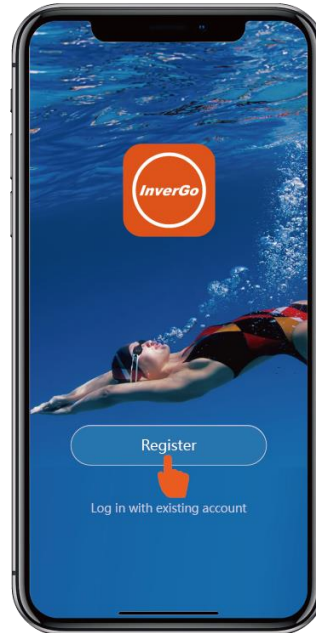


iOS please download from

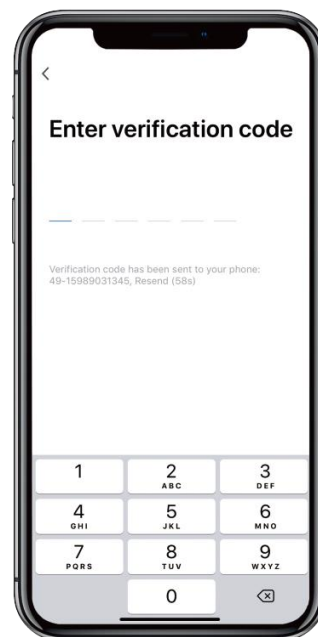
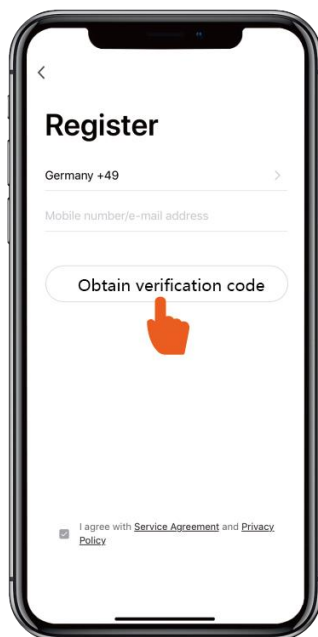


② Account Registration

1. Register by mobile or E-mail.

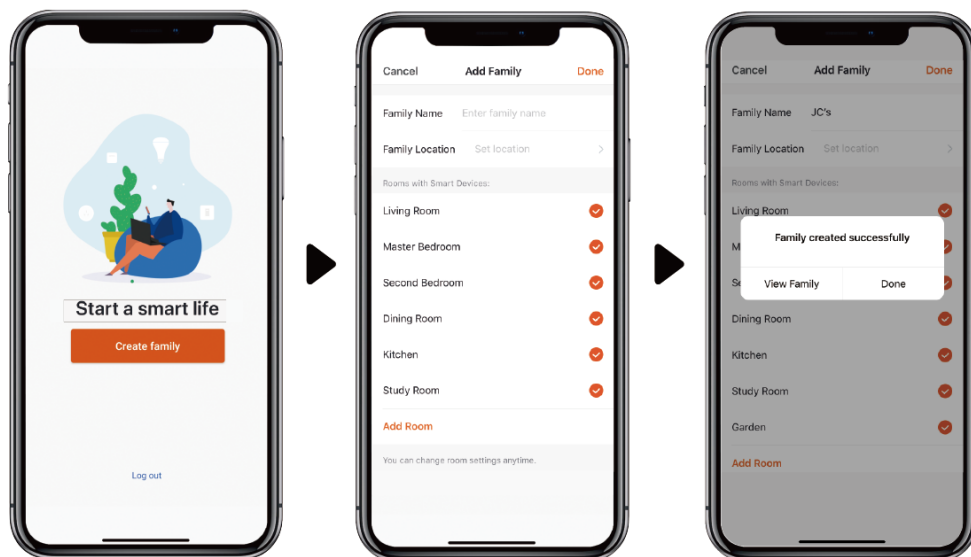


2. Mobile or E-mail registration.



3 Create Family

Please set family name and choose the room of device.



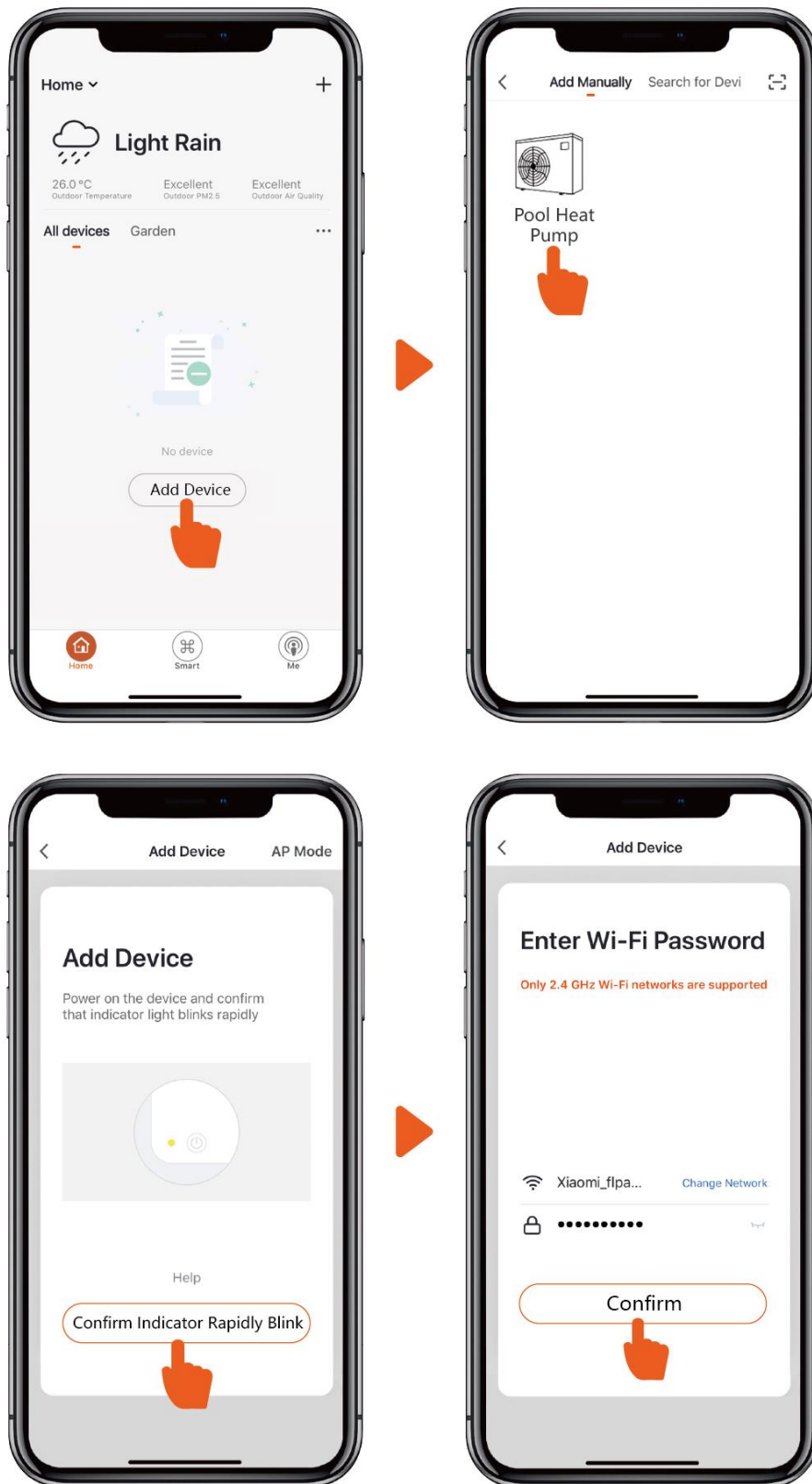
4 APP Pairing

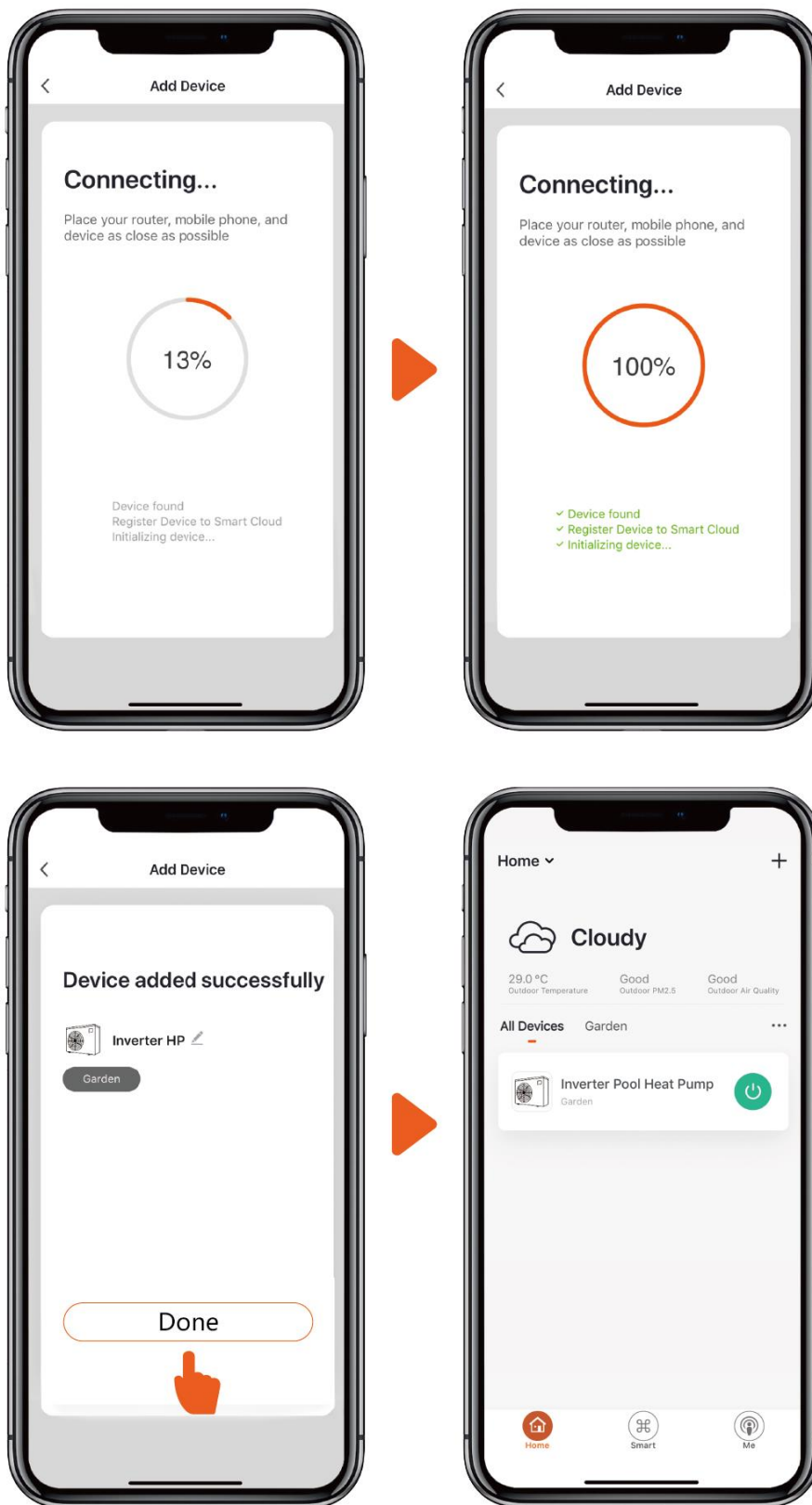
Please make sure you are connected to the Wi-Fi.

1. Press “ M” for 3 seconds to unlock the screen, press “ ” for 3 seconds then release, after hearing “Beep”, enter Wi-Fi password in APP. During connection, “ ” flashes, when the APP connects to the Wi-Fi successfully, “ ” will display.



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





5 Operation

1. For heat pump with Heating function only :

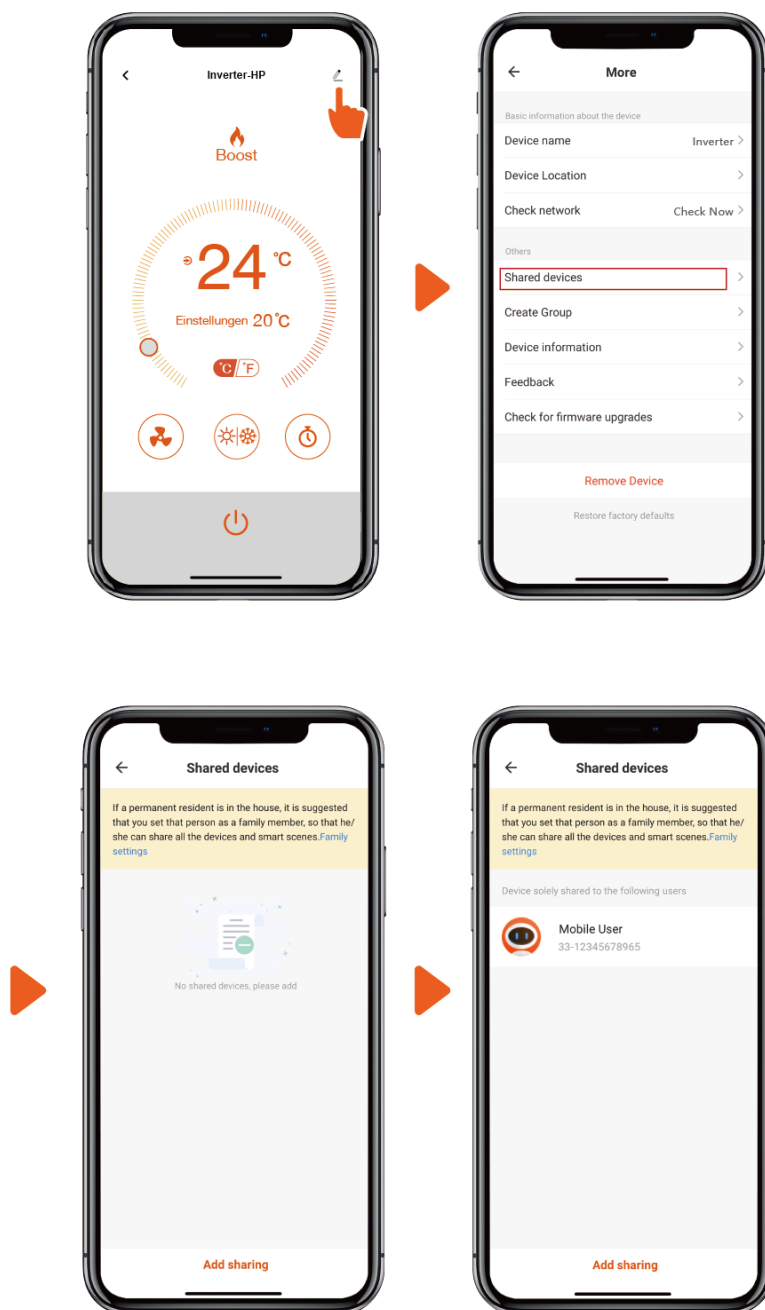


2. For heat pump with Heating&Cooling function :



⑥ Share Devices to Your Family Members

After pairing, if your family members also want to control the device.
Please let your family members register the APP first, and then the administrator
can operate as below:



Notice: The weather forecast is just for reference.
App is subject to updating without notice.

