



MR. PERFECT

InverPad® Turbo Technology for Pool Heat Pump



USER MANUAL

Table of contents

A. Foreword	1
B. Safety Precautions	2
1. Warning	2
2. Attention	3
3. Safety	3
C. About your heat pump	4
1. Transportation	4
2. Accessories	4
3. Features	5
4. Operating range	5
5. Introduction of different modes	5
6. Technical parameter	6
7. Dimension	7
D. Installation guidance	8
1. Installation reminder	8
2. Warning	9
3. Electric wiring diagram	10
E. Operation guidance	12
1. Key Function	12
2. Screen Display	13
3. Operation Instruction	14
F. Testing	18
1. Inspect heat pump before use	18
2. Leakage detection notice and method	18
3. Trial	18
G. Maintenance	19
H. Trouble shooting for common faults	20
I. Water pump control connection	22
J. Wi-Fi operation	26

A. Foreword

Thank you for choosing our 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'll 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 always 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. These signs are rare, but are extremely important.

	a. Keep the heat pump away from 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 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. 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 manual. All repair practice by non-professional is prohibited.
- f. Set proper temperature in order to get comfortable water temperature to avoid overheating or overcooling.
- g. Please don't stack substances, which will block air flow near inlet or outlet area, otherwise the efficiency of the heat pump will be reduced or even stopped.
- h. Don't use or stock combustible gas or liquid such as thinners, paint and fuel to avoid fire.
- i. In order to optimize the heating effect, please install heat preservation insulation on pipes between swimming pool and the heat pump, and please use a recommended cover on the swimming pool.
- j. Connecting pipes of the swimming pool and the heat pump should be $\leq 10\text{m}$.
- k. This unit can only be installed outdoors.
- l. This unit can only be connected to a power source with a single complete cord.

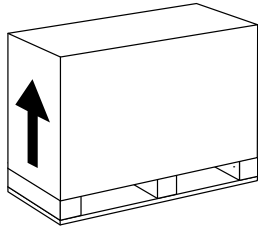
3. Safety

- a. Please keep the main power supply switch far away from the children.
- b. When a power cut happens during operating, and later the power is restored, the heat pump will start up.
- c. Please switch off the main power supply in lightning and storm weather to prevent from machine damage that caused by lightning.
- d. Installation and any repairing should be conducted in the area with good ventilation. The ignition source is prohibited during the operation.
- e. Safety inspection must be carried before the maintenance or repair for heat pumps with R32 gas in order to minimize the risk.
- f. If R32 gas leaks during the installation process, all operations must be stopped immediately and call the service center.

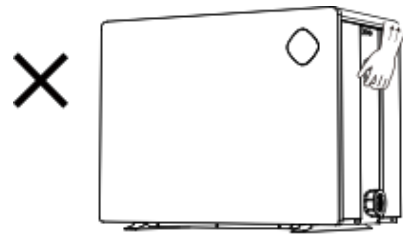
C. About your heat pump

1. Transportation

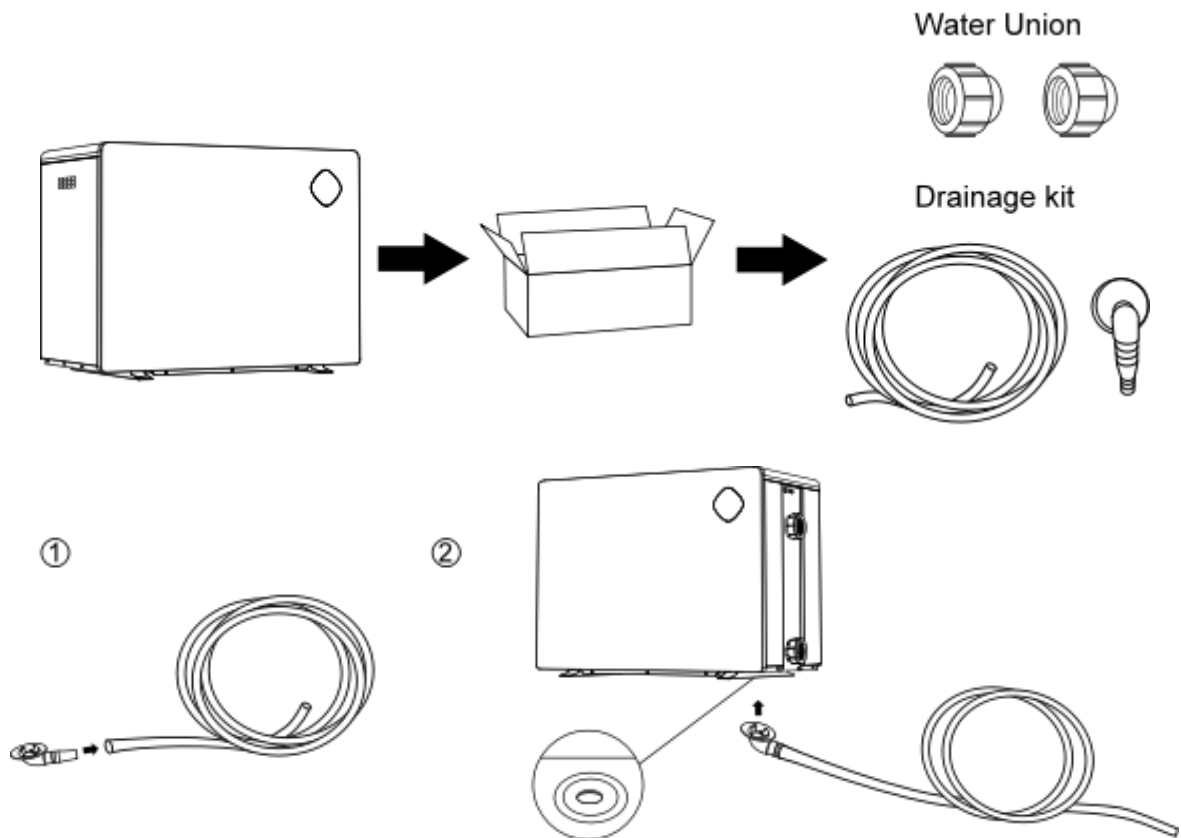
a. Always keep upright



b. Do not lift the water union
(Otherwise, the titanium heat exchanger may be damaged)



2. Accessories



3. Features

- a. Turbo fan
- b. DC Twin-rotary inverter compressor
- c. DC Brushless fan motor
- d. EEV Technology
- e. Reverse cycle defrosting with 4-way valve
- f. High-efficiency twisted titanium heat exchanger
- g. Sensitive and accurate temp control and water temp display
- h. High pressure and low-pressure protection
- i. Full protection on electrical system




4. Operating range

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

- a. The heat pump can work between air $-15^{\circ}\text{C}\sim 43^{\circ}\text{C}$,
 - b. Temperature of heating $18^{\circ}\text{C}\sim 40^{\circ}\text{C}$
 - c. Temperature of cooling $12^{\circ}\text{C}\sim 30^{\circ}\text{C}$
- Ideal operation range is between air $15^{\circ}\text{C} \sim 25^{\circ}\text{C}$.

5. Introduction of different modes

- a. The heat pump has three modes: Power, Perfect and Silence.
- b. They have different strengths under different conditions.

Mode	Modes	Strength
	Power mode	Heating capacity: 100% ~ 20% capacity Fast heating
	Perfect mode	Heating capacity: 80% ~ 20% capacity Automatic adjustment according to ambient and water temperature, intelligent optimization. High efficiency and energy saving
	Silence mode	Heating capacity: 50% ~ 20% capacity Operating at night.

6. Technical parameter

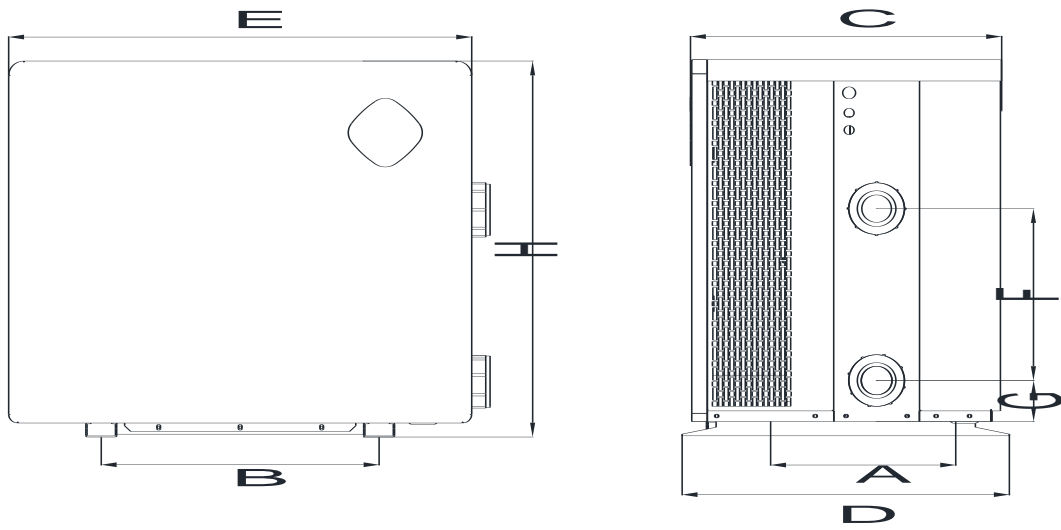
Model		MPC110	MPC140	MPC170	MPC220	MPC270	MPC320	MPC320s	MPC410s
Advised pool volume (m ³) *		20~45	30~55	35~65	40~80	50~95	60~120	60~120	85~160
PERFORMANCE CONDITION: Air 27°C/ Water 27°C/ Humid. 80%									
Perfect Mode	Heating capacity (kW)	9.0	10.8	13.4	17.5	20.6	26.8	26.8	34.5
	COP	15.0~7.3	15.0~7.4	15.0~7.1	15.5~7.4	15.2~7.3	16.0~7.2	15.8~7.2	16.0~7.0
	Average COP	11.4	11	11.1	11.8	11.5	11.6	11.6	11.5
Power Mode	Heating capacity (kW)	11	13.8	17	22	26.5	31.5	31.5	40.5
PERFORMANCE CONDITION: Air 15°C/ Water 26°C/ Humid. 70%									
Perfect Mode	Heating capacity (kW)	6.2	7.6	9.2	12.4	14.4	18	18	23.9
	COP	7.5~5.0	7.6~5.1	7.8~5.0	8.2~5.1	7.9~5.2	8.0~5.2	8.0~5.0	8.3~5.1
	Average COP	6.7	6.5	6.5	7	6.8	6.9	7	7
Power Mode	Heating capacity (kW)	7.7	9.2	11.5	15	18	21.8	22.1	29
PERFORMANCE CONDITION: Air 35°C/ Water 28°C/ Humid. 80%									
Cooling capacity (kW)		4.1	5.6	6.5	8.1	10.2	12.2	12.3	15.0
Operating air temperature (°C)		-15°C~43°C							
Power supply		230V 1Ph						400V 3Ph	
Rated input power (kW)		0.24~1.79	0.29~2.14	0.36~2.67	0.45~3.33	0.54~4.00	0.59~4.36	0.60~4.42	0.78~5.8
Input power at 50% speed (kW)		0.46	0.58	0.71	0.89	1.06	1.30	1.29	1.71
Rated input current (A)		1.05~7.79	1.26~9.3	1.57~11.63	1.96~14.49	2.35~17.39	2.56~18.96	0.86~6.41	1.13~8.41
Sound level at 1m dB(A)		36.3~44.5	36.5~45.9	39.3~46.7	39.5~49.8	39.8~50.2	40.3~50.8	40.5~50.9	40.6~51.3
Sound level 50% at 1m dB(A)		38.4	40.3	42.2	43.1	43	45.1	45.6	45.7
Sound level at 10 m dB(A)		16.3~24.5	16.5~25.9	19.3~26.7	19.5~29.8	19.8~30.2	20.3~30.8	20.5~30.9	20.6~31.3
Advised water flux (m ³ /h)		2~4	3~4	4~6	6~9	8~10	10~12	10~12	12~18
Water connection (mm)		50							

Remarks:

This heat pump is able to perform normal within air temp -15° 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. Dimension



Size(mm) / Name / Model	A	B	C	D	E	F	G	H
MPC110	510	450	504	530	750	300	75	656
MPC140	510	450	504	530	750	280	75	656
MPC170	510	540	504	530	840	350	75	656
MPC220	510	680	504	530	980	460	75	756
MPC270	520	760	514	540	1135	460	75	756
MPC320	520	760	512	540	1029	640	75	1107
MPC320s	520	760	512	540	1029	640	75	1107
MPC410s	520	760	512	540	1139	650	75	1106

※ Above data is subject to modification without notice.


Note: Above swimming pool heat pump specification drawing is for installation reference only to technical staff.

D. Installation guidance

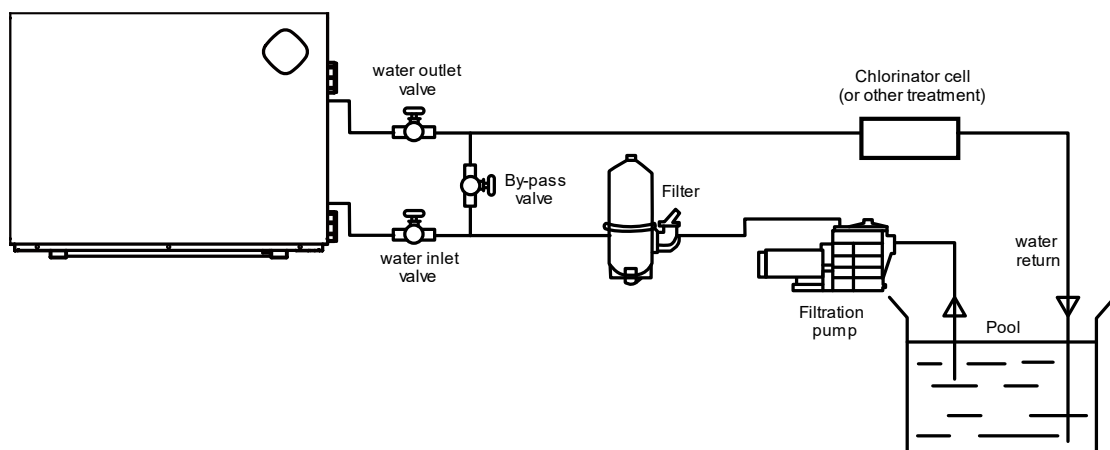
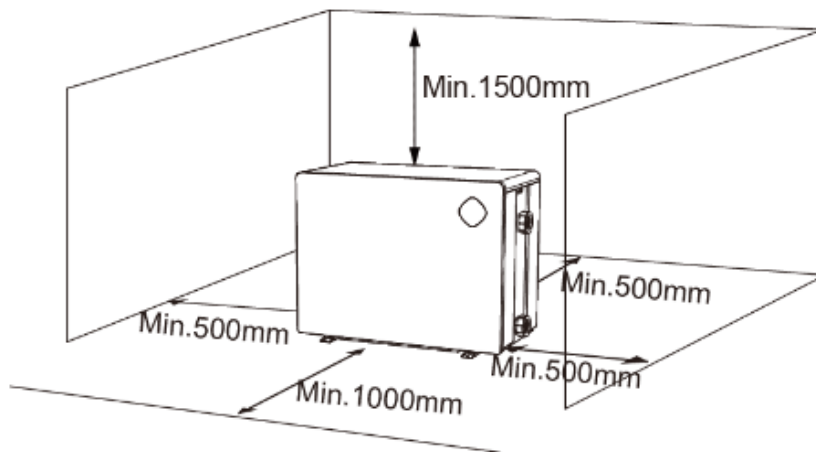
1. Installation reminder

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. Installation distance, drainpipe installation and water pipe connection

 The inverter pool heat pump should be installed in a good ventilation place. The distance should be greater than following;


Installation distance

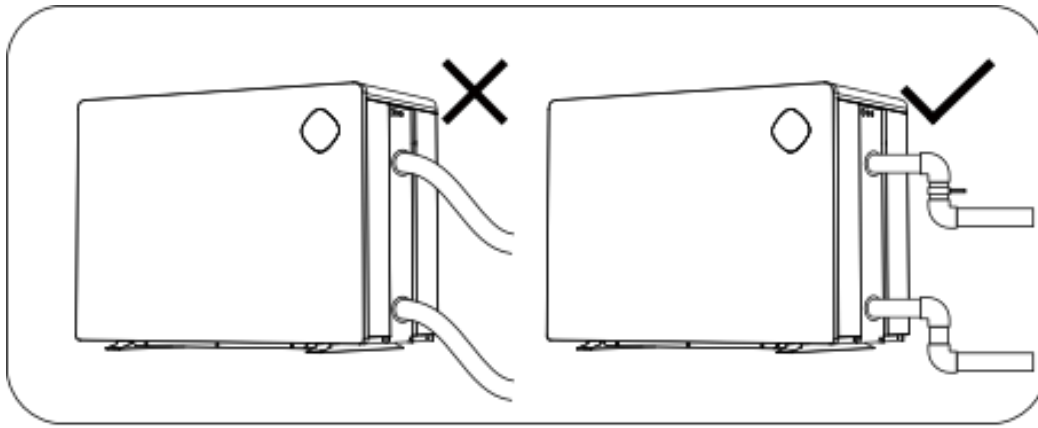


- 1) The frame must be fixed by bolts (M10) to concrete foundation or brackets. The concrete foundation must be solid and fastened; the bracket must be strong enough and antirust treated;

- 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 machine, or it will affect the efficiency of the heat pump and even stop the machine;
- 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. Water pipe connection

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

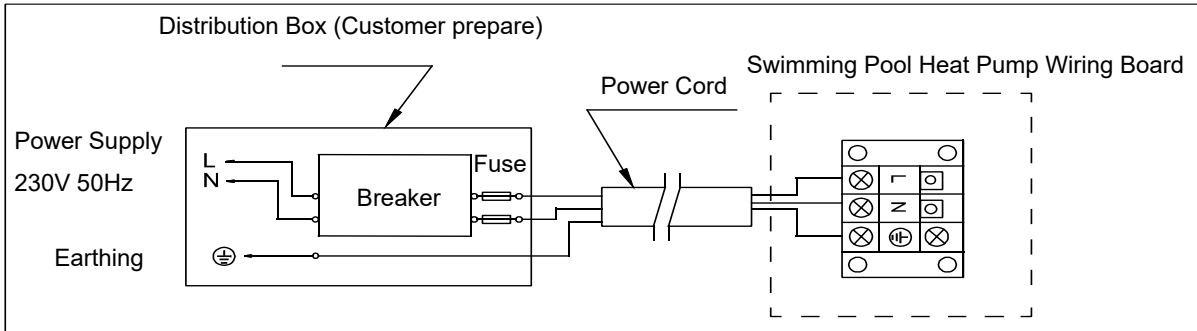


2. Warning

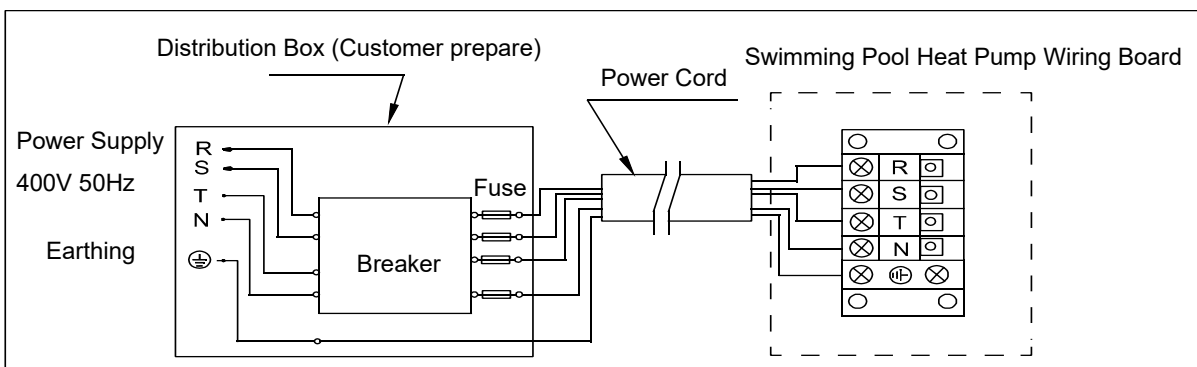
- a. Connect to appropriate power supply, the voltage should comply with the rated voltage of the products.
- b. Earth the machine well.
- c. Wiring must be handled by a professional technician according to the circuit diagram.
- d. Set leakage protector according to the local code for wiring (leakage operating current $\leq 30\text{mA}$).
- e. The layout of power cable and signal cable should be orderly and not affecting each other; the cross-sectional area of the cables can be appropriately enlarged according to the environmental conditions (such as ambient temperature, direct sunlight, rainfall, network voltage, cable length)

3. Electric 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 well.

4. References for protecting devices and cable specification

MODEL		MPC110	MPC140	MPC170	MPC220	MPC270	MPC320	MPC320S	MPC410S
Breaker	Rated Current (A)	12	13	16	18	20	25	10	12
	Rated Residual Action Current (mA)	30	30	30	30	30	30	30	30
Fuse (A)		12	13	16	18	20	25	10	12
Power Cord (mm ²)		3x2.5	3x2.5	3x2.5	3x4	3x4	3x6	5x2.5	5x2.5
Signal Cable (mm ²)		3x0.5	3x0.5	3x0.5	3x0.5	3x0.5	3x0.5	3x0.5	3x0.5
Maximum Current (A)		9	11	13	16	18	21	8.0	10.5







※ Above data is subject to modification without notice.

Note: Above data is adapted to power cord < 10m. If power cord is 10m ~ 40m, the wire diameter must be increased. The signal cable can be extended to 50m maximum.

E. Operation guidance

1. Key Function



สัญลักษณ์	โหมดทำความร้อนและความเย็น
	<ol style="list-style-type: none"> เปิด / ปิด เครื่อง การตั้งค่า WIFI
	<ol style="list-style-type: none"> ล๊อค / ปลดล๊อคหน้าจอ โหมดทำความร้อน (18-40°C) โหมดทำความเย็น (12-30°C) โหมดอัตโนมัติ (12-40°C)
	 <ol style="list-style-type: none"> โหมดแรงประสิทธิภาพ โหมดสมบูรณ์ โหมดเงียบ
 	<ol style="list-style-type: none"> การตั้งค่าอุณหภูมิ

Attention:

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

2. Screen Display

a. Plugged without turning on



Power, Perfect & Silence display[⌂]

Inlet water temperature[⌂]




Outlet water temperature[⌂]


	โหมดทำความร้อน
	โหมดทำความเย็น
	โหมดอัตโนมัติ
	เปอร์เซ็นต์ของความเร็วในการทำงาน
	การเชื่อมต่อ WIFI
	สัญลักษณ์แสดงน้ำเข้า
	สัญลักษณ์แสดงน้ำออก


3. Operation Instruction




a. Screen Lock

- 1) There is automatic screen lock function. No operation for more than 30 seconds, screen will automatically lock, and screen will dim while the lock button will light on, and other button light will be off.



- 2) Press “” for 3 seconds to unlock the screen; screen and buttons will light on.

- 3) Press “” for 3 seconds to lock the screen; screen will be dark; lock button lights on and other buttons will light off.



- 4) Only “” works under off-screen; other buttons work after screen on.

- 5) Lock Period: only “” lights on. If with Wi-Fi, “” and “” light on.

b. Power On

Press “” for 3 seconds to unlock screen. Press “” to power on machine.


c. Temperature Setting


Press “” and “” to display and set temperature under screen on.


d. Mode Selection

1) Heating/Cooling/Auto

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

1) Heating mode “”: Water temperature setting range(18-40°C)





2) Cooling mode “”: Water temperature setting range(12~30°C)

3) 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.

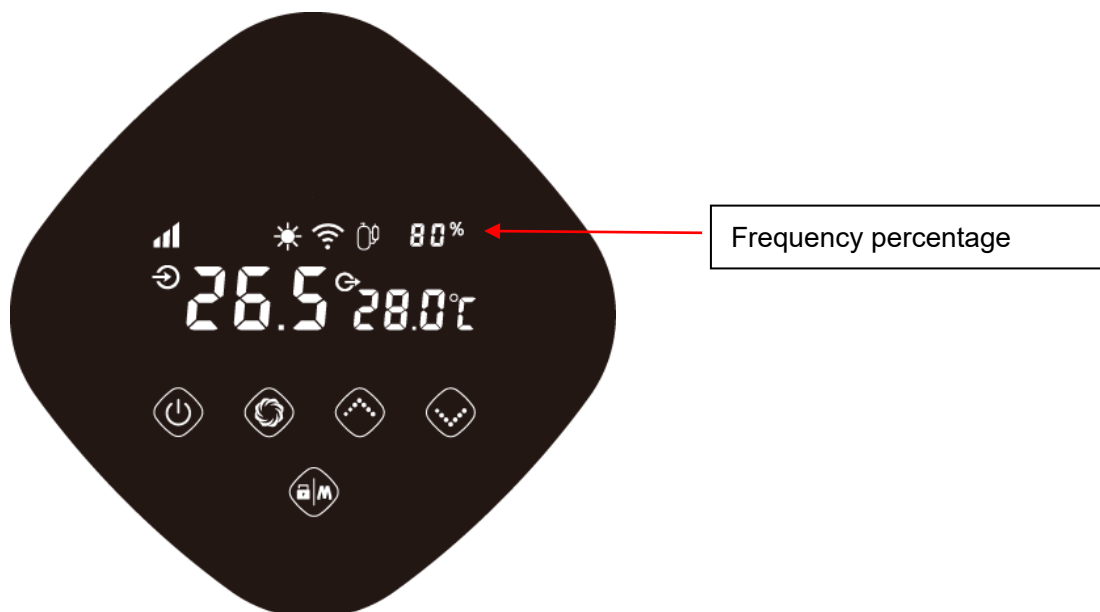
e. Power/Perfect/ Silence mode

Heating mode: Press “” to switch among Power mode , Perfect mode  and Silence mode .

Cooling and Auto mode: only support Power mode , Perfect mode .




f. Operating frequency

Compressor icon lights on during operation. Operation frequency speed will be showed on screen as below:



g. Wi-Fi


1) Wi-Fi connection

When the screen is on, press "" for 3 seconds, after "" 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, "" lights on.




2) WIFI reset (WIFI password change or the network configuration change)

Press "" for 10 seconds, after "" slowly flashing for 60s, and lights off.

Clear configuration records and repeat step 1).

3) "" will always on after connection.

h. 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.


(Remarks: the interval between manual defrosting should be more than 35 minutes.)



Operation and end way of Automatic and Manual defrosting is same.


i. Advanced applications (Professional operation)

1) Running Status Checking



Press “” for 5 seconds to enter running status checking. During this time, the display will show the

status symbol “C0” and its corresponding value. Change status through “” and “” to check

corresponding value. Press “” to quit “Running Status Checking”.

Running status checking table:

Symbol	Content	Unit
C0	Inlet water temp	°C
C1	Outlet water temp	°C
C2	Ambient temp	°C
C3	Exhaust gas temp	°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
C11	DC motor fan speed	r/min

F. Testing

1. Inspect heat pump before use

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

2. Leakage detection notice and method



- a. Leakage checking is prohibited in closed area.
- b. The ignition source is prohibited during the 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 service center.
- e. Please stop using while gas leakage occurs, and contact professional personnel in service center.

3. Trial

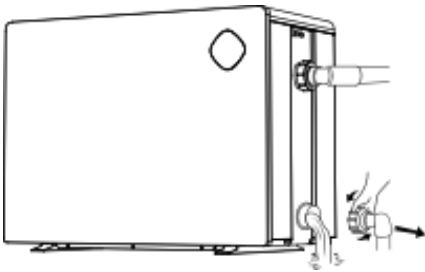
- a. The user must "Start the Pump before the Machine, and Turn off the Machine before the Pump", or the machine will be damaged.
- b. Before start the heat pump, please check for any leakage of water and set the appropriate temperature, then switch on the power.
- c. In order to protect the swimming 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.
- d. After the swimming pool heat pump start up, please kindly checking for any abnormal noise from the machine.

G. Maintenance



“CUT OFF” power supply of the heat pump before cleaning, examination and repairing

1. In winter season when you don't 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.

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

2. Please clean this machine with household detergents or clean water, NEVER use gasoline, thinners, or any similar fuel.
3. Check bolts, cables, and connections regularly.
4. If repair or scrap is required, please contact authorized service center nearby.
5. Do not attempt to work on the equipment by yourself. Improper operation may cause danger.
6. In case of risking, safety inspection must be carried before the maintenance or repairing for heat pumps with R32 gas.

H. Trouble shooting for common faults

1. Repairing Guidance



WARNING:

a.If repair or scrap is required, please contact authorized service center nearby.

b.Requirements for Service Personnel

- c. Any person who is involved with working on or breaking into 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 danger.
- 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 service center.

2. 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:

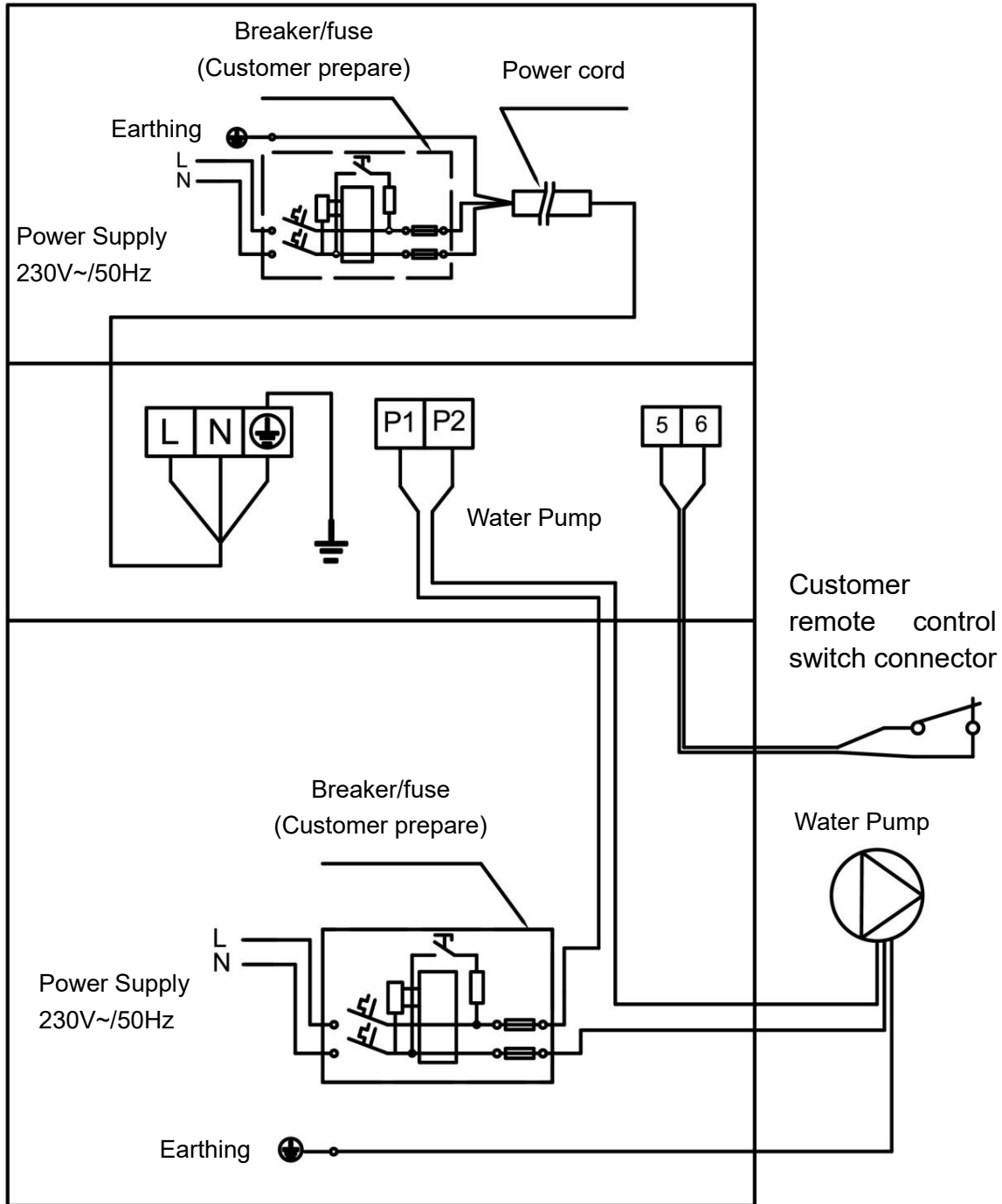
1. Inaccurate switch action.
2. The fuse is frequently broken or leakage circuit breaker jumped.

Protection & Failure code

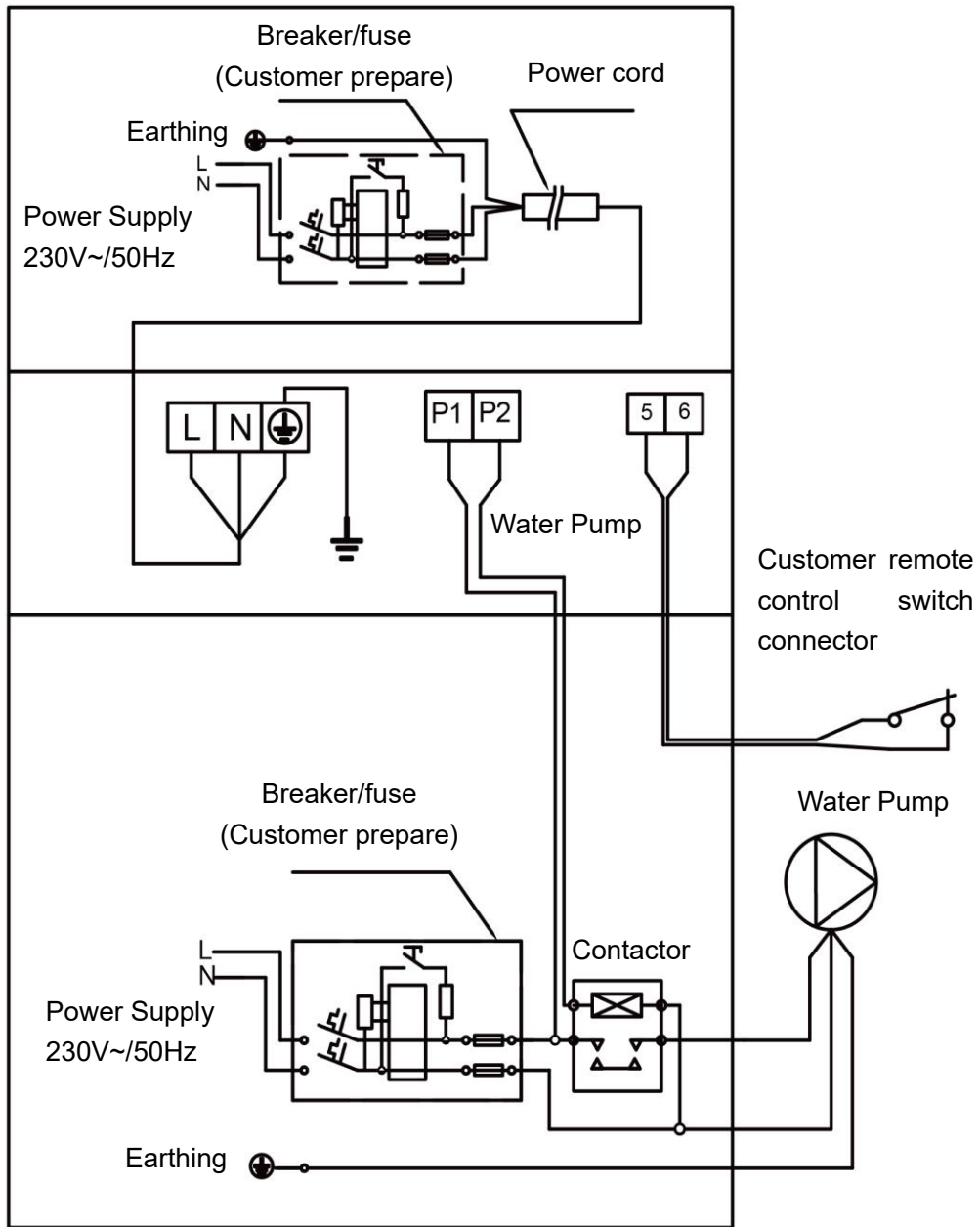
NO.	Display	Protection code description
1	E3	No water protection
2	E5	Power supply excesses operation range (not failure)
3	E6	Excessive temp difference between inlet and outlet water(Insufficient water flow protection)
4	Eb	Ambient temperature too high or too low protection (not failure)
5	Ed	Anti-freezing reminder (not failure)
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	Heat exchanger overheat protection/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 temp. sensor failure
16	P9	Current sensor failure
17	PA	Restart memory failure
18	F1	Compressor driver 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

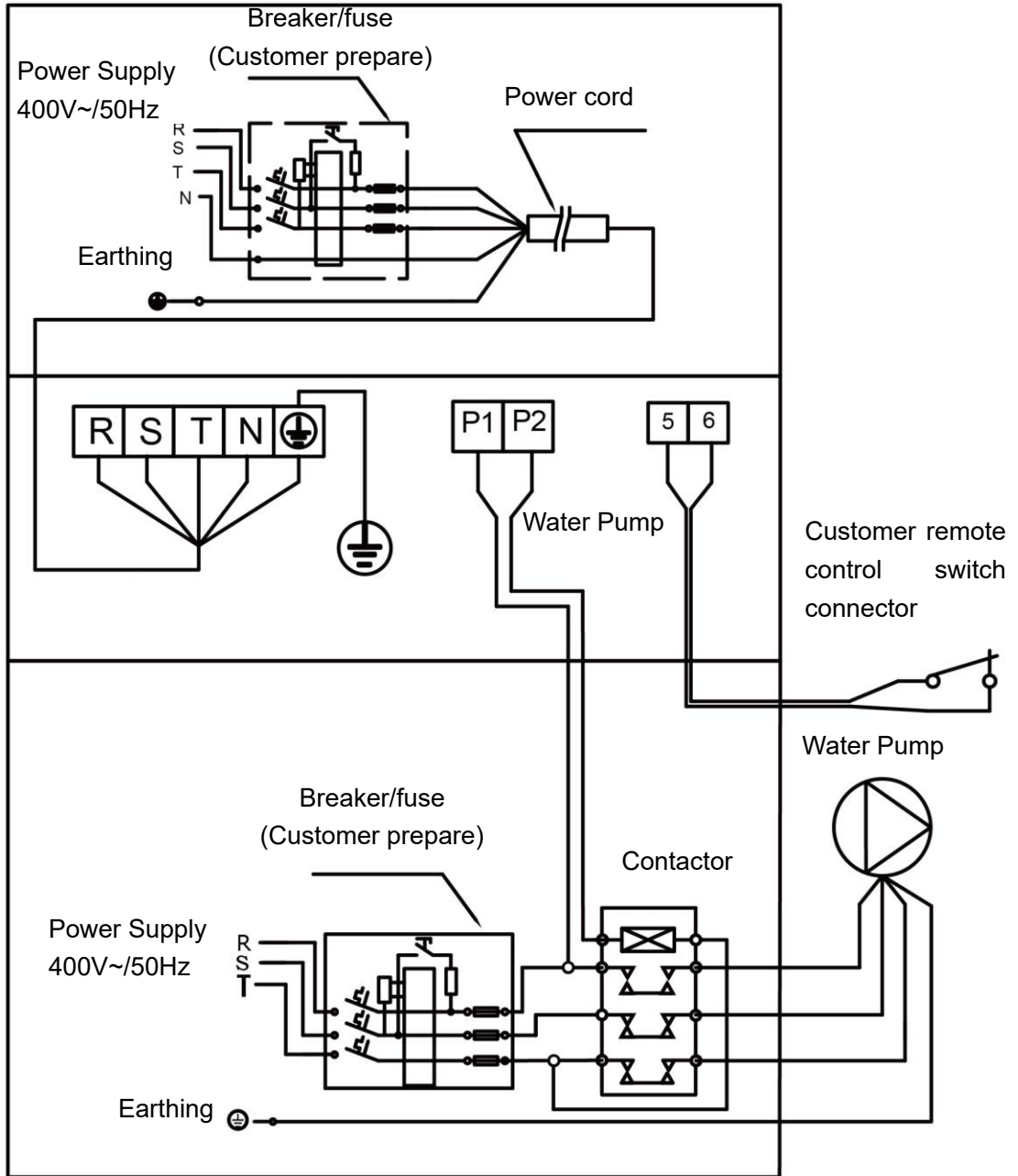
Water pump: 230V voltage, $\leq 500W$ capacity



Water pump: 230V voltage, >500W capacity

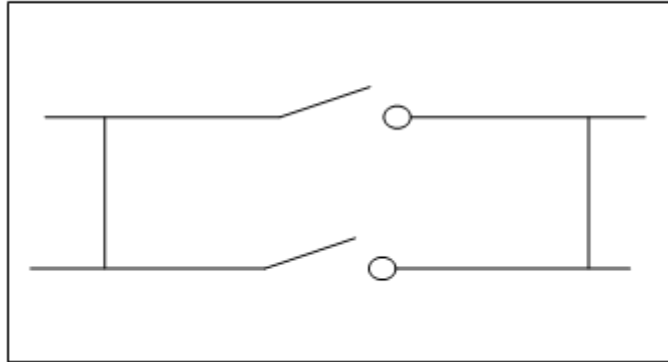


Water pump: 400V voltage



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 InverGo Download



Android

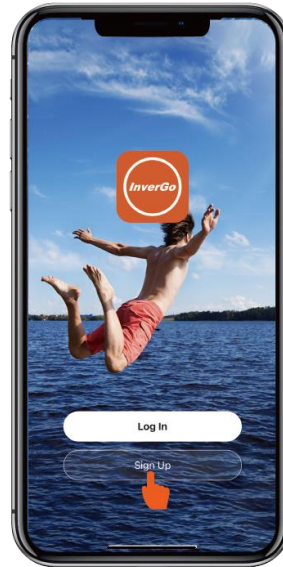


iOS

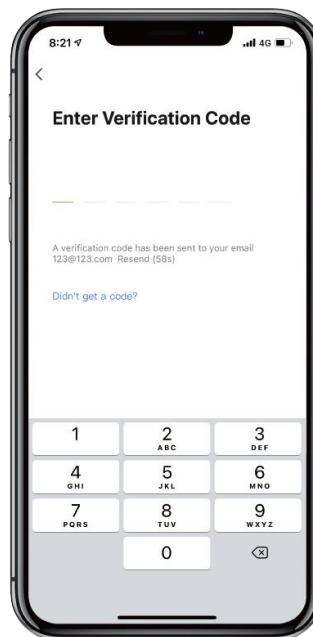
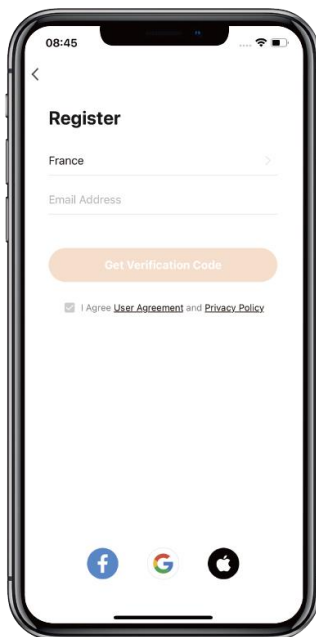


② Account Registration

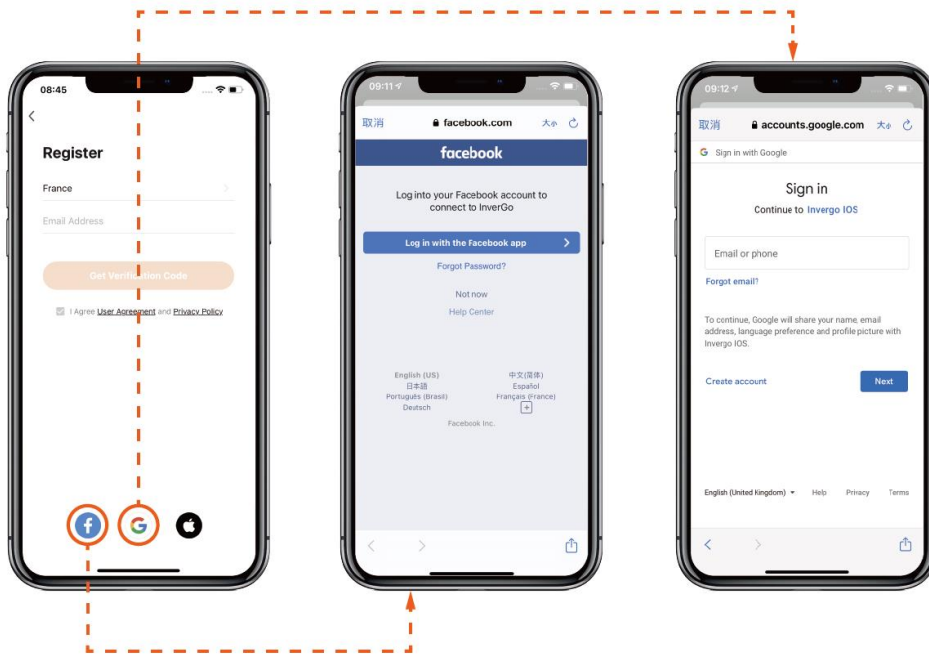
Register by e-mail or third-party application.



a. E-mail registration.

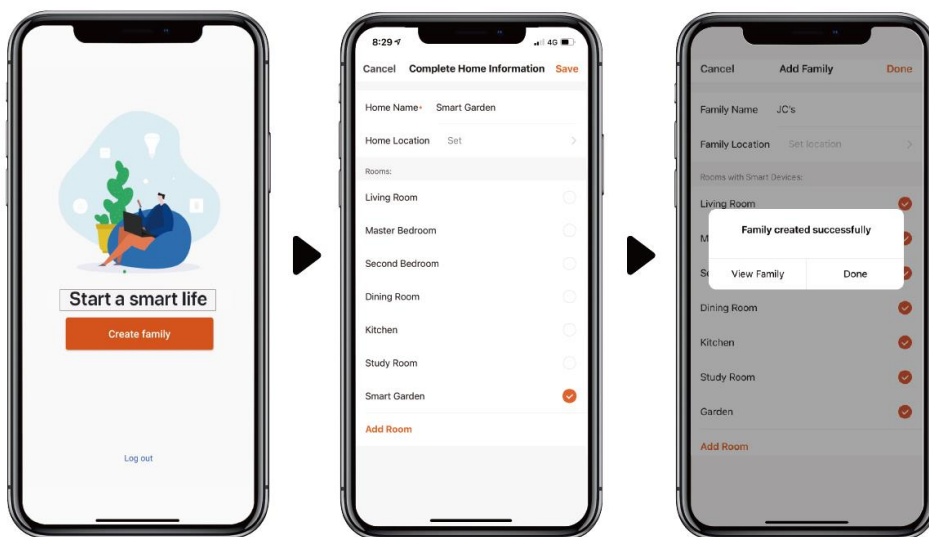


b. Register through third-party application



3 Create Family

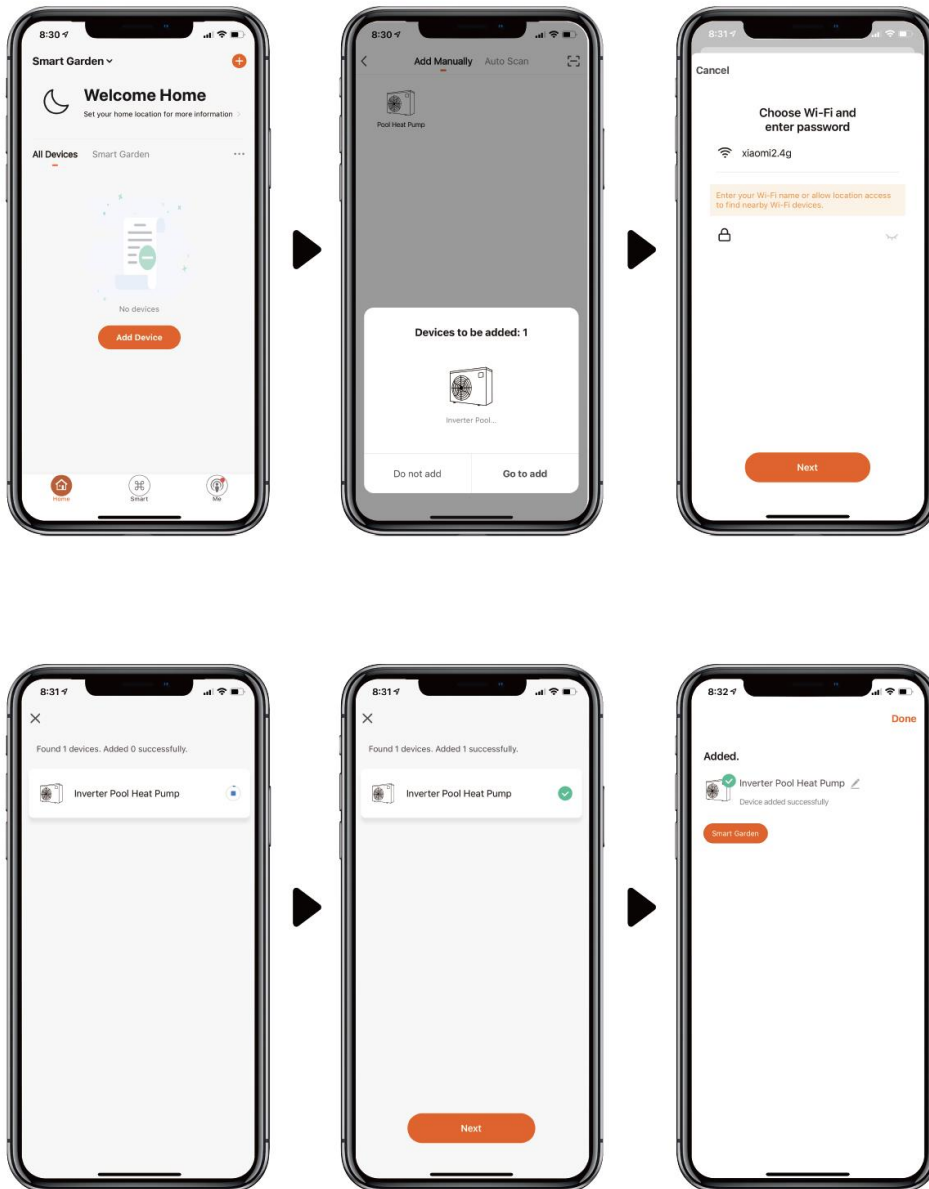
Please set family name and choose location of device.



4 APP Pairing

a. With Bluetooth

1. Please confirm that you're connected to Wi-Fi and your Bluetooth is on.
2. Click "Add Device", and then follow the instructions to pair device.



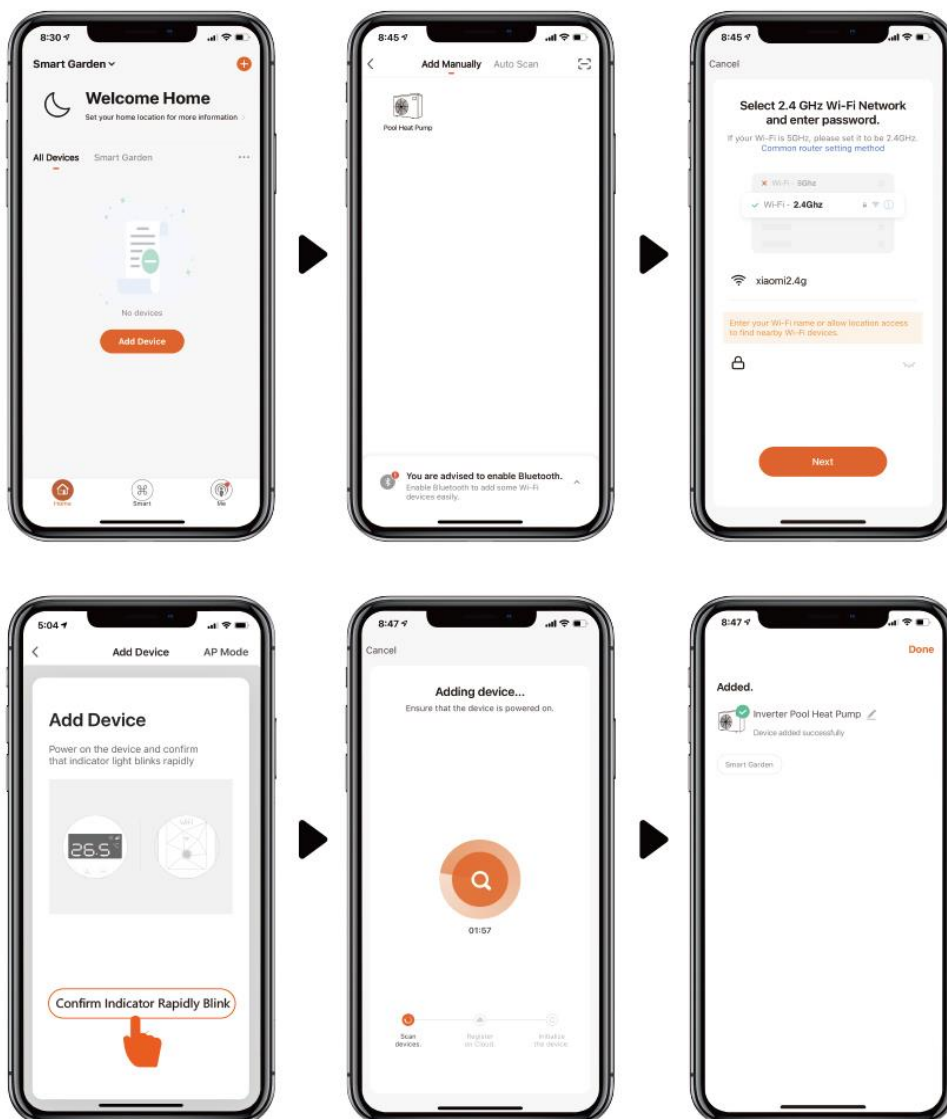
b. With Wi-Fi

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

2. Press "⏻" for 3 seconds to unlock the screen. Press "⏻" for 3 seconds and release. After hearing "Beep", enter Wi-Fi password in app. During connection, "📶" will flash. Once the app connects to Wi-Fi successfully, "📶" will display.



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

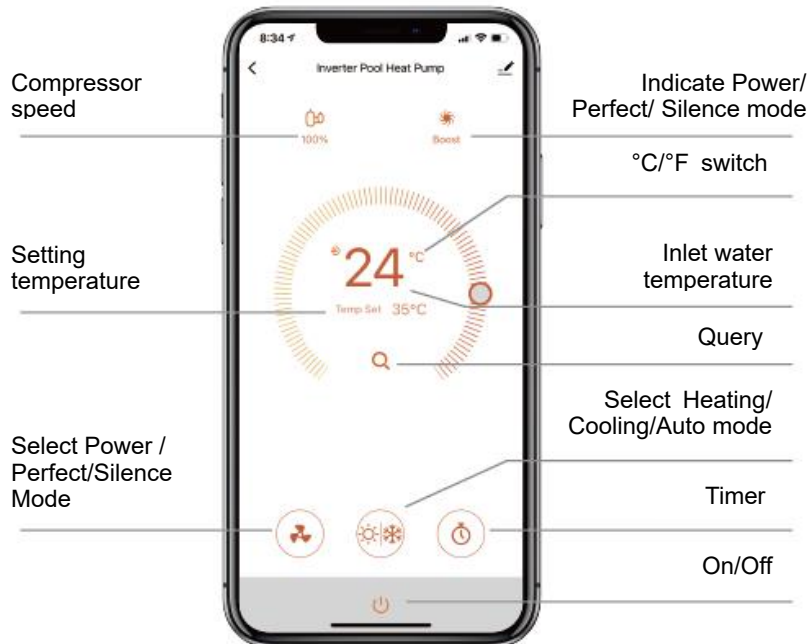


5 Operation

1. For heat pump with Heating function only:

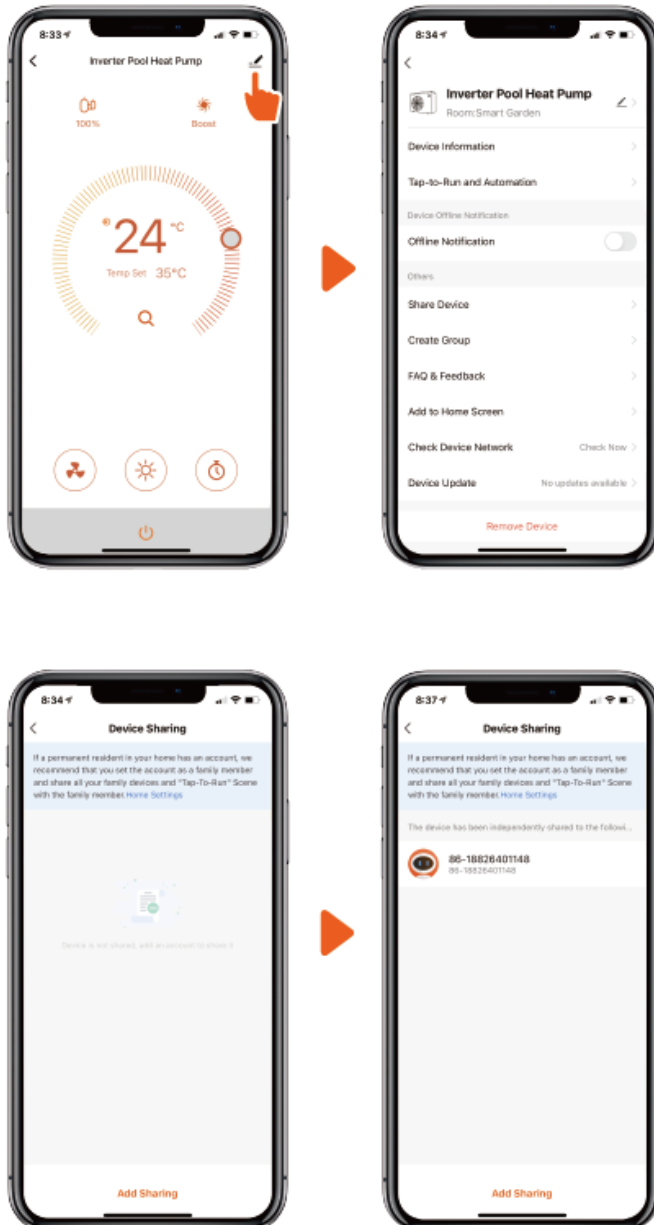


2. For heat pump with Heating & Cooling function:



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 “InverGo” first, and then the administrator can operate as below:



Notice:

1. Weather forecast is just for reference.
2. App is subject to updates without notice.

AQ136CX-R32-BC3A-V24

The company reserves all rights for final explanation.