KAISAI

#R290

WE CARE ABOUT AIR

OWNER'S MANUAL

EN

AIR TO WATER HEAT PUMP

WE CARE ABOUT AIR

KAISAI

AIR TO WATER HEAT PUMP

KHX-09PY1
KHX-14PY3
KHX-16PY3

Owner`s Manual

Thank you very much for purchasing our product,
Before using your unit , please read this manual carefully and keep it for future reference.

Content

1. Preface

In order to provide the customers with high quality, strong reliability and good versatility products, this heat pump is produced by strict design and manufacture standards. This manual includes all the necessary information about installation, debugging, discharging and maintenance. Please read this manual carefully before you open or maintain the unit.

The manufacture of this product will not be held responsible if someone is injured or the unit is damaged, as a result of improper installation, debugging, unnecessary maintenance which is not in line with this manual.

The unit must be installed by qualified personnel.

It is vital that the below instructions are adhered to at all times to keep the warranty.

-The unit can only be opened or repaired by a qualified installer or an authorized dealer.

-Maintenance and operation must be carried out according to the recommended time and frequency, as stated in this manual.

-Use genuine standard spare parts only.

Failure to comply with these recommendations will invalidate the warranty.

Inverter air source water heat pump is a kind of high efficiency, energy saving and environment friendly equipment, which is mainly used for house warming. It can work with any kinds of indoor unit such as fan coil, radiator, or floor heating pipe, by providing warm or hot water. One unit of monoblock heat pump can also work with several indoor units.

The air source water heat pump unit is designed to have heat recovery by using super heater which can provide hot water for sanitary purpose.

2. Safety Instructions

To prevent the users and maintainers from the harm of this unit, and avoid damage to the unit or other property, and use the heat pump properly, please read this manual carefully and understand the following information correctly.

Mark Notes

Mark	Meaning
	A wrong operation may lead to death or grievous injury on people.
	A wrong operation may lead to harm to people or loss of material.

Icon Notes

Icon	Meaning
	Prohibition. What is prohibited will be nearby this icon.
	Compulsory implement. The listed action needed to be taken.
	ATTENTION (include WARNING) Please pay attention to what is indicated.

Warning

Operation	Meaning
 Prohibition	DO NOT put fingers or others into the fan and evaporator of the unit, otherwise harm may occur.
 Shut off the power	When there is something wrong or strange smells, the power supply needs to be shut off to stop the unit. Continue running may cause short circuit or fire.

Operation	Meaning
 Prohibition	DO NOT put fingers or others into the fan and evaporator of the unit, otherwise harm may occur.
 Shut off the power	When there is something wrong or strange smells, the power supply needs to be shut off to stop the unit. Continue running may cause short circuit or fire.

Move and Repair	Meaning
 Entrust	When the heat pump needs to be moved or installed again, please entrust dealers or qualified people to carry it out. Improper installation will lead to water leakage, electrical shock, injury or fire.
 Entrust	It is prohibited from repair the unit by the user himself, otherwise electrical shock or fire may occur.
 Prohibit	When the heat pump needs to be repaired, please entrust dealers or qualified people to carry it out. Improper movement or repair on the unit will lead to water leakage, electrical shock, injury or fire.

	Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
	The appliance shall be stored in a room and installed in the environment without continuously operating or potential ignition sources (for example: open flames, an operating gas appliance or an operating electric heater or Electric Spark or hot objects).

ATTENTION

Installation	Meaning
 Installation Place	The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire may occur.
 Fix the unit	Make sure that the basement of the heat pump is strong enough, to avoid any decline or fall down of the unit
 Need circuit breaker	Make sure that there is circuit breaker for the unit, lack of circuit breaker may lead to electrical shock or fire.

Operation	Meaning
 Check the installation basement	Please check the installation basement regularly (once a month), to avoid any decline or damage to the basement, which may hurt people or damage the unit.
 Switch off the power	Please switch off the power when cleaning or maintaining.

 Prohibition	It is prohibited from using copper or iron as fuse. The right fuse must be fixed by electricians for the heat pump.
 Prohibition	It is prohibited from spray the flammable gas to the heat pump, as it may cause fire.

3. Features

This series of heat pump unit owns following features:

3.1. Advanced Controlling
The PC micro-computer based controller is available for the users to review or set the running parameters of the heat pump. Centralized controlling system can control several units by PC.

3.2. Nice Appearance
The heat pump is designed with beautiful looking. The monoblock one has the water pump included which is very easy for installation.

3.3. Flexible Installation
The unit has a smart structure with compact body, just as simple outdoor installation is needed.

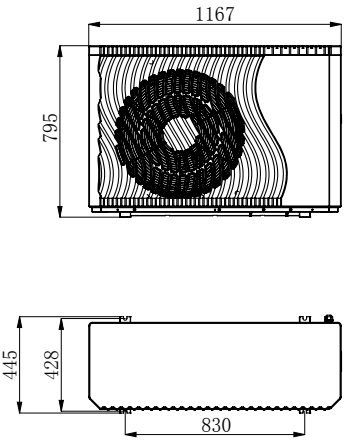
3.4. Quiet Running
The heat pump unit use a special designed heat exchanger to enhance whole efficiency.

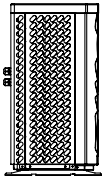
3.5. Good Heat Exchange Rate
The heat pump unit use a special designed heat exchanger to enhance whole efficiency.

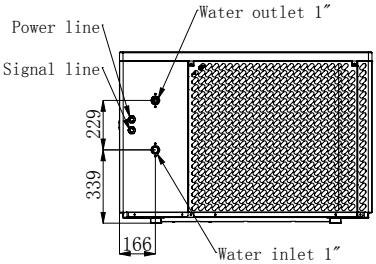
3.6. Large Working Range
This series of heat pump is designed to work under

4. Unit Dimension(mm)

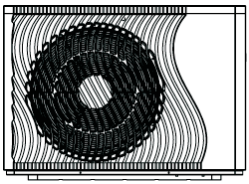
4.1. Models: KHX-09PY1

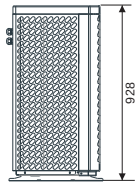


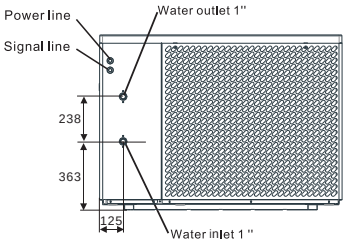


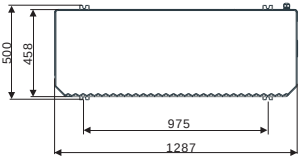


4.2. Models: KHX-14PY3



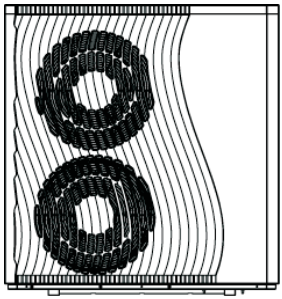


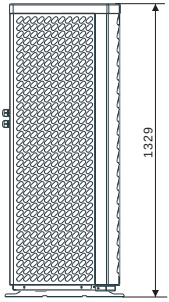


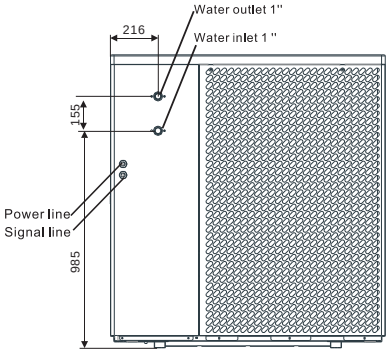


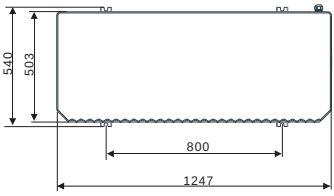
4. Unit Dimension(m

4.3 Models: KHX-16PY3









5. Parameters

Model		**KHX-09PY1**	**KHX-14PY3**
Power Supply	/	220~240V/3N~/50Hz	380~415V/3N~/50Hz
Moisture Resistance	IPX	IPX4	IPX4
Electrical Shockproof	I	I	I
Heating Condition - Ambient Temp, (DB/WB): 7/6℃, Water Temp, (In/Out): 30/35℃			
Heating Capacity Range	kW	3.10~8.9	5,40~14,95
Heating Power Input Range	kW	0.65~2.1	1,05~3,85
Heating Current Input Range	A	2.9~9.3	1,9~6,8
Cooling Condition - Ambient Temp, (DB/WB): 35/24℃, Water Temp, (In/Out): 12/7℃			
Cooling Capacity Range	kW	1.20~5.72	3,60~10,50
Cooling Power Input Range	kW	0.65~2.40	1,12~4,47
Heating Current Input Range	A	2.9~10.6	2,0~7,9
Hot Water Condition - Ambient Temp, (DB/WB): 20/15℃, Water Temp, (In/Out): 15/55℃			
Hot Water Capacity Range	kW	3.92~10.68	6,50~18,50
„Hot Water Power Input Range"	kW	0.78~2.47	1,27~4,65
„Hot Water Current Input Range"	A	3.5~11.0	2,4~8,21
Max, Power Input	kW	3	5,3
Max, Current Input	A	13.5	10,5
Water Flow	m3/h	1	1,7
Refrigerant / Proper Input	kg	R290 / 0.5kg	R290 / 0,85kg
CO2 Equivalent	Ton	0,0015	0,0026
Sound Pressure (1m)	dB(A)	43	44
Sound Power Level (EN12102)	dB	57	58
Net Weight	kg	103	160
„Operation Pressure(Low Side)"	MPa	0,8	0,8
Operation Pressure(High Side)	MPa	3,0	3,0
Unit Dimension(L/W/H)	mm	1167×445×795	1287×458×928
Shipping	mm	1300×485×940	1420×540×1080
Dimension(L/W/H)			
Compressor	Brand	HIGHLY	HIGHLY
Operating Ambient Temperature	℃	-25~43	-25~43
Fan Quantity	/	1	1
Fan Motor Type	/	DC motor	DC motor
Fan Motor Power Input (min~max)	W	30~80	60~120
Fan Speed (RPM)	RPM	220~600	220~600
Water Connection (inch)	inch	1	1
Water Pressure Drop (max)	kPa	20	20
Circulation Pump Head	m	9	7,5
Cabinet Type		Galvanized sheet+ ASA	Galvanized sheet+ ASA

5. arameters

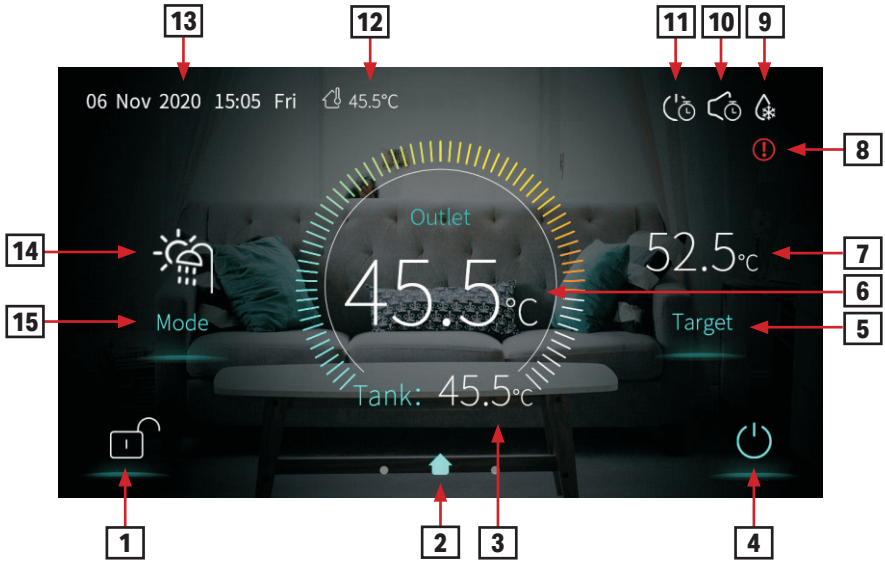
Model		**KHX-16PY3**
Power Supply	/	380~415V/3N~/50Hz
Moisture Resistance	IPX	IPX4
Electrical Shockproof	I	I
Heating Condition - Ambient Temp, (DB/WB): 7/6°C, Water Temp, (In/Out): 30/35°C		
Heating Capacity Range	kW	8,00~22,00
Heating Power Input Range	kW	1,60~6,90
Heating Current Input Range	A	2,8~12,2
Cooling Condition - Ambient Temp, (DB/WB): 35/24°C, Water Temp, (In/Out): 12/7°C		
Cooling Capacity Range	kW	4,20~15,00
Cooling Power Input Range	kW	1,80~7,30
Heating Current Input Range	A	3,2~12,9
Hot Water Condition - Ambient Temp, (DB/WB): 20/15°C, Water Temp, (In/Out): 15/55°C		
Hot Water Capacity Range	kW	10,00~27,00
„Hot Water Power Input Range"	kW	1,90~7,10
„Hot Water Current Input Range"	A	3,4~12,5
Max, Power Input	kW	9
Max, Current Input	A	15,8
Water Flow	m3/h	2,9
Refrigerant / Proper Input	kg	R290 / 1,30kg
CO2 Equivalent	Ton	0,0039
Sound Pressure (1m)	dB(A)	47
Sound Power Level (EN12102)	dB	62
Net Weight	kg	202
„Operation Pressure(Low Side)"	MPa	0,8
Operation Pressure(High Side)	MPa	3,0
Unit Dimension(L/W/H)	mm	1250×540×1330
Shipping	mm	1380×570×1480
Dimension(L/W/H)		
Compressor	Brand	HIGHLY
Operating Ambient Temperature	°C	-25~43
Fan Quantity	/	2
Fan Motor Type	/	DC motor
Fan Motor Power Input (min~max)	W	60~160
Fan Speed (RPM)	RPM	300~750
Water Connection (inch)	inch	1
Water Pressure Drop (max)	kPa	65
Circulation Pump Head	m	12,5
Cabinet Type		Galvanized sheet+ ASA

6. Display Operation Guide

6.1. Main Interface Display and Function

(1) Power on Interface

(2) Starting up Interface



Key function

Key number	Key name	Key Function
1	Lock screen	Click this key to lock the screen. White represents not enabled, while blue represents enabled
4	On and off	Click this key to switch ON or OFF. Blue represents ON, while white represents OFF
5	Temperature setting	Click this key to set the target temperature
15	Mode key	Hot water mode, heating mode, cooling mode, hot water+ heating mode or hot water+ cooling mode can be selected by pressing this key

Note:

2 is home icon. This icon is shown by sliding the main interface.

3 is tank water temperature. The machine is in hot water mode when this icon is shown; Otherwise this icon is not shown.

6 is outlet water temperature or room temperature. If H25=0, the outlet water temperature will be shown. If H25=1, the room temperature will be shown.

7 is Target Temperature of No.1 Unit.

8 is fault icon. This icon will flash when there is an error shown up, then the display will enter failure record interface after tapping this icon;

9 is defrosting icon. It will display in the defrosting process of the unit.

10 is timing mute icon which displays only when activated.

11 is timing switch which displays only when activated.

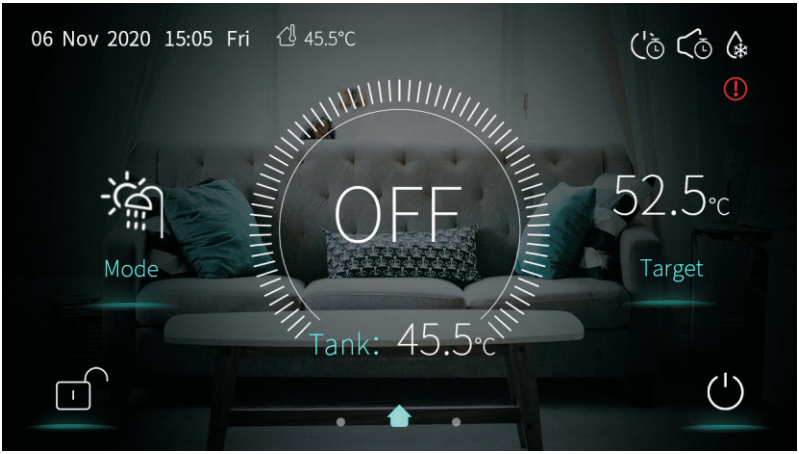
12 is ambient temperature.

13 is system time.

14 is current mode.

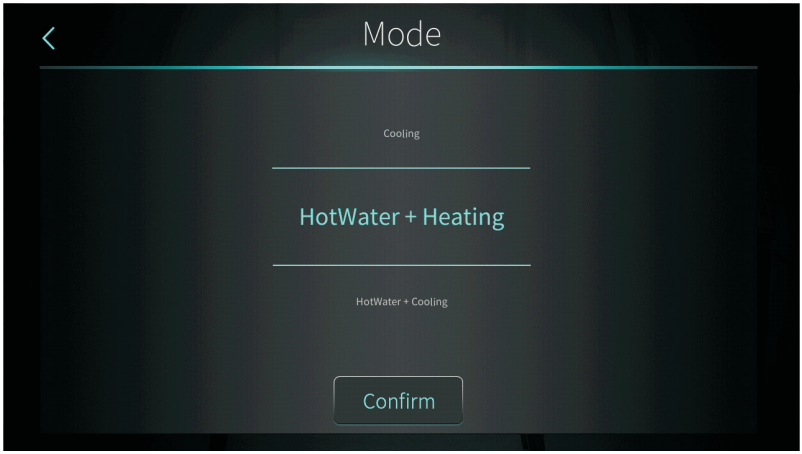
6.2. ON/OFF

(1) In shutting down interface (on/off key is in white status), press on/off key can start up the machine.



(2) In starting up interface (on/off key is in blue status), press on/off key can shut down the machine.

6.2.1. Mode switch



There are five modes can be selected after sliding the mode icon.

(1) selecting hot water mode icon, then the display will change to this mode interface;

(2) selecting heating mode icon, then the display will enter this mode interface;

(3) selecting cooling mode icon, then the display will switch to this mode interface;

(4) selecting hot water+ heating mode icon, then the display will go into
hot water+ heating mode interface;

(5) selecting hot water+ cooling mode icon, then the display will come to
hot water+ cooling mode interface;

Note:
a) If the machine model you purchased has no cooling function, the key of cooling mode will not be displayed.
b) If the machine model you purchased has no hot water function, the key of hot water mode function will not be displayed.

In the main interface, there are five modes that can be selected after tapping the mode key.

(1) tapping hot water mode icon **1**, then the display will change to this mode's interface;

(2) tapping heating mode icon **2**, then the display will enter this mode's interface;

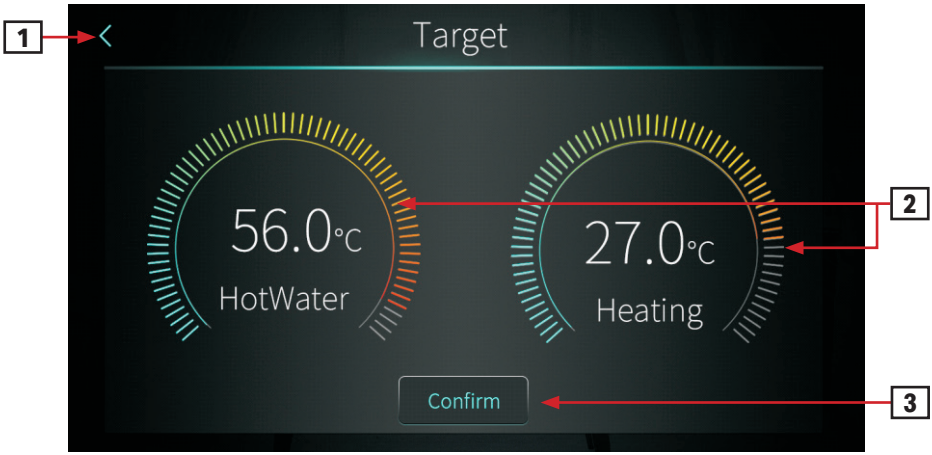
(3) tapping cooling mode icon **3**, then the display will switch to this mode's interface;

(4) tapping hot water + heating mode icon **4**, then the display will go into the hot water + heating mode's interface;

(5) tapping hot water + cooling mode icon **5**, then the display will come to the hot water + cooling mode's interface;

Note:
If your unit is a heating-only model (without a cooling function), the „cooling" key will show on the interface.

6.3. Setting of target temperature



Take hot water + heating mode for example:

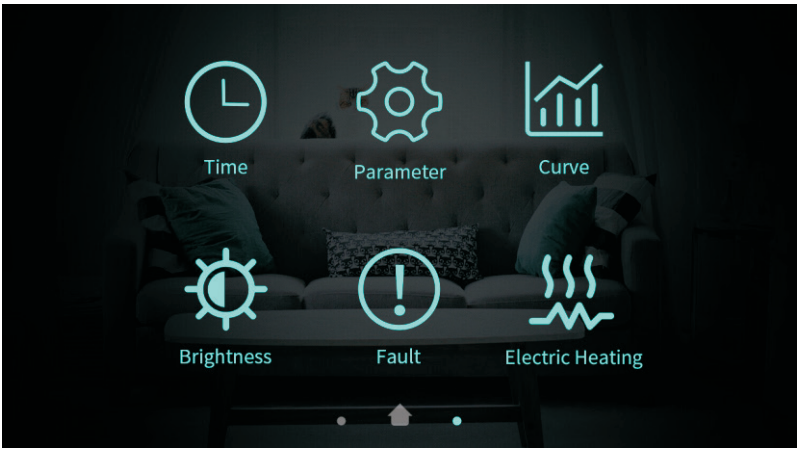
(1) Tapping **1**, the wire controller back to main interface;

(2) Sliding **2**, the target temperature can be adjusted in the clockwise or counter clock--wise direction;

(3) Tapping **3**, the target temperature can be saved.

6.4. Setting interface display and function

Swipe from right to left on the main interface to enter the function setting interface, and swipe from left to right on the function setting interface to return to the main interface. The function setting interface is shown in the figure below.

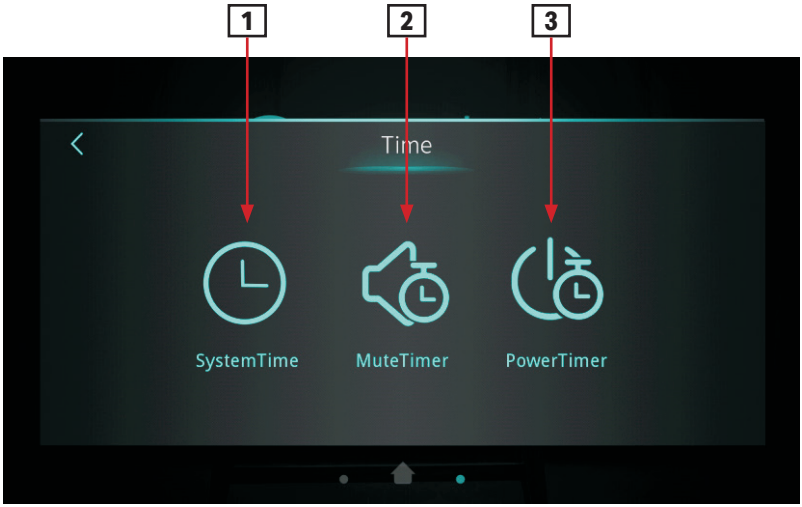


6.4.1. Buttons description

Key number	Key name	Key Function
1	Time setting	Click this key to set the time function.
2	Factory parameter	Click the key and enter the password to enter the factory parameter settings and status parameters interface.
3	Curve key	Click this key to view the temperature curve.
4	Adjust brightness	Click this button to adjust screen brightness
5	Fault	Click to view fault history
6	One key electric heating	When activate electric heating function, the color of the icon will turn blue, otherwise it will turn white.

6.4.2. Time setting
In the setup interface:

(1) Tapping the button 1, then the interface display is shown as follows:



6.4.3. System time setting

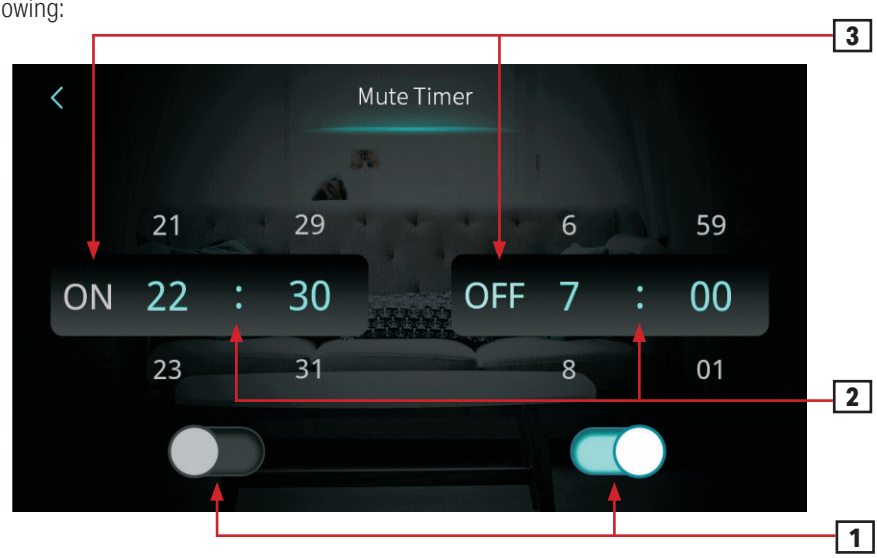
In the time setting interface, click 1 interface displays as follows:

When entering the page of system time setting, the system time will be initialized to the time at the moment when the system time setting button is pressed, and you can adjust the time by sliding up and down.

Note: When the temperature unit is? the time format is displayed as: month-day-year hour: minute: second.

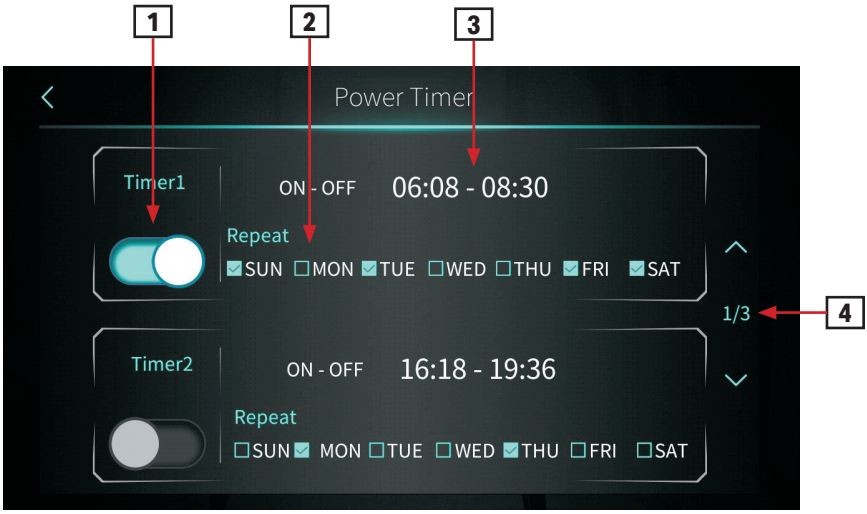
6.4.4. Mute Timer setting

Click the lock screen key again while the screen has been locked, the pop-up keyboard is shown as following:



NO.	Name	Key color	Button function
1	Whether enable the mute timer on function	Enable: Blue Disable: Gray	Click this key to enable or disable the mute timer on function
	Whether enable the mute timer off function	Enable: Blue Disable: Gray	Click this key to enable or disable the mute timer off function
2	The mute timer on setting point		select from 0:00-23:59
	The mute timer off settingpoint		select from 0:00-23:59
3	The status of mute timer on	Enable: Blue Disable: Gray	The status of mute timer on is shown
	The status of mute timer off	Enable: Blue Disable: Gray	The status of mute timer on is shown

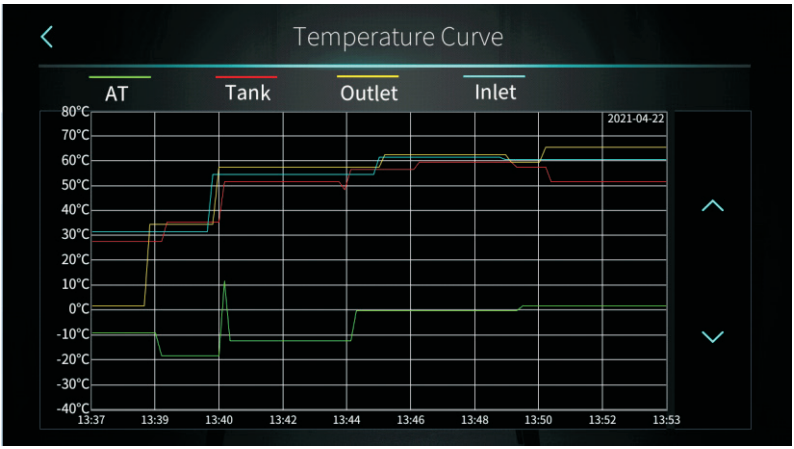
6.4.5. Power Timer setting
In the time setting interface, click 3 interface displays as follows:



NO.	Name	Button function
1	Timing switch function on	Clicking the button, when the font color is blue, the timing switch is on
2	Week setting	Set the day of the week to activate the timing switch

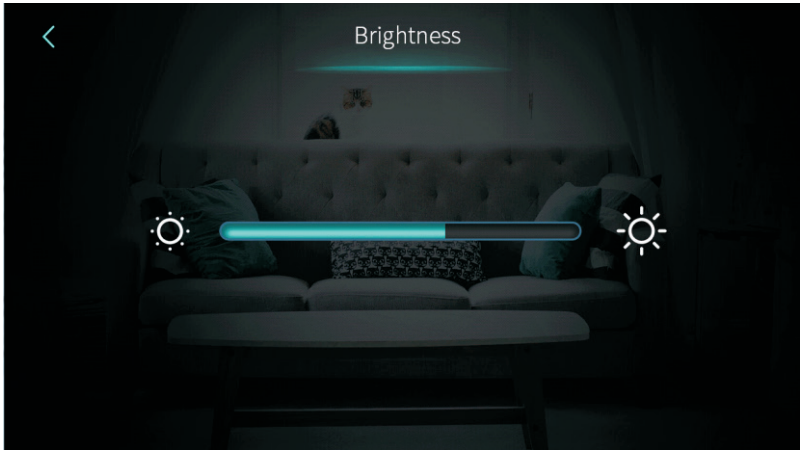
3	Time period setting	Set the time to turn on and the time to turn off
4	Turn page	A total of 6 timing switch time periods can be set which can be selected by turning the page

6.4.6. Temperature Curve
In the setup interface:
Tapping operating mode button 4, then the interface display is shown as follows:



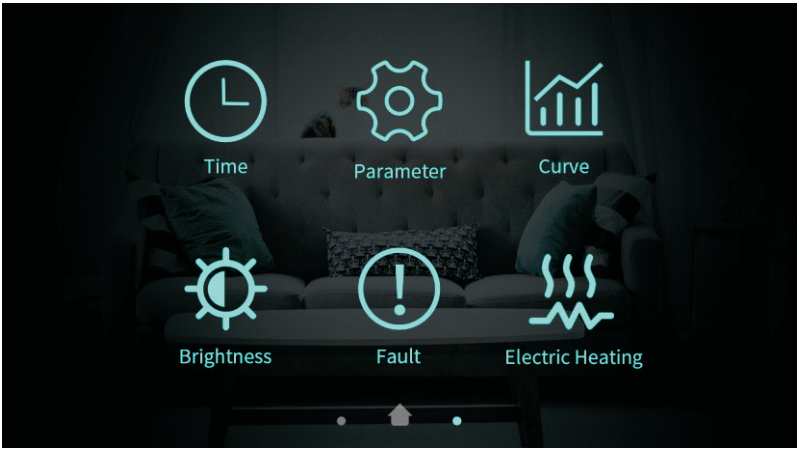
Note:
1) This curve function records the water inlet temperature, water outlet temperature, tank water temperature and ambient temperature;
2) Temperature data is collected and saved every five minutes. Timekeeping is made from the latest data saving, if the power is disrupted when the time is less than five minutes, the data during such period will not be saved;
3) Only curve for power-on status is recorded, and that for power-off will not be saved;
4) The value of the abscissa indicates the time from the point on the curve to the current time point. The rightmost point on the first page is the latest temperature record;
5) Temperature curve record is provided with power-down memory function.

6.4.7. Color Display Calibration
In the setting interface: Tapping operating mode button 5, then the interfacedisplay is shown as follows:



Note:
1) The middle display bar can be dragged or clicked to adjust the brightness of the screen with power-down memory.
2) Press the back key to return to the previous level and save the brightness setting value.
3) The screen has the function of automatic on and off, if there is no operation for 30s, the screen will enter the half-time screen state.
4) If there is no operation for another 5 minutes (a consecutive 5 minutes), the screen will enter the screen state.

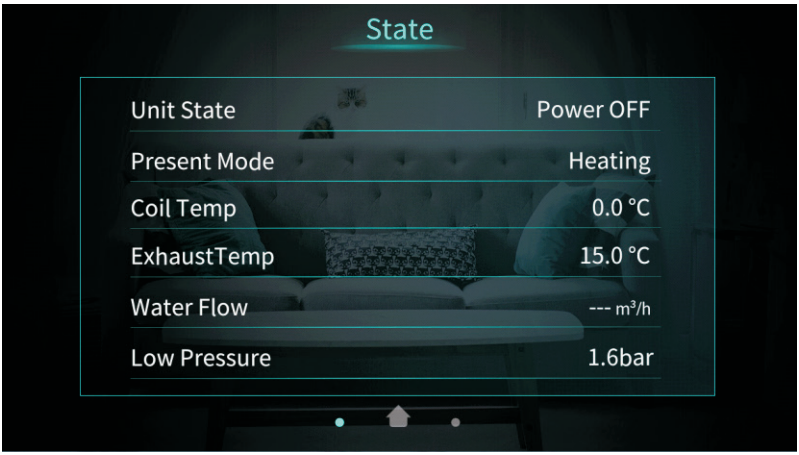
6.4.8. Electric Heating
In the setup interface: Tapping operating mode button **6**, then the interface display is shown as follows:



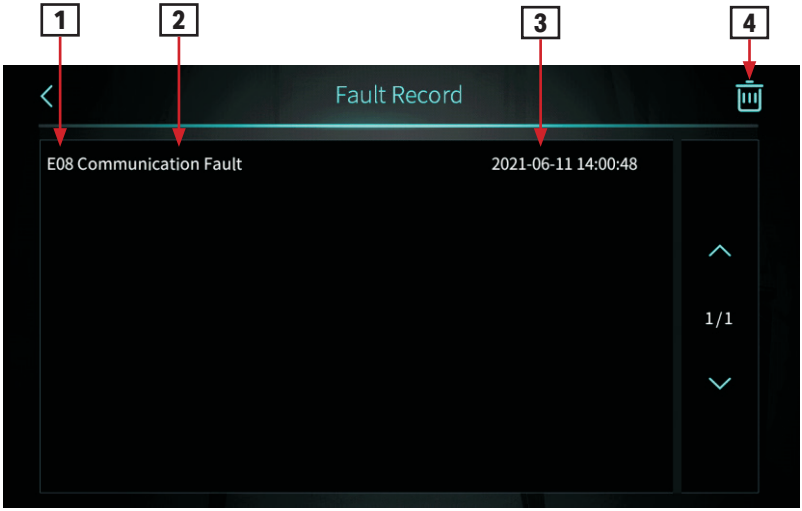
Note:
If you enter one-key electric heating, the icon is blue, otherwise it is gray.

6.5. Status interface display

Swipe from left to right on the main interface to enter the status interface, and swipe from right to left on the status interface to return to the main interface. The status interface is shown in the figure below.



6.6. Fault interface display and function



1 Fault code
2 Fault name
3 Occurrence time of the fault: Day an month hour: minute: second
Note: If the current temperature is F, occurrence time of the fault: Month and day hour: minute: second.
4 Click this key to clear all fault recordsfigure below.

7. Failure List & Troubleshooting

7.1. Failure Handling

Issue	Possible cause	Related components	Solution
Unit tripped when powered on	Short circuit	Terminals Relays Contactors cables	Check all the components' connection Check relays and contactors whether are broken Disconnect the electronic components one by one and powered on to find the problem
Display cannot get power	Cables has disconnected The power input cable is mis-connected	Display cable Power input cable	Check the display cable Check the power cable Check the 3-phase power cable whether connected in right phase sequence
Cannot start up the unit	The unit have error Cables has disconnected	Display Cables	Check the display whether shown error Check the cable Reconnect the power cable and check if it works
Display cannot work	The display has been locked The display is broken	Display	Check the display whether shown locked icon Check the cable Reconnect the power cable and check if it works
Heating effect is not good	The compressor running low frequency The fan is not running or speed is too low Leakage problem	Compressor Fan Refrigerant system	Check the compressor frequency Check the fan speed Check the exhaust temperature and low pressure
Shut off while didn't reach the target temperature	Temperature limit (according to ambient temperature)	Control logic	Check the parameters
The evaporator has too much frost and cannot defrosting cleanly	Fan blade or motor issue EEV step is not suitable Refrigerant amount issue Parameter issue	Parameters Fan EEV Refrigerant system	Check the defrosting parameters Check the compressor frequency Check the fan speed Check the exhaust temperature and low pressure
Abnormal noise	Screws issue Fan blade or motor issue Compressor issue Components have collision	Screws Fan Compressor Other components (tubes, cables)	Check the screws Check the fan blade and motor Check the compressor Check other components

7.2. Error Code Instruction

Error code	Error name	Relevant parts information	Review and resolve
E04	Electric heater over heat Protection		1. Check the Electrical heating Overheat protector open or not. 2. Check the Electrical heater.
E08	Communication failure between PCB and display	Communication error between PCB and DISPLAY	1. Check cable connection of PCB and DISPLAY. 2. Check the software version of PCB and DISPLAY.
E11	HP Protection	HP switch is open	1. Check whether showing the error after unit shutdown. 2. Measure the discharge pressure when unit is running. 3. Detect EEV step, suction pressure, inlet/outlet water discharge and suction temp. 4. Release all the gas of the system and refill refrigerant according to the nameplate.
E12	LP Protection	LP switch is open	1. Check whether showing the error after unit shutdown. 2. Measure the suction pressure when unit is running. 3. Detect EEV step, discharge pressure, inlet/outlet water discharge and suction temp. 4. Release all the gas of the system and refill refrigerant according to the nameplate.
E19	Primary Anti-freezing Protection	Ambient temp.≤0°C, A04-2°C≤ water inlet≤A04°C	It is the protection in winter. Once the water temperature rises up to A04+4oC or the ambient temp is higher than 1, the error code disappears.
E29	Secondary Anti-freezing Protection	Ambient temp.≤0°C, water inlet≤A04-2°C	It is the protection in winter. Once the water temperature up to A04+11 oC or the ambient temp is higher than 1, the error code disappears.
E19	Primary Anti-freezing Protection	Ambient temp.≤0°C, 2°C ≤ water inlet≤4°C	It is the protection in winter. Once the water temperature rises up to 8 oC or the ambient temp is higher than 1 oC, the error code disappears.
E29	Secondary Anti-freezing Protection	Ambient temp.≤0°C, water inlet≤2°C	It is the protection in winter. Once the water temperature up to 15 oC or the ambient temp is higher than 1 oC, the error code disappears.
E032	Flow Switch Protection	Flow switch is open	1. Detect the connection of cables. 2. Detect the flow switch. 3. Detect the water valve is opened or opened fully. 4. Detect the water pump and the filter. 5. Maybe there is some air in the water route.
E051	Compressor Over current Shutdown Fault	Compressor Over current	1. Check ambient temp. and inlet/outlet water temp.; 2. Turn on the unit. Record and analyze the changing process of high/low pressure, discharge/suction temp., EEV step, compressor frequency and running current. 3. If they are OK, replace a new compressor driver board.
E065	High water outlet temp. protection		Check if the water flow is too low and the outlet water whether too high
E081	Communication failure between PCB and fan drive board	Communication error between PCB and fan drive board	1. Check the connection between PCB and fan board. All of 12V-12V, GND-GND, A-A, B-B should be closed; 2. If they are closed, turn on the power, then measure the voltage between 12V and GND on fan board, if higher than 15V or lower than 7V, replace a new fan board.
E103	Fan motor overload protection		1. Check if the fan motor running well. 2. Detect the current of fan motor. 3. If the current is more than 1A, it means the motor have problem and need to replace a new one. 4. If the current is less than 1A, it means the motor control module have problem and nee to replace a new one.
E171	Anti-freezing Protection	inlet water ≤A04°C and the antifreeze temp ≤ A04-A05°C	1. Check the water flow. 2. Check the outlet water temp sensor. 3. Measure the ambient temp. 4. Detect the connection of cables. 5. Check the record of defrosting, whether the defrosting time is too long or too often.

F01	Compressor activation failure		Restart the unit. 1. Check the changing process of EEV step, high pressure, low pressure, inlet/outlet water temp. 2. Check the connection of U/V/W between compressor and compressor driver board. 3. Check the compressor resistance. 4. Check compressor driver board.
F03	PFC Fault		Restart the unit. 1. Check the power supply connection and voltage supply is stable or not. 2. Replace a new compressor driver board.
F05	DC Bus Over voltage		1. Check the voltage between DCP-IN and DCN-IN, if lower than 300V, the unit will get this protection. 2. Check the input voltage of R/S/T on compressor driver board, if lower than 210V, the unit will get this protection. 3. If they are OK, please replace a new compressor driver board.
F06	DC Bus Under voltage		1. Check the voltage between DCP-IN and DCN-IN, if lower than 300V, it will get this protection; 2. Check the input voltage of R/S/T on compressor driver board, if lower than 210V, it will get this protection; 3. If they are OK, please replace a new compressor driver board
F07	AC Input Under voltage		1. Measure the input voltage of R/S/T of driver board, if lower than 300V, it will get this protection. 2. If it's OK, replace a new compressor driver board.
F08	AC Input Over current		Only in single phase unit. Restart the unit. Check if there is electric leakage. If not, replace a new drive board.
F09	Input voltage sampling fault		1. Make sure power supply not lower than 300V or higher than 500V; 2. If it's OK, please replace a new compressor driver board.
F10	Communication Failure between DSP and PFC		Only in single phase unit. 1. Check the inverter board connection. 2. If no problem, replace a new compressor driver board.
F11	Communication Fault between DSP and Communication board		1. Please check the inverter board connection. 2. If no problem, please replace a new compressor driver board
F12	Communication failure between PCB and driver board		1. Check the connection between main control board and compressor driver board. All of 12V-12V, GND-GND, A-A, B-B should be closed. 2. If they are closed, turn on the power, then measure the voltage between 12V and GND on compressor driver board, if higher than 15V or lower than 7V, please replace a new one compressor driver board.
F13	IPM Overheat Stop		1. Check the fans are running or not. 2. Check the installation distance and space. 3. Leave enough distance and space to make heat pump have a good transfer heating condition. 4. Clean the finned heat exchanger. 5. If they are OK, replace a new compressor driver board.
F15	Input voltage Lacking Phase		1. Check the phase of power supply R/S/T to compressor driver board. 2. If it's OK, replace a new compressor driver board.
F16	Compressor weak magnetic protection alarm		1. Check the refrigeration system. 2. If it's OK, replace a new compressor driver board.
F17	Temperature fault of drive board		1. Check the connection of heat sink temp. sensor. 2. Check the resistance of heat sink temp. sensor. 3. If they are OK, please replace a new heat sink and heat sink temp. sensor.
F18	IPM Current Sampling Fault		1. Check ambient temp. and inlet/outlet water temp. 2. Check high/low pressure and discharge temp. and suction temp. 3. Check EEV step. 4. Check the compressor frequency and current. 5. If they are OK, replace a new compressor driver board.

F20	IGBT Power Device Overheat Alarm		1. Check the fans are running or not. 2. Check the installation distance and space. 3. If they are OK, please replace a new compressor driver board. 4. Leave enough distance and space to make heat pump have a good transfer heating condition. 5. Clean air to fin heat exchanger.
F22	AC input over current protection alarm		Only in single phase unit. Restart the unit. 1. Check if there is electric leakage. 2. If still have the failure, replace a new drive board.
F23	EEPROM Fault Alarm		1. Check the connection; 2. Replace a new driver board;
F24	Destroyed EEPROM Activation Ban Alarm		
F25	LP 15V Under load Fault		1. Check the power supply is stable or not, and restart unit. 2. If the problem still on, please replace a new drive board.
F26	IGBT Power Device Overheat Fault		1. Check the fans are running or not; 2. Check the installation distance and space; 3. Leave enough distance and space to make heat pump have a good transfer heating condition; 4. Clean the finned heat exchanger. 5. If they are OK, please replace a new driver board;
F031	DC Fan Motor 1 Failure		1. Turn off the unit and check the connection. 2. Restart and check if the motor is running normal or the error happens again. 3. Replace a new fan motor.
F032	DC Fan Motor 2 Failure		
Pp1	Exhaust Pressure Sensor Fault		1. Detect the exhaust pressure sensor connection 2. If the connection is OK, please replace a new one.
Pp2	Suction Pressure Sensor Fault		1. Detect the suction pressure sensor connection 2. If the connection is OK, please replace a new one.
TP	Low Ambient Temp. Protection	Ambient temp ≤-30	1 Check the ambient temp 2. When ambient temp ≥-28℃, the fault will disappear.
P01	Water Inlet Temp. Sensor Fault		1. Detect the connection. 2. Measure the resistance of sensor, if lower than 100Ω or higher than 500kΩ, please replace a new one.
P02	Water Outlet Temp. Sensor Fault		
P04	Ambient Temp. Sensor Fault		
P17	Water Outlet Temp. Sensor Fault		
P032	Hot Water Tank Temp. Sensor Fault		
P42	Room Temp. Sensor Fault		
P101	EVI Inlet Temp. Sensor Fault		
P102	EVI Outlet Temp. Sensor Fault		
P153	Coil Temp. Sensor Fault		
P181	Exhaust Temp. Sensor Fault		
P182	Exhaust Over Temp.	(Exhaust temp.) ≥C05 default 110	1. Measure the resistance of sensor, if lower than 100Ω or higher than 500kΩ, please replace a new one. 2. Check the unit find if it has refrigerant leakage.
P191	Antifreeze Temp. Sensor Fault		1. Detect the connection 2. Measure the resistance of sensor, if lower than 100Ω or higher than 500kΩ, please replace a new one.

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