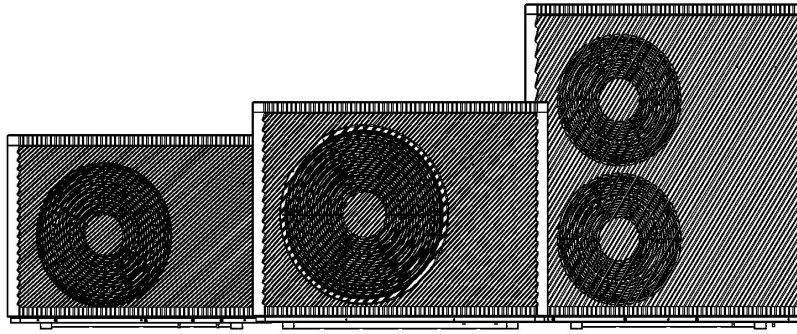
Technical Manual

EVIPOWER PREMIUM INVERTER

Air to Water Heat Pumps



CH-HP08UIMPRK-P CH-HP12UIMPRM-P CH-HP23UIMPRM-P

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1. Preface

In order to provide the customers with high quality, strong reliability and good versatility product, 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 qualified installer or an authorised 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 kind of indoor unit such fan coil, radiator, or floor heating pipe, by provide warm or hot water. One unit of monobloc 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 others from the harm of this unit, and avoid damage on 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
 WARNING	A wrong operation may lead to death or heavy injury on people.
 ATTENTION	A wrong operation may lead to harm on people or loss of material.

Icon notes

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

Warning

Installation	Meaning
 Professional installer is required.	The heat pump must be installed by qualified personals, to avoid improper installation which can lead to water leakage, electrical shock or fire.
 Earthing is required	Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.

Operation	Meaning
 PROHIBITION	DO NOT put fingers or others into the fans and evaporator of the unit, otherwise harm may be occurred.
 Shut off the power	When there is something wrong or strange smell, the power supply need to be shut off to stop the unit. Continue to run may cause electrical short or fire.

Move and repair	Meaning
 Entrust	When the heat pump need to be moved or installed again, please entrust dealer or qualified person to carry it out. Improper installation will lead to water leakage, electrical shock, injury or fire.
 Entrust	It is prohibited to repair the unit by the user himself, otherwise electrical shock or fire may be occur.
 Prohibit	When the heat pump need to be repaired, please entrust dealer or qualified person 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 recimmended by the manufacturer.
	The appliance shall be stored in a room and install In the environment without continuously operating or potential ignition

ATTENTION

Installation	Meaning
 Installation Place	The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire can be 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 can lead to electrical shock or fire.

Operation	Meaning
 Check the installation basement	Please check the installation basement in a period (one month), to avoid any decline or damage on the basement, which may hurt people or damage the unit
 Switch off the power	Please switch off the power for clean or maintenance.
 Prohibition	It is prohibited to use copper or iron as fuse. The right fuse must be fixed by electrician for the heat pump.
 Prohibition	It is prohibited to 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 microcomputer 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 monobloc one has the water pump included which is very easy for installation.

3.3. Flexible Installation

The unit has smart structure with compact body, just simple outdoor installation is needed.

3.4. Quiet Running

High quality and efficient compressor, fan and water pump is used to ensure the low noise level with insulation.

3.5. Good Heat Exchange Rate

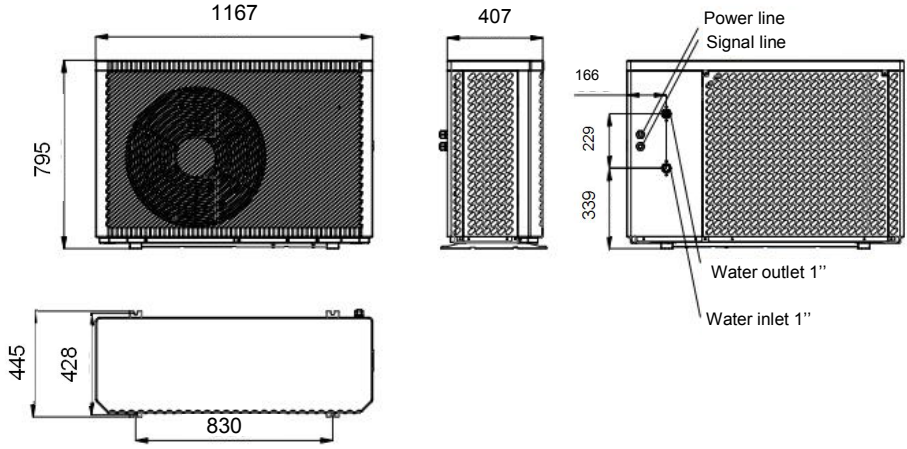
The heat pump unit use special designed heat exchanger to enhance whole efficiency.

3.6. Large Working Range

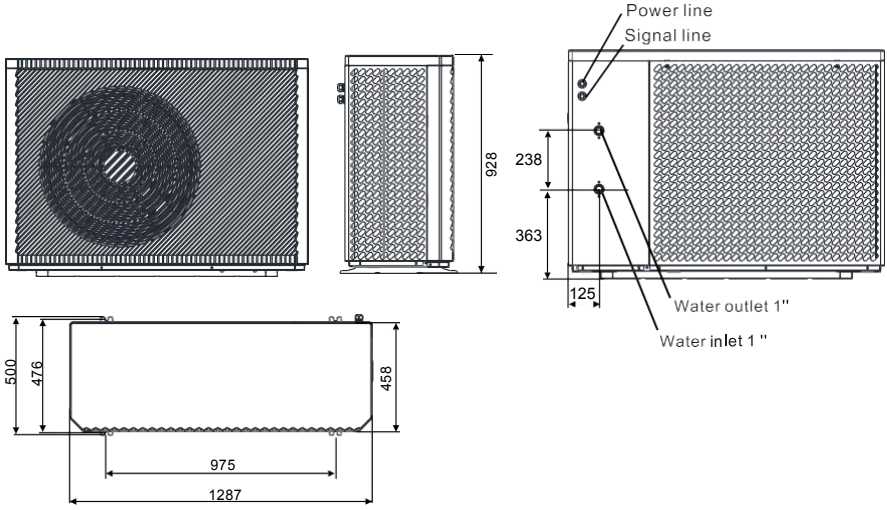
This series of heat pump is designed to work under different working conditions as low as -15 degrees for heating.

4. Unit Dimension (mm)

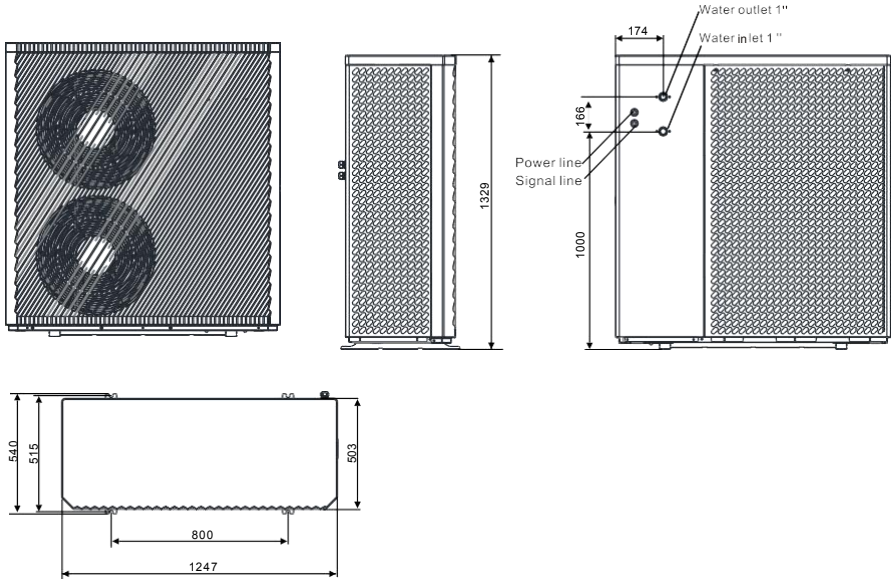
4.1. Models:CH-HP08UIMPRK-P



4.2. Models:CH-HP12UIMPRM-P



4.3. Models: CH-HP23UIMPRM-P

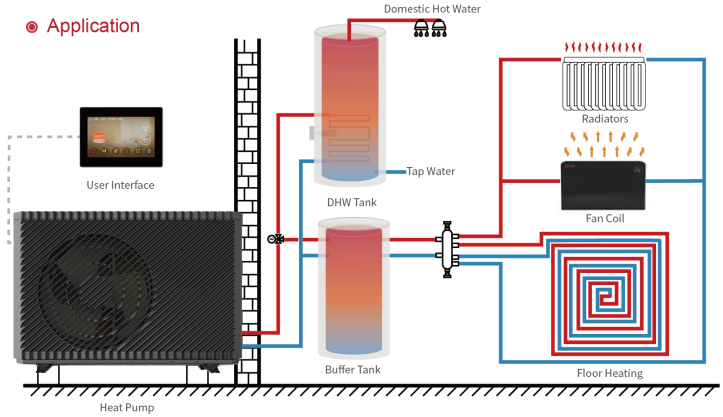


5. Installation Diagram

C&H monoblock heat pumps can provide heating/cooling and domestic hot water. Floor heating loops and fan coil units are used for space heating and fan coil units are used for space cooling. Domestic hot water is supplied from the domestic hot water tank connected to the heat pump.

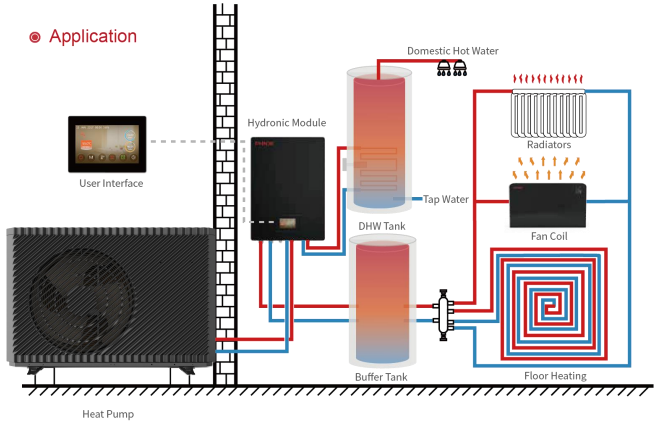
5.1. Traditional Installation

C&H provides the monoblock heat pump with main circulation pump built inside. When install the unit, installer should connect the heat pump with other parts including the buffer tank (for space heating/cooling), storage water tank (for domestic hot water) and water pumps (for space heating/cooling water circulation and domestic hot water). External fittings are also needed including the safety valve, water charge valve, hot water valves (three-way valve). Temperature sensor should be added in the storage water tank. Additional electric heater can be installed in the DHW tank or the buffer tank which can get the control signal from the heat pump.



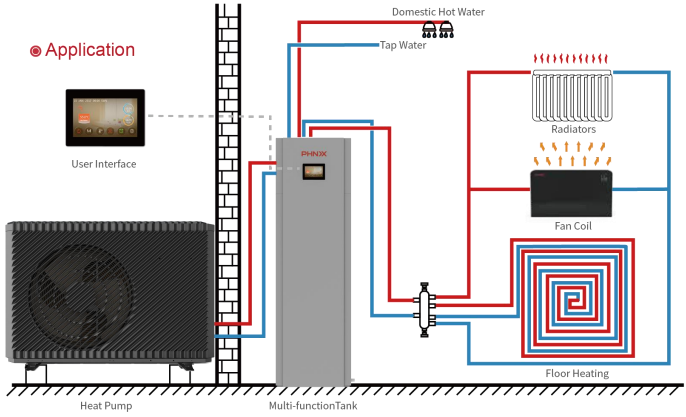
5.2. Installation with Hydronic Box

C&H provides the monoblock heat pump (without circulation pump) and the Hydronic box. Hydronic box includes one small size built-in buffer tank, one main circulation water pump, one space heating/cooling circulation water pump, one DHW pump, safety valve, water charge valve and expansion tank, electrical heater. When install the unit, installer should connect the heat pump directly to the Hydronic box while the buffer tank (for space heating/cooling) is considered whether to add or not. Storage water tank is needed for the domestic hot water application. Temperature sensor should be added in the storage water tank.



5.3. Installation with Multi-functions box

C&H provides the monoblock heat pump (without circulation pump) and the Multi-functions box. Multi-functions box includes one 50-liter buffer tank, one 150-liter storage tank, one main circulation water pump, one space heating/cooling circulation water pump, one domestic hot water pump, safety valve, water charge valve and hot water valve. When install the unit, installer just connect the heat pump directly to the Multi-functions box.



6. Handling & Installation

Unit features

a. Plate heat exchanger

Use the SWEP efficient heat exchanger with small size and high efficiency.

b. Environmentally friendly refrigerant

Use the new generation of environmentally friendly refrigerant R32, which is harmless t the ozone sphere.

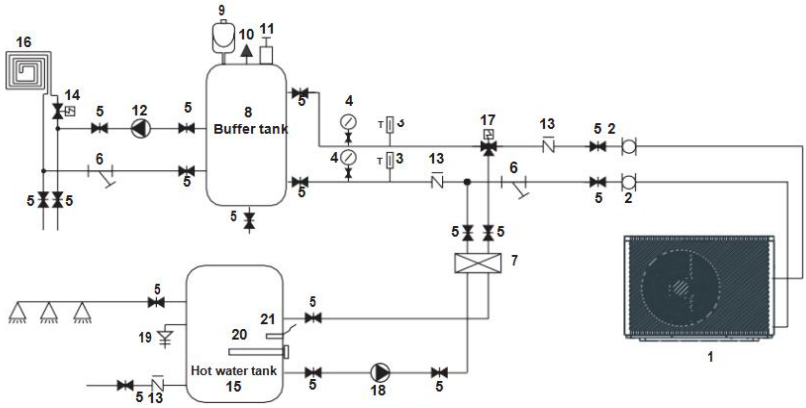
c. Heating in frigid environment.

Optimized designed unit can achieve the heating function normally even when the ambi temperature is -25℃.

6.1. Packing List

	**Heat Pump Unit × 1**
	**Display Mounting Plate × 1**
	**Rubber Feet × 4**
	**Drain Connection × 1**
	**Display Connecting Wire × 1**
	**Thermistor × 1** ***optional accessory**

6.2. Application of Heat Pump



1	Heat pump	10	Relief valve	19	PT valve
2	Flexible pipe	11	Air vent valve	20	Electrical heater
3	Thermometer	12	Water pump for floor heating	21	Hot water sensor
4	Manometer	13	Check valve		
5	Shut-off valve	14	Floor heating valve		
6	Y type water filter	15	Hot water tank		
7	Plate heat exchanger	16	Floor heating pipe/fan coil unit		
8	Buffer tank	17	Hot water valve		
9	Expansion tank	18	Hot water pump		

Remark: Item 17, 18, 20, 21 can be connected with heat pump.

6.3. Choose a Right Heat Pump Unit

(1) Based on the local climate condition, construction features and insulation level, calculate the required cooling(heating) capacity per square meter.
(2) Conclude the total capacity which will be needed by the construction.
(3) According to the total capacity needed, choose the right model by consulting the heat.
pump features as below:
a. Cooling only unit:
Chilled water outlet temp. at 5-15℃, maximum ambient temp. at 43℃.
b. Heating and Cooling unit:
For cooling chilled water outlet temp. at 5-15℃,maximum ambient temp. at 43℃.
For heating, warm water outlet temp. at 25-60℃, minimum ambient temp. at -25℃.
c. Unit application:
Inverter air source water heat pump is used for house, office, hotel, and so forth, which need heating or cooling separately, with each area need to be controlled.

6.4. Installation Place

a. The unit can be installed on any place outdoor which can carry heavy machine such as terrace, housetop, ground and so on.
b. The place is free from heat radiation and other fire flame.
c. A pall is needed in winter to protect the heat pump from snow.
d. There must be not obstacles near the air inlet and outlet of the heat pump.
e. A place which is free from strong air blowing.
f. There must be water channel around the heat pump to drain the condensing water.
g. There must be enough space around the unit for maintenance.

6.5. Installation Method

The heat pump can be installed onto the concrete basement by expansion screws, or onto a steel frame with rubber feet which can be placed on the ground or housetop.
Make sure that the unit is placed horizontally.

6.6. Water Loop Connection

Please pay attention to below matters when the water pipe is connected:

a. Try to reduce the resistance to the water from the piping.

b. The piping must be clear and free from dirty and blocks. Water leakage test must be carried out to ensure there is no water leaking. And then the insulation can be made.

c. Attention that the pipe must be tested by pressure separately. DO NOT test it together with the heat pump.

d. There must be expansion tank on the top point of the water loop, and the water level in the tank must be at least 0.5 meter higher than the top point of the water loop.

e. The flow switch is installed inside of the heat pump, check to ensure that the wiring and action of the switch is normal and controlled by the controller.

f. Try to avoid air stayed inside of the water pipe, and there must be air vent on the top point of the water loop.

g. There must be thermometer and pressure meter at the water inlet and outlet, for easy inspection during running.

6.7. Power Supply Connection

a. Open the front panel, and open the power supply access.

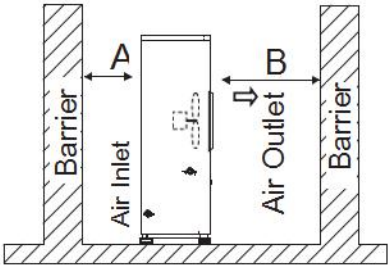
b. The power supply must go through the wire access and be connected to the power supply terminals in the controlling box. Then connect the 3-signal wire

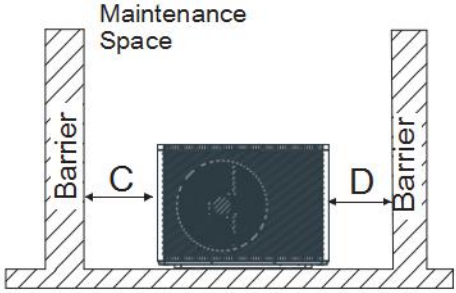
plugs of the wire controller and main controller.

c. If the outside water pump is needed, please insert the power supply wire into the wire access also and connect to the water pump terminals.

d. If an additional auxiliary heater is need to be controlled by the heat pump controller, the relay (or power) of the aux-heater must be connected to the relevant output of the controller.

6.8. Location of the Unit





The picture shows the location of horizontal air outlet unit.

Attention

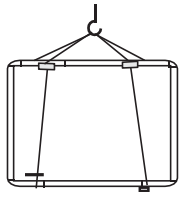
Requirements

A>500mm； B>1500mm；
C>1000mm； D>500mm

The minimum ventilation distance in diagram 1.

6.9. Transit

When the unit need to be hung up during installation, a 8 meters cable is needed, and there must be soft material between the cable and the unit to prevent damage to the heat pump cabinet. (See picture 1)



Picture 1

WARNING

DO NOT touch the heat exchanger of the heat pump with fingers or other objects！

6.10. Trail Running

6.10.1. Inspection before Trial Running

(1) Check the indoor unit, and make sure that the pipe connection is right and the relevant valves are open .
(2) Check the water loop, to ensure that the water inside of the expansion tank is enough, the water supply is good, the water loop is full of water and without any air. Also make sure there is good insulation for the water pipe.
(3) Check the electrical wiring. Make sure that the power voltage is normal, the screws are fastened, the wiring is made in line with the diagram, and the earthing is connected.
(4) Check the heat pump unit including all of the screws and parts of the heat pump to see if they are in good order. When power on, review the indicator on the controller to see if there is any failure indication. The gas gauge can be connected to the check valve to see the high pressure(or low pressure) of the system during trial running.

6.10.2. Trial Running

(1) Start the heat pump by press " " key on the controller. Check whether the water pump is running, if it runs normally there will be 0.2 MPa on the water pressure meter.
(2) When the water pump runs for 1 minutes, the compressor will start. Hear whether there is strange sound from the compressor. If abnormal sound occurs please stop the unit and check the compressor. If the compressor runs well please look for the pressure meter of the refrigerant.
(3) Then check whether the power input and running current is in line with the manual. If not please stop and check.
(4) Adjust the valves on the water loop, to make sure that the hot(cool) water supply to each door is good and meet the requirement of heating(or cooling).
(5) Review whether the outlet water temperature is stable.
(6) The parameters of the controller are set by the factory, it is not allowed to change then by user himself.

7. Maintenance

7.1. Precautions for Daily Use

Before starting up the unit for the first time or after a long-time shutdown, the following preparations must be made: (1) Thoroughly inspect and clean up the unit. (2) Clean the waterway system. (3) Check water pump, regulating valve and other waterway equipment. (4) Tighten all wire connections.
Do not change the system parameters before consulting the engineer.
Ensure the water refill and exhaust device in the waterway is well, otherwise the performance and reliability of the unit will become worse.
Ensure the waterways are clean and avoid dirt and blockage.
Timely check the electrical, water and replace the faulty parts. Please use the parts provided or recommended by the company, do not use the parts unqualified.
Refrigerant supplement: Each unit has been equipped with sufficient refrigerant when leaving the factory. Do not charge or change the refrigerant. If you need to replenish the refrigerant due to leakage, please contact the engineer or dealer.

7.2. Periodic Maintenance (every 6 months)

Preparation	Before maintenance, please ensure that the unit stop running and cut off the power supply.
Inspection and cleaning of fin heat exchanger	In order to ensure that heat exchangers remain in optimum condition for heat exchange, their surfaces must be kept clean.
Inspection and cleaning of plate heat exchanger	Every 6 months or when the capacity of the unit drops by more than 10%, check the water-side heat exchanger for scale and clean the heat exchanger.
Check the electrical wiring	Check if the contact point is loose, oxidized, or blocked by sundries, etc., which causes poor contact of the electronic wiring.

7.3. Inspection and Maintenance

7.3.1. Preparing for Inspection and Maintenance

Danger!
Risk of death caused by fire or explosion if there is a refrigerant leakage!
Only carry out the work if you are competent and have knowledge about the special features and risks of R32 refrigerant.

The product contains combustible refrigerant R32. In the event of a leak, escaping refrigerant may mix with air to form a flammable atmosphere. There is a risk of fire and explosion.

Ensure that space is sufficiently aerated around the product.

Observe the basic safety rules before carrying out inspection and maintenance work or installing spare parts.

Disconnect the product from the power supply but ensure that the product is still earthed.

7.3.2. Cleaning the Product

Do not clean the product with a high-pressure cleaner or a direct jet of water.

Clean the product using a sponge and hot water with a cleaning agent.

Do not use abrasive cleaners. Do not use solvents. Do not use any cleaning agents that contain chlorine or ammonia.

7.3.3. Checking the Evaporator,Fan, and Condensate Discharge

Check whether there is dirt between the fins or whether depositions have adhered to the fins.

Clean the fins using a soft brush, avoid fins from being bent.

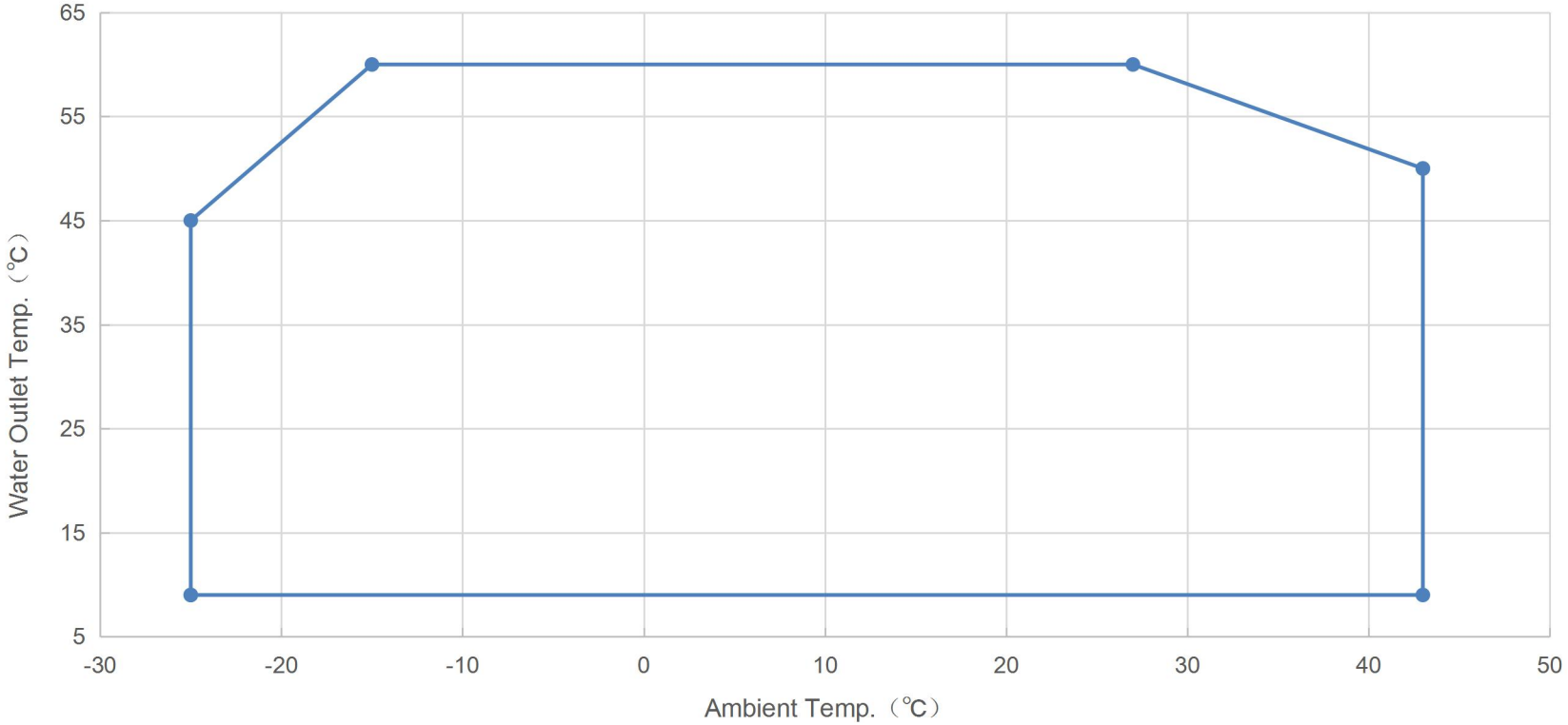
Check whether dirt has accumulated on the condensate tray or in the condensate discharge pipe.

Check that the water can drain freely.

8. Parameters

Model		CH-HP08UIMPRK-P	CH-HP12UIMPRK-P	CH-HP12UIMPRM-P	CH-HP23UIMPRK-P	CH-HP23UIMPRM-P
Power Supply	/	220~240V~/50Hz	220~240V~/50Hz	380~415V/3N~/50Hz	220~240V~/50Hz	380~415V/3N~/50Hz
Moisture Resistance	IPX	IPX4	IPX4	IPX4	IPX4	IPX4
Electrical Shockproof	I	I	I	I	I	I
Heating Condition - Ambient Temp. (DB/WB): 7/6°C, Water Temp. (In/Out): 30/35°C						
Heating Capacity Range	kW	2.3~8.20	3.80~12.50	3.80~12.50	7.00~23.0	7.00~23.0
Heating Power Input Range	kW	0.50~1.84	0.80~2.95	0.80~2.95	1.47~5.9	1.47~5.90
Heating Current Input Range	A	2.17~8.00	3.48~12.8	1.33~4.92	6.5~25.9	2.60~10.42
Cooling Condition - Ambient Temp. (DB/WB): 35/24°C, Water Temp. (In/Out): 12/7°C						
Cooling Capacity Range	kW	1.56~6.00	2.20~10.0	2.20~10.0	4.35~15.00	5.30~15.00
Cooling Power Input Range	kW	0.63~2.36	1.10~3.80	1.10~3.80	1.65~6.59	2.03~6.59
Cooling Current Input Range	A	2.74~10.3	4.78~8.26	1.84 ~6.36	7.58~30.00	3.59~11.64
Hot Water Condition - Ambient Temp. (DB/WB): 20/15°C, Water Temp. (In/Out): 15/55°C						
Hot Water Capacity Range	kW	3.00~9.50	4.15~16.00	4.15~16.00	8.80~26.20	8.80~26.20
Hot Water Power Input Range	kW	0.62~2.30	0.90~3.85	0.90~3.85	2.10~6.29	2.10~6.29
Hot Water Current Input Range	A	2.70~10.0	3.91~17.2	1.50~6.43	9.22~27.6	3.71~11.11
Max. Power Input	kW	2.9	4.95	4.95	6.6	8.3
Max. Current Input	A	13	21.4	8	30	15
Water Flow	m^3/h	1	1.7	1.7	2.9	2.9
Refrigerant / Proper Input	kg	R32 / 1.1kg	R32 / 1.8kg	R32 / 1.8kg	R32 / 2.0kg	R32 / 2.0kg
CO_2 Equivalent	Ton	0.74	1.22	1.22	1.35	1.35
Sound Pressure (1m)	dB(A)	41	43	43	44	45
Sound Power Level (EN12102)	dB	55	58	60	61	61
Net Weight	kg	90	132	132	208	208
Operation Pressure(Low Side)	MPa	2.1	2.1	2.1	2.1	2.1
Operation Pressure(High Side)	MPa	4.4	4.4	4.4	4.4	4.4
Unit Dimension(L/W/H)	mm	1167×407×795	1287×458×928	1287×458×928	1250×540×1330	1250×540×1330
Shipping Dimension(L/W/H)	mm	1300×485×940	1420×540×1080	1420×540×1080	1380×570×1480	1380×570×1480
Compressor	Brand	Panasonic	Panasonic	Panasonic	Panasonic	Panasonic
Circulation Pump	/	YES	YES	YES	YES	YES
Operating Ambient Temperature	℃	-25~43	-25~43	-25~43	-25~43	-25~43
Fan Quantity	/	1	1	1	2	2
Fan Motor Type	/	DC motor	DC motor	DC motor	DC motor	DC motor
Fan Motor Power Input(Min~Max)	W	55~105	60~120	60~120	30~80	30~80
Fan Speed (RPM)	RPM	300~600	300~600	300~600	300~750	300~750
Water Connection (inch)	inch	1	1	1	1	1
Internal Water Pressure Drop (at Rated Flow)	kPa	40	45	45	69	69
Circulation Pump Head	m	7.5	7.5	7.5	12.5	12.5
Cabinet Type		Galvanized sheet+ASA	Galvanized sheet+ASA	Galvanized sheet+ASA	Galvanized sheet+ASA	Galvanized sheet+ASA

9. Operation Range



9.1. CH-HP08UIMPRK-P

Performance Curve of EVIPOWER PREMIUM INVERTER
CH-HP08UIMPRK-P

	90Hz		84Hz		78Hz		72Hz		66Hz		60Hz		54Hz		48Hz	

Heating Capacity (kW)

	Ambient Temperature (℃)																	
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	3.1	3.9	4.5	4.6	5.1	5.8	6.0	6.8	7.0	7.1	7.5	8.2	8.7	9.4	9.5	10.6	10.5	9.5	10.5
41	3.2	4.0	4.6	4.7	5.3	6.0	6.2	7.0	7.2	7.3	7.7	8.4	9.0	9.0	9.1	10.2	10.0	8.9	9.8
45	3.3	4.1	4.7	4.8	5.4	6.1	6.4	7.2	7.4	7.6	7.9	8.7	9.2	9.3	9.4	10.5	9.9	9.2	10.1
50	3.4	4.2	4.9	5.0	5.6	6.3	6.6	6.9	7.1	7.3	7.6	8.3	8.9	8.9	9.0	10.0	9.8	8.5	9.4
55	3.5	4.3	5.0	5.1	5.4	6.1	6.3	6.7	6.9	7.1	7.5	8.2	8.7	8.4	8.5	9.5	10.1	7.7	8.6
60	/	4.1	4.8	4.9	5.1	5.8	6.0	6.2	6.4	6.6	6.9	7.5	8.0	8.6	8.7	9.8	8.6	7.9	8.8

Power Input (kW)

	Ambient Temperature (℃)																	
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	1.42	1.49	1.54	1.56	1.60	1.66	1.70	1.76	1.77	1.78	1.81	1.84	1.85	1.87	1.88	1.90	1.85	1.40	1.48
41	1.70	1.79	1.85	1.87	1.92	1.99	2.04	2.11	2.12	2.14	2.17	2.21	2.22	2.09	2.11	2.13	2.06	1.53	1.61
45	1.92	2.01	2.08	2.11	2.16	2.24	2.30	2.38	2.39	2.40	2.44	2.48	2.50	2.27	2.28	2.31	2.23	1.65	1.75
50	2.20	2.31	2.39	2.42	2.48	2.57	2.64	2.55	2.56	2.58	2.62	2.66	2.68	2.51	2.53	2.55	2.46	1.78	1.88
55	2.41	2.53	2.62	2.65	2.54	2.63	2.70	2.59	2.61	2.62	2.67	2.71	2.73	2.54	2.56	2.58	2.47	1.73	1.83
60	/	2.50	2.59	2.62	2.69	2.79	2.86	2.53	2.55	2.56	2.61	2.65	2.66	2.47	2.48	2.51	2.38	1.83	1.94

COP

	Ambient Temperature (℃)																	
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	2.20	2.58	2.90	2.93	3.20	3.49	3.54	3.84	3.93	4.01	4.13	4.46	4.70	5.03	5.05	5.58	5.68	6.79	7.09
41	1.89	2.22	2.49	2.52	2.75	3.00	3.04	3.29	3.37	3.44	3.55	3.83	4.04	4.31	4.34	4.79	4.87	5.82	6.09
45	1.73	2.03	2.27	2.30	2.51	2.74	2.78	3.01	3.08	3.15	3.24	3.50	3.69	4.10	4.12	4.55	4.43	5.53	5.78
50	1.55	1.82	2.04	2.06	2.25	2.46	2.49	2.70	2.76	2.82	2.91	3.13	3.31	3.53	3.55	3.92	3.99	4.77	4.99
55	1.45	1.70	1.91	1.93	2.11	2.30	2.33	2.59	2.66	2.71	2.80	3.01	3.18	3.31	3.33	3.68	4.08	4.47	4.67
60	/	1.65	1.85	1.87	1.90	2.07	2.10	2.45	2.51	2.56	2.64	2.85	3.00	3.50	3.52	3.89	3.63	4.34	4.53

9.2. CH-HP12UIMPRK-P

Performance Curve of EVIPOWER PREMIUM INVERTER CH-HP12UIMPRK-P

	90Hz		84Hz		78Hz		72Hz		66Hz		60Hz		54Hz		48Hz	

Heating Capacity (kW)

	Ambient Temperature (℃)																		
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	5.0	6.2	7.3	7.4	8.0	9.2	9.8	11.0	11.2	11.3	12.2	12.5	13.5	14.3	14.5	16.5	16.4	14.5	16.0
41	5.2	6.4	7.5	7.6	8.2	9.5	10.1	11.3	11.5	11.6	12.6	12.9	13.9	13.7	13.9	15.9	15.7	13.6	15.0
45	5.3	6.6	7.7	7.8	8.5	9.8	10.4	11.7	11.8	12.0	12.9	13.3	14.3	14.1	14.3	16.3	15.4	14.0	15.4
50	5.5	6.8	8.0	8.1	8.7	10.0	10.7	11.2	11.3	11.5	12.4	12.7	13.7	13.5	13.7	15.6	15.3	12.9	14.3
55	5.6	6.9	8.2	8.3	8.4	9.6	10.2	11.0	11.1	11.3	12.2	12.5	13.5	12.8	13.0	14.8	15.7	11.8	13.0
60	/	6.7	7.8	7.9	8.0	9.2	9.8	10.1	10.3	10.4	11.2	11.5	12.4	13.2	13.3	15.2	13.5	12.1	13.4

Power Input (kW)

	Ambient Temperature (℃)																		
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	2.43	2.51	2.59	2.60	2.64	2.73	2.77	2.85	2.86	2.87	2.93	2.95	3.00	3.05	3.06	3.12	2.98	2.14	2.30
41	2.91	3.01	3.11	3.11	3.17	3.28	3.32	3.42	3.43	3.44	3.52	3.54	3.60	3.42	3.43	3.49	3.32	2.33	2.51
45	3.27	3.39	3.50	3.50	3.56	3.69	3.73	3.85	3.86	3.87	3.96	3.98	4.05	3.70	3.71	3.79	3.60	2.53	2.72
50	3.76	3.89	4.01	4.02	4.09	4.23	4.29	4.12	4.14	4.15	4.24	4.27	4.34	4.10	4.11	4.19	3.96	2.71	2.92
55	4.12	4.27	4.40	4.41	4.19	4.33	4.39	4.20	4.21	4.23	4.32	4.35	4.42	4.15	4.16	4.24	3.98	2.65	2.84
60	/	4.22	4.35	4.36	4.44	4.59	4.65	4.10	4.12	4.13	4.22	4.25	4.32	4.03	4.04	4.12	3.83	2.80	3.01

COP

	Ambient Temperature (℃)																		
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	2.06	2.47	2.82	2.85	3.03	3.37	3.54	3.86	3.90	3.94	4.16	4.24	4.50	4.69	4.74	5.29	5.50	6.78	6.96
41	1.77	2.12	2.42	2.45	2.60	2.89	3.04	3.31	3.35	3.38	3.57	3.64	3.86	4.02	4.07	4.54	4.72	5.82	5.97
45	1.62	1.94	2.21	2.24	2.38	2.65	2.78	3.03	3.06	3.09	3.27	3.33	3.53	3.82	3.86	4.31	4.29	5.52	5.67
50	1.45	1.74	1.98	2.01	2.13	2.37	2.49	2.71	2.74	2.77	2.93	2.98	3.16	3.30	3.33	3.72	3.87	4.76	4.89
55	1.36	1.63	1.86	1.88	2.00	2.22	2.34	2.61	2.64	2.66	2.82	2.87	3.04	3.09	3.12	3.48	3.96	4.46	4.58
60	/	1.58	1.80	1.82	1.80	2.00	2.10	2.47	2.49	2.52	2.66	2.71	2.88	3.27	3.30	3.69	3.52	4.33	4.44

9.3. CH-HP12UIMPRM-P

Performance Curve of EVIPOWER PREMIUM INVERTER
CH-HP12UIMPRM-P

	90Hz		84Hz		78Hz		72Hz		66Hz		60Hz		54Hz		48Hz	

Heating Capacity（kW）

	Ambient Temperature (℃)																	
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	5.0	6.2	7.4	7.5	8.1	9.3	9.9	11.1	11.2	11.4	12.3	12.6	13.6	14.4	14.6	16.6	16.5	14.6	16.1
41	5.2	6.4	7.6	7.7	8.3	9.6	10.2	11.4	11.6	11.7	12.7	13.0	14.0	13.9	14.1	16.0	15.8	13.7	15.1
45	5.3	6.6	7.8	7.9	8.5	9.8	10.5	11.8	11.9	12.1	13.0	13.4	14.4	14.3	14.5	16.5	15.6	14.1	15.5
50	5.5	6.8	8.0	8.1	8.8	10.1	10.8	11.3	11.4	11.6	12.5	12.8	13.8	13.6	13.8	15.7	15.4	13.0	14.4
55	5.6	7.0	8.2	8.4	8.4	9.7	10.3	11.1	11.2	11.4	12.3	12.6	13.6	12.9	13.1	14.9	15.9	11.9	13.1
60	/	6.7	7.9	8.0	8.0	9.2	9.8	10.2	10.3	10.5	11.3	11.6	12.5	13.3	13.4	15.3	13.6	12.2	13.5

Power Input (kW)

	Ambient Temperature (℃)																	
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	2.42	2.50	2.58	2.59	2.63	2.72	2.76	2.84	2.85	2.86	2.92	2.94	2.99	3.05	3.06	3.11	2.97	2.14	2.30
41	2.90	3.01	3.10	3.11	3.16	3.27	3.31	3.41	3.43	3.44	3.51	3.53	3.59	3.42	3.43	3.49	3.31	2.33	2.50
45	3.27	3.38	3.49	3.50	3.56	3.68	3.73	3.84	3.85	3.87	3.95	3.97	4.04	3.70	3.71	3.78	3.59	2.52	2.71
50	3.75	3.88	4.01	4.01	4.08	4.22	4.28	4.11	4.13	4.14	4.23	4.26	4.33	4.10	4.11	4.18	3.95	2.71	2.91
55	4.11	4.26	4.39	4.40	4.18	4.32	4.38	4.19	4.21	4.22	4.31	4.34	4.41	4.15	4.16	4.23	3.97	2.64	2.84
60	/	4.21	4.34	4.35	4.43	4.58	4.64	4.10	4.11	4.12	4.21	4.24	4.31	4.03	4.04	4.11	3.82	2.80	3.00

COP

	Ambient Temperature (℃)																	
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	2.08	2.49	2.85	2.88	3.06	3.40	3.58	3.90	3.94	3.98	4.21	4.28	4.55	4.73	4.78	5.34	5.56	6.84	7.03
41	1.79	2.14	2.44	2.47	2.63	2.92	3.07	3.35	3.38	3.41	3.61	3.67	3.90	4.06	4.10	4.58	4.77	5.87	6.03
45	1.64	1.96	2.24	2.26	2.40	2.67	2.81	3.06	3.09	3.12	3.30	3.36	3.57	3.85	3.89	4.36	4.33	5.58	5.73
50	1.46	1.75	2.00	2.03	2.15	2.39	2.52	2.74	2.77	2.80	2.96	3.01	3.20	3.32	3.36	3.76	3.91	4.81	4.94
55	1.37	1.64	1.88	1.90	2.02	2.24	2.36	2.64	2.66	2.69	2.84	2.90	3.07	3.11	3.15	3.52	3.99	4.51	4.63
60	/	1.59	1.82	1.84	1.82	2.02	2.12	2.49	2.52	2.54	2.69	2.73	2.90	3.29	3.33	3.72	3.55	4.37	4.49

9.4. CH-HP23UIMPRK-P

Performance Curve of EVIPOWER PREMIUM INVERTER CH-HP23UIMPRK-P

	90Hz		84Hz		78Hz		72Hz		66Hz		60Hz		54Hz		48Hz	

Heating Capacity（kW）

	Ambient Temperature (℃)																		
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	10.49	12.25	13.23	13.43	15.60	16.75	17.61	18.67	19.68	20.13	20.76	22.54	24.15	25.51	26.63	28.58	28.79	25.80	29.52
41	10.15	12.08	13.14	13.51	14.86	16.09	16.64	18.41	19.48	21.15	21.72	23.22	24.93	25.12	26.01	27.67	27.47	24.99	27.07
45	9.82	11.64	12.85	13.08	14.84	15.51	16.05	17.73	18.77	20.66	22.19	22.83	24.40	24.61	25.46	26.95	26.56	24.66	26.12
50	10.24	11.53	12.12	12.36	14.70	15.29	15.79	16.60	18.49	19.91	21.55	22.45	23.42	22.84	23.62	25.59	25.95	21.20	22.46
55	7.88	10.00	10.59	10.76	13.38	12.99	13.44	14.93	15.60	17.37	18.80	20.57	21.34	20.59	21.29	22.83	21.98	19.10	20.24
60	—	9.42	9.87	10.21	11.02	11.80	12.61	14.25	15.23	15.79	16.83	17.74	19.77	21.38	22.04	20.60	21.67	21.72	23.01

Power Input（kW）

	Ambient Temperature (℃)																		
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	4.76	4.81	4.84	4.86	4.87	4.93	4.96	4.98	5.05	5.11	5.14	5.20	5.22	5.29	5.31	5.34	5.10	4.10	4.23
41	5.23	5.29	5.32	5.34	5.36	5.42	5.46	5.48	5.55	5.62	5.65	5.72	5.74	5.43	5.45	5.48	5.21	4.10	4.23
45	5.75	5.82	5.85	5.88	5.89	5.96	6.01	6.03	6.11	6.18	6.22	6.30	6.32	5.97	5.99	6.03	5.73	4.51	4.65
50	6.37	6.44	6.48	6.51	6.53	6.57	6.60	6.23	6.31	6.39	6.43	6.51	6.53	6.14	6.16	6.20	5.86	4.50	4.64
55	6.44	6.51	6.55	6.57	6.59	6.19	6.24	6.26	6.34	6.42	6.46	6.54	6.56	6.14	6.16	6.20	5.81	4.32	4.46
60	/	6.54	6.58	6.59	6.60	6.14	6.19	6.21	6.29	6.37	6.41	6.49	6.51	6.59	6.60	6.05	6.19	5.07	5.23

COP

	Ambient Temperature (℃)																		
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	2.21	2.55	2.73	2.76	3.20	3.40	3.55	3.75	3.90	3.94	4.04	4.33	4.63	4.82	5.02	5.35	5.64	6.29	6.98
41	1.94	2.28	2.47	2.53	2.77	2.97	3.05	3.36	3.51	3.76	3.84	4.06	4.34	4.63	4.77	5.05	5.27	6.10	6.40
45	1.71	2.00	2.20	2.22	2.52	2.60	2.67	2.94	3.07	3.34	3.57	3.63	3.86	4.12	4.25	4.47	4.64	5.47	5.61
50	1.61	1.79	1.87	1.90	2.25	2.33	2.39	2.67	2.93	3.12	3.35	3.45	3.59	3.72	3.83	4.13	4.43	4.72	4.84
55	1.23	1.54	1.62	1.64	2.03	2.10	2.15	2.39	2.46	2.70	2.91	3.15	3.25	3.36	3.46	3.68	3.78	4.42	4.54
60	/	1.44	1.50	1.55	1.67	1.92	2.04	2.30	2.42	2.48	2.63	2.73	3.04	3.24	3.34	3.40	3.50	4.28	4.40

9.5. CH-HP23UIMPRM-P

Performance Curve of EVIPOWER PREMIUM INVERTER CH-HP23UIMPRM-P

	90Hz		84Hz		78Hz		72Hz		66Hz		60Hz		54Hz		48Hz	

Heating Capacity（kW）

	Ambient Temperature (℃)																	
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	10.7	12.5	13.5	13.7	15.9	17.1	18.0	19.1	20.1	20.5	21.2	23.0	24.6	26.0	27.2	29.2	29.4	26.3	30.1
41	10.4	12.3	13.4	13.8	15.2	16.4	17.0	18.8	19.9	21.6	22.2	23.7	25.4	25.6	26.5	28.2	28.0	25.5	27.6
45	10.0	11.9	13.1	13.3	15.1	15.8	16.4	18.1	19.2	21.1	22.6	23.3	24.9	25.1	26.0	27.5	27.1	25.2	26.7
50	10.5	11.8	12.4	12.6	15.0	15.7	16.2	16.9	18.9	20.3	22.0	22.9	23.9	23.3	24.1	26.1	26.5	21.6	22.9
55	8.6	10.9	11.6	11.8	13.7	14.3	14.8	15.2	15.9	17.7	19.2	21.0	21.8	21.0	21.7	23.3	22.4	19.5	20.6
60	/	11.2	11.7	12.2	13.2	15.3	16.4	15.9	17.0	17.6	18.7	19.7	22.0	21.8	22.5	23.1	22.1	22.2	23.5

Power Input（kW）

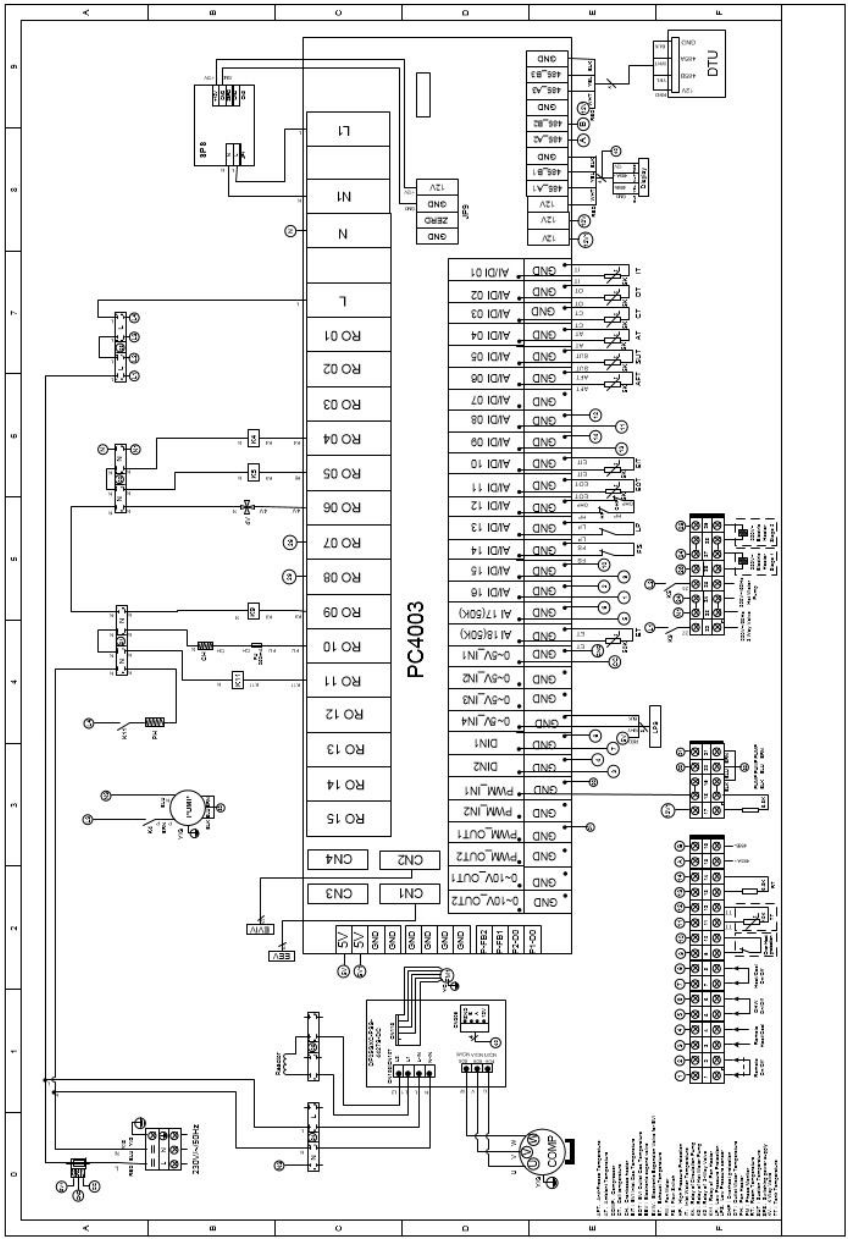
	Ambient Temperature (℃)																	
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	4.76	4.81	4.84	4.86	4.87	4.93	4.96	4.98	5.05	5.11	5.14	5.20	5.22	5.29	5.31	5.34	5.10	4.10	4.23
41	5.23	5.29	5.32	5.34	5.36	5.42	5.46	5.48	5.55	5.62	5.65	5.72	5.74	5.43	5.45	5.48	5.21	4.10	4.23
45	5.75	5.82	5.85	5.88	5.89	5.96	6.01	6.03	6.11	6.18	6.22	6.30	6.32	5.97	5.99	6.03	5.73	4.51	4.65
50	6.37	6.44	6.48	6.51	6.53	6.60	6.65	6.23	6.31	6.39	6.43	6.51	6.53	6.14	6.16	6.20	5.86	4.50	4.64
55	6.90	6.97	7.02	7.04	6.59	6.67	6.72	6.26	6.34	6.42	6.46	6.54	6.56	6.14	6.16	6.20	5.81	4.32	4.46
60	/	7.63	7.68	7.71	7.73	7.82	7.88	6.77	6.86	6.95	6.99	7.08	7.10	6.59	6.62	6.66	6.19	5.07	5.23

COP

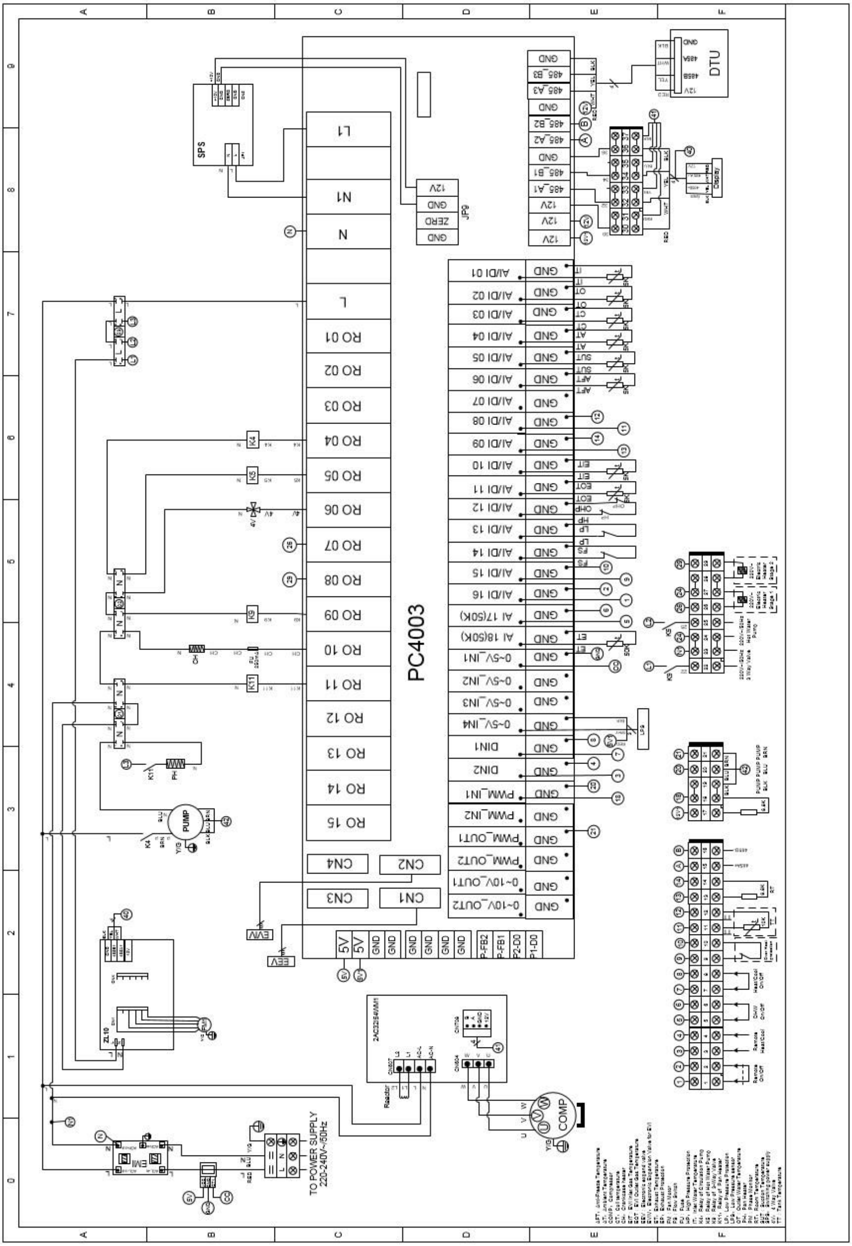
	Ambient Temperature (℃)																	
Water outlet(℃)	-25	-20	-16	-15	-12	-7	-5	0	1	2	5	7	10	14	15	20	25	30	35
35	2.25	2.60	2.79	2.82	3.27	3.47	3.62	3.83	3.98	4.02	4.12	4.42	4.72	4.92	5.12	5.46	5.76	6.42	7.12
41	1.98	2.33	2.52	2.58	2.83	3.03	3.11	3.43	3.58	3.84	3.92	4.14	4.43	4.72	4.87	5.15	5.38	6.22	6.53
45	1.74	2.04	2.24	2.27	2.57	2.66	2.73	3.00	3.14	3.41	3.64	3.70	3.94	4.20	4.33	4.56	4.73	5.58	5.73
50	1.64	1.83	1.91	1.94	2.30	2.38	2.44	2.72	2.99	3.18	3.42	3.52	3.66	3.79	3.91	4.21	4.52	4.81	4.94
55	1.25	1.57	1.65	1.67	2.07	2.14	2.20	2.43	2.51	2.76	2.97	3.21	3.32	3.42	3.53	3.76	3.86	4.51	4.63
60	/	1.47	1.53	1.58	1.70	1.96	2.08	2.34	2.47	2.53	2.68	2.79	3.10	3.31	3.41	3.47	3.57	4.37	4.49

10. Wiring Diagram

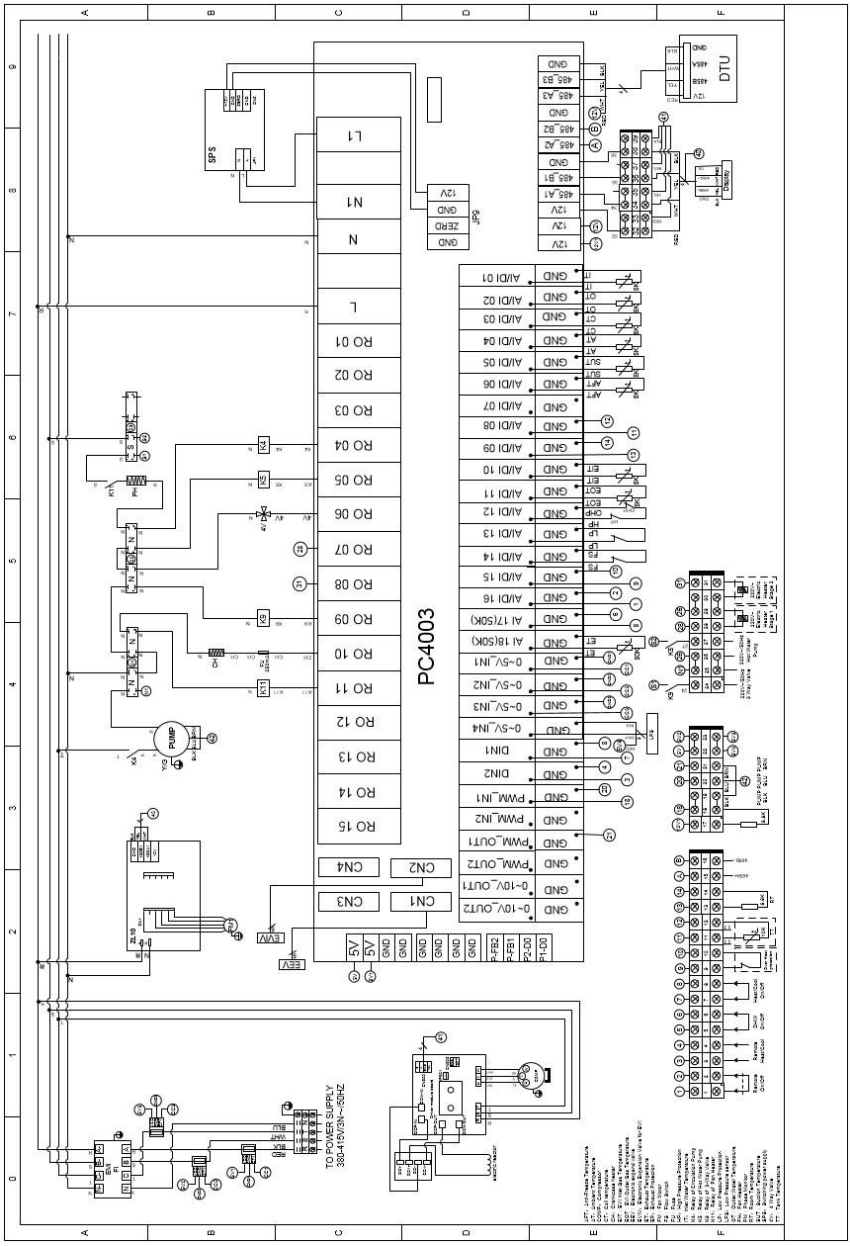
10.1. Model:CH-HP08UIMPRK-P



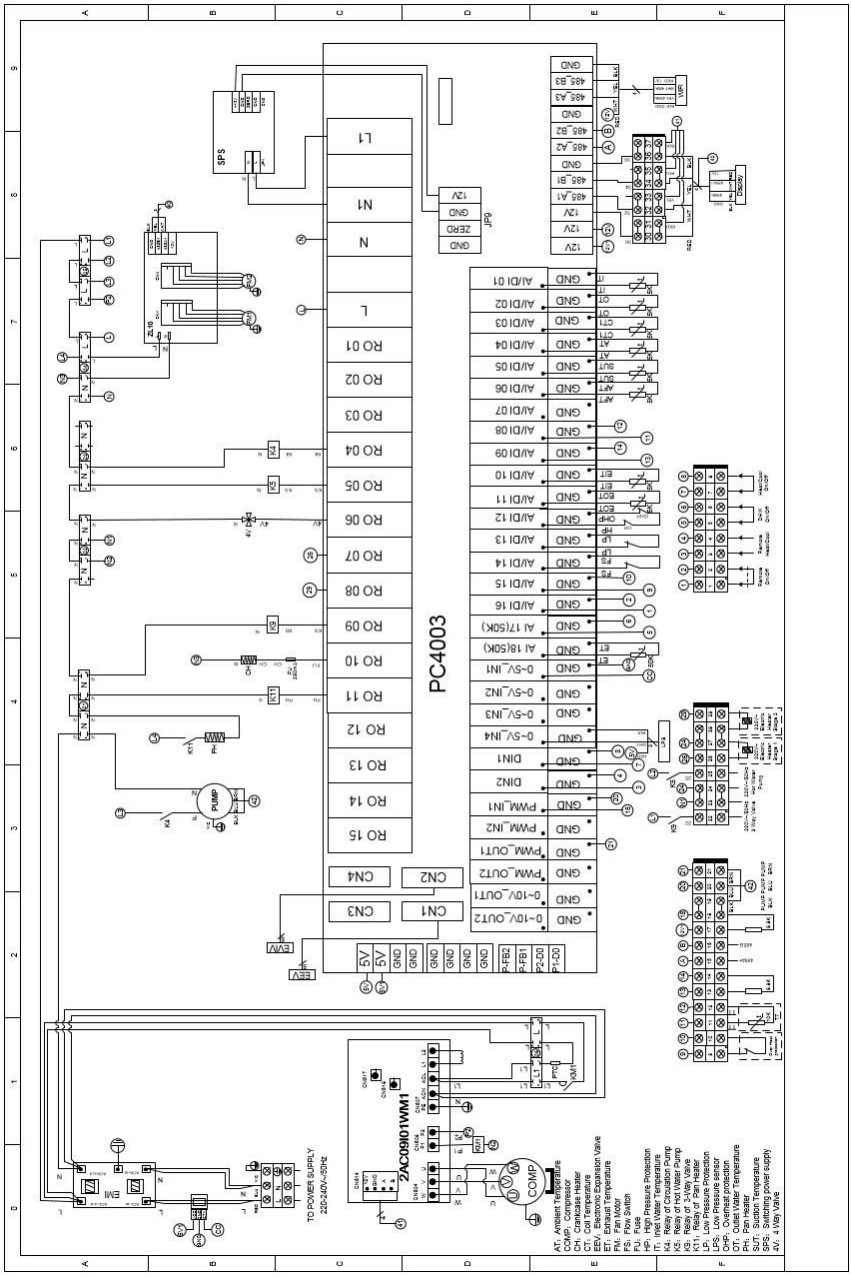
10.2. Model: CH-HP12UIMPRK-P



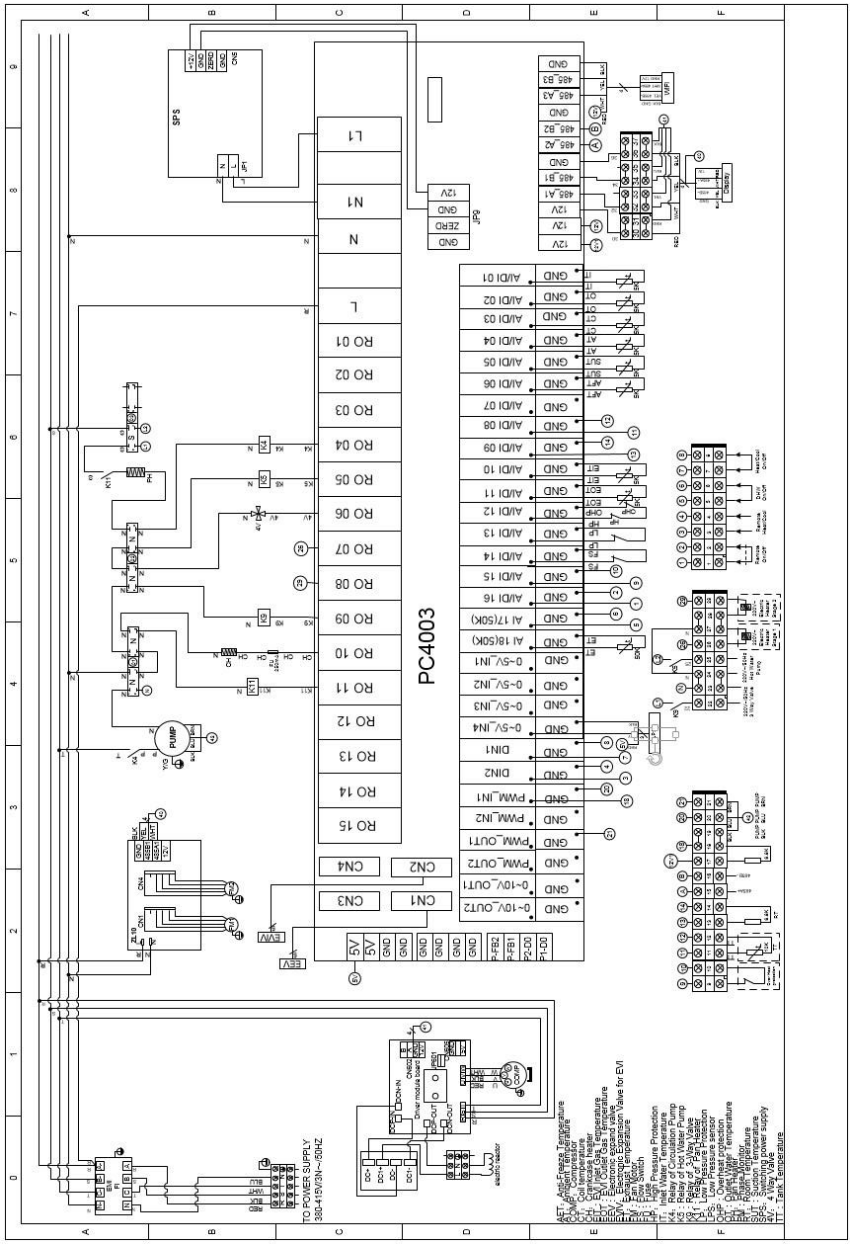
10.3. Model: CH-HP12UIMPRM-P



10.4. Model: CH-HP23UIMPRK-P



10.5. Model: CH-HP23UIMPRM-P



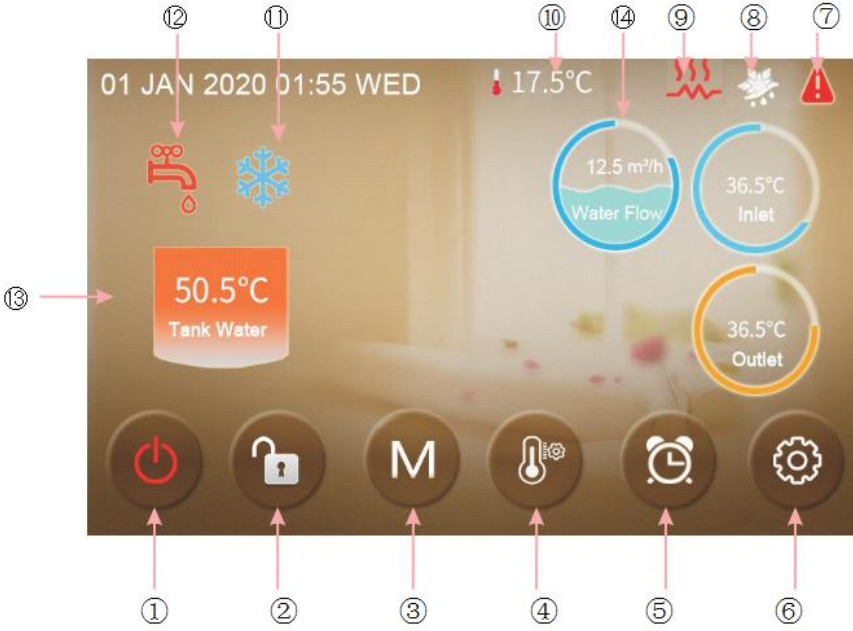
11. Display Operation Guide

11.1. Main Interface Display and Function

(1) Power on Interface



(2) Starting up Interface

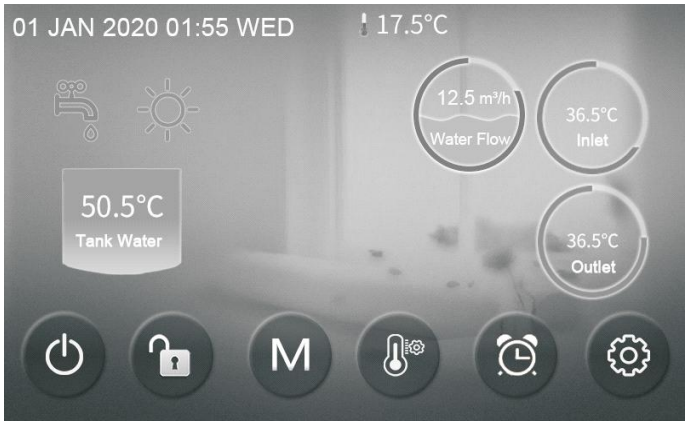


Key No.	Key Name	Key Function
①	ON/OFF	Switch the unit ON or OFF. Red represents ON, while grey represents OFF.
②	Lock Screen	Lock the screen. White represents disabled, while green represents enabled.
③	Running Mode	Switch Hot water mode, heating mode, cooling mode, hot water + heating mode or hot water + cooling mode
④	Temperature Setting	Set the target temperature.
⑤	Timer Setting	Set the timer. White represents disabled, while green represents enabled.
⑥	Setup	Check the unit status, time, factory parameter, temperature curve, timer setting and mute setting.
⑦	Fault	This icon will flash when there is an error showing up. The display will enter fault record interface after tapping this icon.
⑧	Defrosting	The unit is in defrosting mode when this icon shows up.
⑨	Electric Heater	The unit is in electric heater mode when this icon shows up.
⑩	Ambient Temperature	It shows the current ambient temperature.
⑪	Cooling Mode	The unit is in cooling mode when this icon shows up.
⑫	Hot Water Mode	The unit is in hot water mode when this icon shows up.
⑬	Tank Water Temperature	The unit is in hot water mode when this icon shows up; Otherwise, this icon is not shown.
⑭	Water Flow (Not available for model P24T)	It shows the current water flow (note: When H31=0, the icon is not displayed).
⑮	Room Temperature	It shows the current room temperature.

11.2. ON/OFF

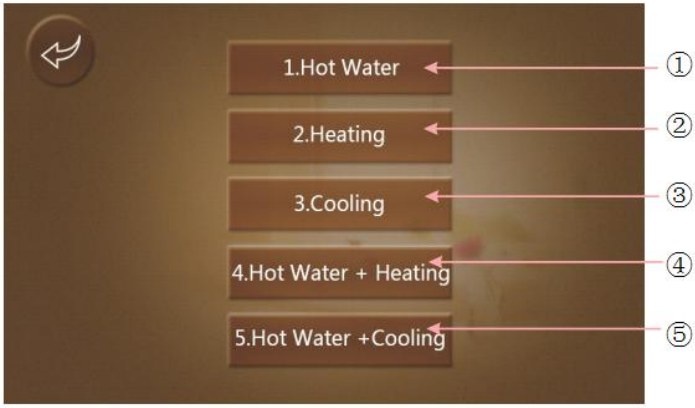
As the main interface shows

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



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

11.3. Mode Switch



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

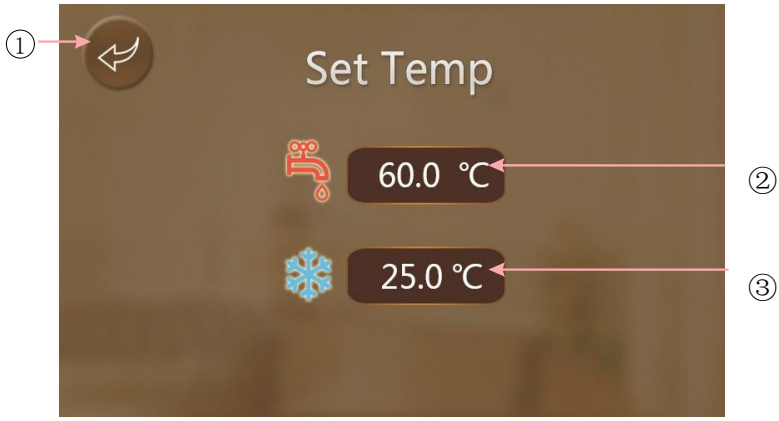
(1)tapping hot water mode icon ①, then the display will change to this mode's interface;

(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;

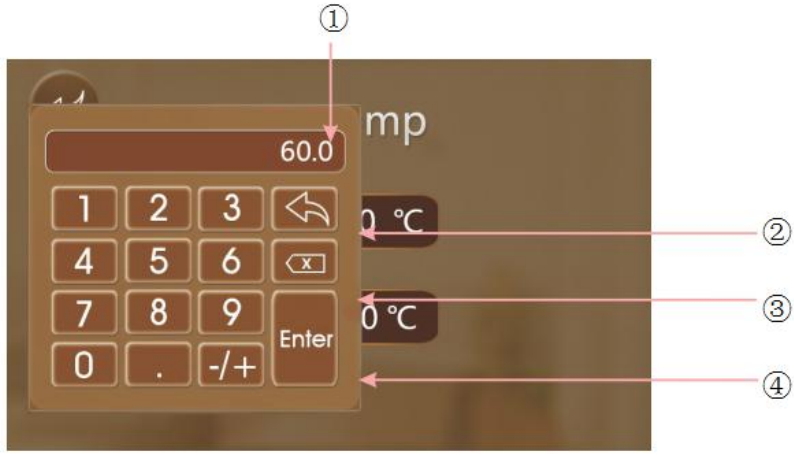
(4)tapping hot water + heating mode icon ④, then the display will go into the hot water + heating mode's interface;
(5)tapping hot water + cooling mode icon ⑤, then the display will come to the hot water + cooling mode's interface;
Note: If your unit is a heating-only model (without a cooling function), the "cooling" key will show on the interface.

11.4. Set Target Temperature



Take hot water + cooling mode for example:
Tapping①, the wire controller will back to the main interface;
Tapping②, the target temp of hot water can be set by the pop-up keyboard;
Tapping③, the target temp of cooling mode can be set by the pop-up keyboard.

When the target temp is being set, the pop-up keyboard is shown as following:

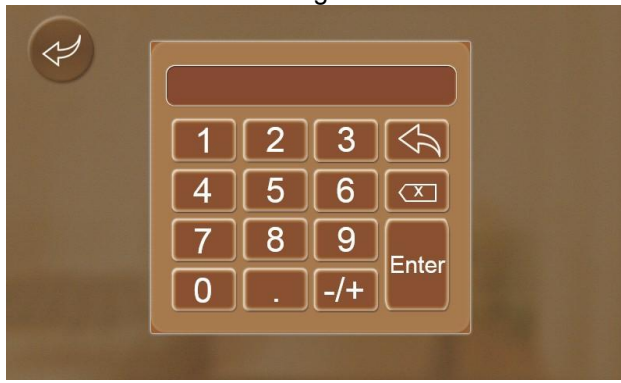


Key No.	Key Name	Key Function
②	Return key	Tapping this key can back to the main interface.
③	Delete key	Tapping this key to undo the last action.
④	Enter key	Tapping this key can save you action and back to the main interface.

Note: ①means the new target temp under current setting

11.5. Unlock Screen

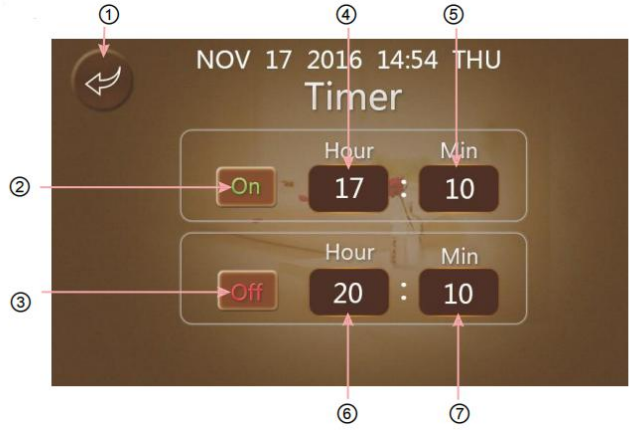
Click the lock screen key again while the screen has been locked, the pop-up keyboard is shown as following:



Note: Input the password of 22 or 022 and click the enter key, the screen will be unlocked.

11.6. Timer Setting

Click the timer setting key to enter the timer setting, the interface display is as follows:

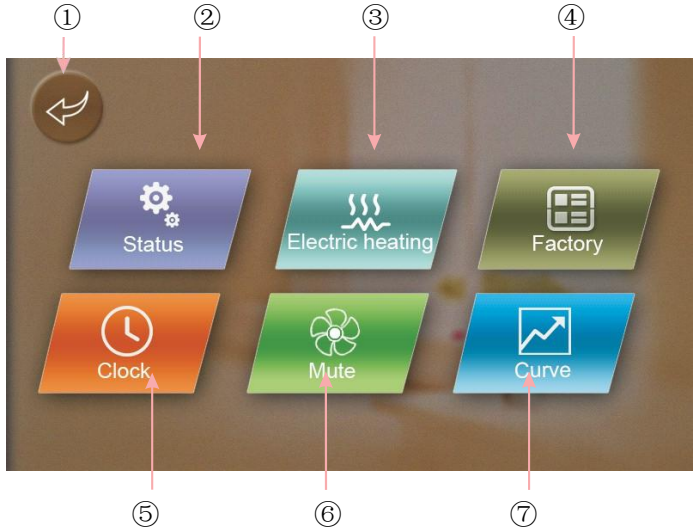


Key No.	Key Name	Key color	Key Function
①	Return key		Click this key to return to the main interface.
②	Enable the timer on	Enable: Green ON Disable: Gray OFF	Click this key to start or turn off the timed start-up function
③	Enable the timer off	Enable: Red ON Disable: Gray OFF	Click this key to start or turn off the timed shutdown function
④	Hour of timer on		Hour of Timer on is shown
⑤	Minute of timer on		Minute of Timer on is shown
⑥	Hour of timer off		Hour of Timer off is shown
⑦	Minute of timer off		Hour of Timer off is shown

Such as the above figure: Under the state of unmanned operation, it will start the timed start-up at 17:10 and will be timed shutdown when running to 20:10.

11.7. Setup

Click the setup key to enter the setup and the interface display is shown as follows:



Key No.	Key Name	Key Function
①	Return key	Click this key to return to the main interface.
②	Operating mode	Click this key to view the current operating parameters of the unit.
③	Electric heating	Click this key to turn on the unit Electric heating.
④	Factory parameter	Click the key and enter the password to enter the factory parameter settings and status parameters interface.
⑤	System time setting	Click this key to set the system time.
⑥	Mute setting	Click this key to set the unit mute function mode.
⑦	Curve key	Click this key to view the temperature curve.

Note: If the unit has ②, ⑥ or both functions, the corresponding icon will be displayed on the setting interface.

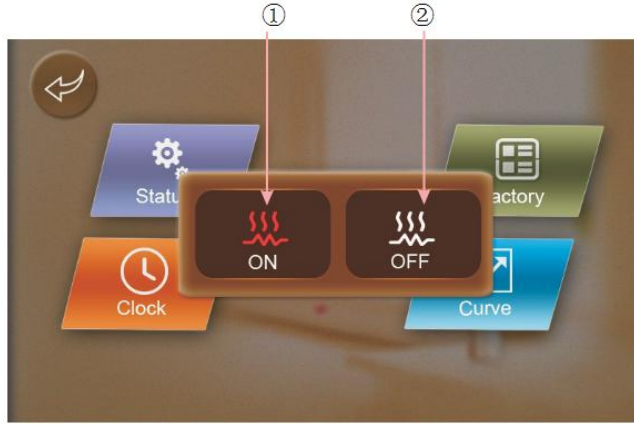
In the setup interface:
(1) Tapping operating mode button②, then the interface display is shown as follows:
(2) Tapping system time setting button⑤, then the interface display is shown as follows:



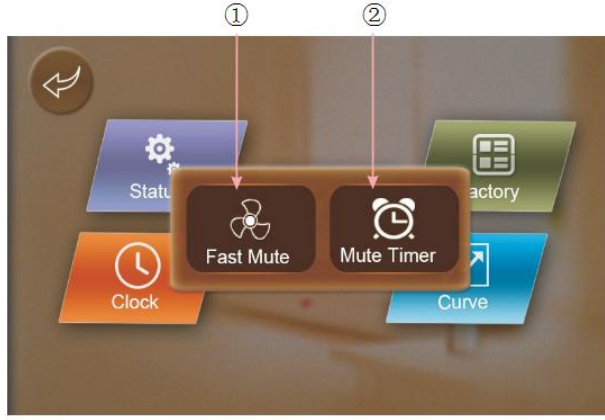
Key No.	Key Name	Key Function
①	Return key	Click this key to return to the setup interface.
②	Up key	Click this key to increase the value.
③	Down key	Click this key to decrease the value.
④	Cannel key	Click this key to cancel the current settings and return to the settings page.
⑤	Enter key	Click this key to save the current settings.

Note:
①: Click the up and down key to set the month;
②: Click the up and down key to set the day;
③: Click the up and down key to set the year;
④: Click the up and down key to set the hour;
⑤: Click the up and down key to set the minute;
⑥: Click the key to cancel the setting;
⑦: Click the key to determine the setting,and the system will be automatically calibrated if it is incorrect.

(3) Tapping Electric heating button③, then the interface display is shown as follows:

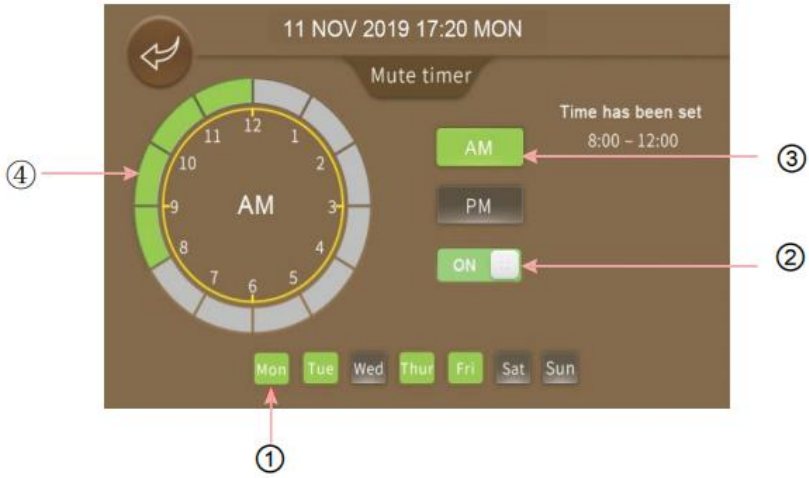


Note:
When the unit starts the electric heating , the icon is displayed as ①;
When the unit closes the electric heating , the icon is displayed as ②;
While the unit is in cooling mode , clicking the icon ①, the electric heating will not be turned on;
While the unit is in hot water+cooling mode , if the hot water side is running, the electric heating will be operated and shown; if the cooling side is running,clicking the icon ①, the electric heating will not be turned on.
(4) Tapping Mute setting button⑥, then the interface display is shown as follows:



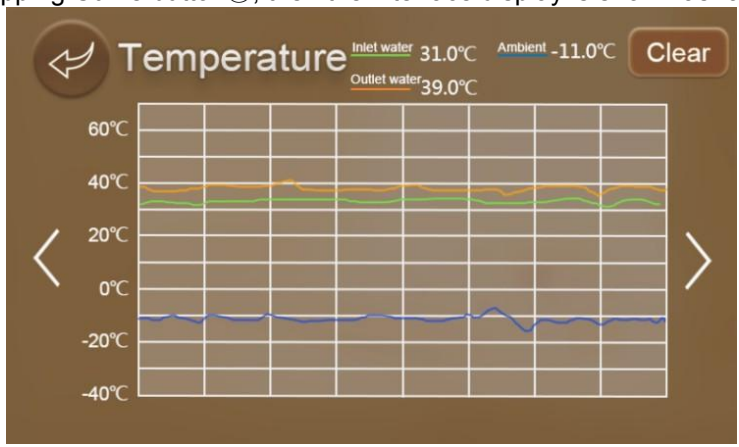
Note: When the unit is enabled to activate the mute function, the icon ① is displayed as ; When the unit is enabled to activate the powerful function, the icon ① is displayed as .

(5) Tapping Mute Timer button ②, then the interface display is shown as follows:



Note: Click ①to set the day of the week, click ②to active the mute mode, then click ③to select the morning or afternoon mode, and finally click ④to select the time period to turn on the silent mode.

(6) Tapping Curve button⑦, then the interface display is shown as follows:

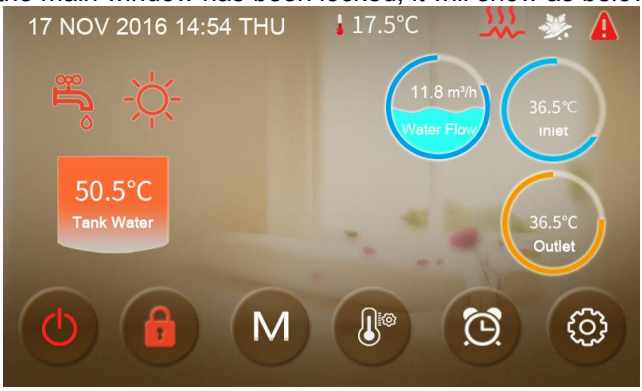


a. This curve function records the water inlet temperature and water outlet temperature;
b. Temperature data is collected every five minutes and the 12 sets of temperature data are saved every hour. Timekeeping is made from the latest data saving, if the power is disrupted when the time is less than 1 hour (12 sets), the data during such period will not be saved.

c. Only curve for power-on status is recorded, and that for power-off will not be saved;
d. The value of the abscissa indicates the time from the point on the curve to the current time point. The leftmost point on the first page (0 on the abscissa) is the latest temperature record;
e. Temperature curve record is provided with power-down memory function.

11.8. Locking Window Function

(1) When the main window has been locked, it will show as below:



(2) Unlock the mainboard window

Click the “lock” key to unlock the window, it needs to input the password 22 or 022;



12. Electrical Parameter

NO.	Type	Parameter	Default value	Specification	Remark
1	H System Parameter	H01	1-Yes	【Auto start】	According to the order, (0- NO memory /1- memory)
2		H02	---	【System Quantity】	Do not need to set this parameter (" -- "is displayed)
3		H03	---	【4-way Valve Polarity】	
4		H05	1-Yes	【Cooling Mode】	According to the order, (0-disabled / 1-enabled) [0-no / 1-yes]
5		H06	---	【Unit Model Selection】	
6		H07	0-Master	【Dry Contact】	(0- Wire control /1- Switch control)0- [Master] /1- [Slave]
7		H10	1	【Unit Address】	
8		H15	---	【Compressor Shunt Times】	
9		H16	---	【Comp Overcurrent Setpoint】	
10		H17	---	【Comp Energy Stage Control】【0-No/1-Yes】	
11		H18	3-Stage3	【Electric Heater Energy Stage】	【1-Stage1/2-Stage2/3-Stage3】
12		H20	0-Hot Water-ON	【3-way Valve Polarity】	【0-Hot Water-ON/1-Hot Water-OFF】
13		H21	0-℃	【Temperature Unit】	According to the order,(0-℃/1-℉)
14		H22	1-Yes	【Silence Mode】	【0-No/1-Yes】
15		H25	0-outlet Water	【Air Conditioner Tempt. Choice】	【0-outlet Water/1-Room】
16		H27	3-All EVI	【EVI enabled EVI Enabled】	【0- no EVI/1-EVI for cooling/2-EVI for heating/3-All EVI】
17		H28	1	【Heating/Cooling and Hot Water Function Enabled】	0-NO/1-YES
18		H29	0	【Model running parameter code】	（0-20）
19		H30	0	【Hydraulic Module】	【0-NO/1-YES】
20		H31	/	【Pump Type】	【0-No Flow Detection 1-Grundfos(25~75) 2-Grundfos(25~105) 3-Grundfos(25~125)】
21		H32	120	1~300min） 【Force Switch Mode Time】	According to the order, if the order does not appear, according to the set value
22		H33	0	【Fan Motor Drive Integrated】	
23	A System Protection	A03	-25	【Shutdown Ambient Temp】	
24		A04	4	【Antifreeze Temp】	According to the order, if the order does not appear, according to the set value
25		A05	3	【Antifreeze Temp Difference】	
26		A06	115	【Exhaust Temp Protect Setup】	
27		A11		【Low Voltage Pressure Sensor】	According to the circuit diagram

28		A19	---	【Antifreeze Program】	
29		A20	---	【Current Transformer Type】	
30		A21	0-5K	【Ambient/Suction/Coil Sensor】	(0-5K/1-2K)
31		A22	4	【Antifreeze Min Temp】	According to the order, if the order does not appear, according to the set value
32		A23	5	【Low Outlet Water Temp Protection Value】	
33		A24	9.5	【Inlet and Outlet Water Temp Difference Overlimiting Value】	
34		A25	-3.5	【Minimum Evaporation Temp of Cooling】	
35	F Fan	F01	3-DC	【Fan Motor Type】	【0-High/1-Double/3-DC】
36		F02	50	【Max Cool Coil Temp】	
37			---	【Cooling High Speed Pressure】	
38		F03	10	【Min Cool Coil Temp】	
39			---	【Cooling low speed pressure】	
40		F04	---	【Stop Cool Coil Temp】	
41			---	【Cooling motor off pressure】	
42		F05	10	【Max Heat Coil Temp】	
43			---	【Heating high speed pressure】	
44		F06	20	【Min Heat Coil Temp】	
45			---	【Heating Low Speed Pressure】	
46		F07	---	(Stop Heat Coil Temp】	
47			---	(0~20bar) 【Heating Motor Off Pressure】	
48		F10	0- One fan	【Quantity】	【0- One fan/1-Two fans】
49	F Fan	F11	---	【Speed Control Mode】	
50		F15	---	【Unloading Coil Temp】	
51		F16	---	【Adavanced Start Time】	
52		F17	---	【Fan Motor Max Speed in】	
53		F18	300	【Cooling Fan Motor Speed】	
54		F19	300	【Fan Motor Min Speed in Heating】	
55		F20	---	【Mute Mode Speed】	
56		F21	0	【Timer Mute】	【0-No/1-Yes】
57		F22	0	【Manual-control Fan Speed】	【0-No/1-Yes】
58		F23	600	【 DC/EC Fan Rated Speed】	
59		F24	---	【DC Fan Motor Speed Regulation Plate Number】	

60		F25	700	【Cooling Fan Max Speed】	
61		F26	700	【Heating Fan Max Speed】	
62	D Defrosting	D01-1	-7	【Start Defrosting Setpoint】	
63		D01-2	5.5	【Start Defrosting Pressure】	
64		D02	13	【Exit Defrosting Setpoint】	
65		D03	45	(30~90min)【Defrosting Cycle】	
66		D04	8	(1~12 min)【Max Defrosting Time】	
67		D06	---	【Defrost Mode】	LCD wire controller (82400212) This parameter is unavailable 82400247 This parameter is unavailable
68		D07	1-Yes	【Electric Heater Control】	【0-No/1-Yes】
69		D08	2	【Sliding Defrost Ambient Temp】	
70		D09	14	【Sliding Defrost:AT Diff】	
71		D10-1	10	【Sliding Defrost:CT Diff】	
72		D10-2	2	【Sliding Defrost:Pressure Diff】	
73		D11-1	-18	【Sliding Defrost:Min CT】	
74		D11-2	3.3	【Sliding Defrost:Min Pressure】	
75		D12	70	【Defrosting fFrequency】	
76		D13	23	【Minimum Inlet Water Temp for Defrosting】	
77		D14	0	【Minimum Water Flow for Defrosting】	
78		D15	33	【Distributor Tube Temp of Exit Defrosting】	According to the order, if the order does not appear, according to the set value
		D24	2-【Heating Buffer Tank】	【Defrost Mode Water Loop】	0-【Base On The Current Mode】/1-【DHW Tank】/2-【Heating Buffer Tank】
79	E Electronic Expansion Valve	E01	1-Auto	【EEV1 EEV Adjust Mode】	【0-Manual/1-Auto】
80		E02	5	【EEV1 Target Superheat Degree】	
81		E03	350	(0~500N)【EEV1 EEV Initial Steps】	
82		E04	---	【EEV2 EEV Adjust Mode】	
83		E05	---	【EEV2 Target Superheat Degree】	
84		E06	---	【EEV2 EEV Initial Steps】	
85		E07	100	【EEV Min Steps】	
86		E08	200	【Cooling Open Degree】	
87		E09	1-Auto	【EVI1：Adjustment Mode】	【0-Manual/1-Auto】
88		E10	350	【EVI1：Initial Steps】	

89		E11	---	【EVI2：Adjustment Mode】	
90		E12	---	【EVI2：Initial Steps】	
91		E13	3	【EVI Target Superheat Degree】	
92		E14	100	【EVI： Min Steps】	
93		E15	---	【EVI：Enter Exhaust-Control Temp】	
94		E16	---	【EVI：Exit Exhaust-Control Temp】	
95		E17	480	【Defrost Place】	
96		E18	3	【Target superheat for cooling】	
97	R Temperature Parameter	R01	55	【Hot Water Setpoint】	
98		R02	45	【Heating Target Tempt.】	
99		R03	7	【Cooling Target Tempt.】	
100		R04	2	【Heating Power-on Return Difference】	
101		R05	1	【Heating Constant Tempt. Power-off Tempt. Difference】	
102	R Temperature Parameter	R06	2	【Cooling Power-on Return Difference】	
103		R07	1	【 Cooling Constant Tempt. Power-off Tempt. Difference】	
104		R08	5	【Min Cooling Setpoint】	
105		R09	28	【Max Cooling Setpoint】	
106		R10	15	【Min Heating Setpoint】	
107		R11	60	【Max Heating Setpoint】	
108		R12	---	【Max. Outlet Water Tempt.】	
109		R13		【Max. Outlet Water Tempt.(Low Ambient Tempt.)】	
110		R14		【Max. Outlet Water Tempt.(High Ambient Tempt.)】	
111		R15	2	【Return Difference of Exiting High Tempt. Mode】	
112		R16	5	【Power-on Return Difference of Tank Water】	
113		R17	2	【Standby Temp Difference of Tank Water】	
114		R29	-5	【Compensation-ON low AT】	
115		R30	-23	【Compensation-OFF low AT】	
116		R31	40	【Low-AT Max-Compensation Aim】	
117		R32	55	【Compensation-ON High AT】	
118		R33		【Compensation-OFF High AT】	
119		R34	45	【High-AT Max-Compensation Aim】	
120		R35	0-Not used	【Functions of Electric Heater】	【0-Not used/1-Waterline】/2-【Water tank】】

121		R36	15	【Min Hot Water Setpoint】	
122		R37	58	【Max Hot Water Setpoint】	
123		R39	10	【Heating Mode Auto Restart Ambient Tempt.】	
124		R40	2	【Ambient Temp of Main Pump running】	
125		R41		【Ambient Temp of Heating Circulation Pump】	
126		R42	55	【Max Water Heating temp.】	
127		R43	50	【Max Water Heating Temp.(Under Low Temp.)】	
128		R44	40	【Max Water Heating Temp.(Under High Temp.)】	
129		R45	-10	【Electric Heater Start(No Delay) Ambient Temp】	
130		R46	2	【Max. Outlet Water Tempt Difference】	Set it to 2 ° C
131	P Pump Parameter	P01	2-【Interval】	【Running Mode】	【0-Ordinary/1-Special/2-Interval】
132		P02	30	【Running Interval Time】	
133		P03	3	【Running Duration】	
134		P04	---	【Advanced Start Time】	
135		P05	2-Interval	【Domestic Hot Water Pump Working Mode】	【0-Ordinary/1-Special/2-Interval】
136	G Sterilize Parameter	G01	63	【Setpoint】	
137		G02	0	【Time of Duration】	(This function is unavailable when the value is set to 0.)
138		G03	1	【Start Time】	
139		G04	30	(1~30days)【Work Cycle】	
140		G05	1-Yes	【High Tempt. Disinfection】	(0-Yes/1-No)
141	C compressor parameter	C01	0	【Manual frequency】	
142		C02	30	(20~60Hz)【Minimum frequency 】	
143		C03	90	【 Max frequency 】	
144		C04	0	【Model selection 】	
145		C05	50	【Minimum frequency of Low Ambient Tempt.】	
146		C06	1	Frequency control mode】	
147		C07	0	(0~120HZ)【Resonance Point 1】	
148		C08		(0~120HZ)【Resonance Point 2】	
149		C09		(0~120HZ)【Resonance Point 3】	

13. Failure List & Troubleshooting

13.1. 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 misconnected	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 Parameters 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

13.2. Error Code Instruction

Error code	Error name	Relevant parts information	Review and resolve
E04	Electric heater overheat 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℃, A04-2℃ ≤ water inlet≤A04℃	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℃, water inlet≤A04-2℃	It is the protection in winter. Once the water temperature up to A04+11ºC or the ambient temp is higher than 1, the error code disappears.
E19	Primary Anti-freezing Protection	Ambient temp.≤0℃, 2℃ ≤ water inlet≤4℃	It is the protection in winter. Once the water temperature rises up to 8ºC or the ambient temp is higher than 1ºC, the error code disappears.
E29	Secondary Anti-freezing Protection	Ambient temp.≤0℃, water inlet≤2℃	It is the protection in winter. Once the water temperature up to 15ºC or the ambient temp is higher than 1ºC, 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 Overcurrent Shutdown Fault	Compressor Overcurrent	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℃ and the antifreeze temp ⩽A04-A05 ℃	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.

F00	IPM Overcurrent Shutdown Fault	IPM Input current is large	1.Check and adjust the current measurement
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. 2.Replace a new compressor driver board.
F05	DC Bus Overvoltage		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 Undervoltage		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 Undervoltage		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 Overcurrent		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 overcurrent 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 Underload 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.

13.3. Parameter list and breakdown table

13.3.1. Electronic control fault table

Can be judged according to the remote controller failure code and troubleshooting.

Protect/fault	Fault display	Reason	Elimination methods
Inlet Temp Sensor Fault	P01	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Outlet Temp Sensor Fault	P02	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Water Tank Temp Sensor	P03	The temp. sensor is broken or short circuit	Check or change the temp. sensor
AT Sensor Fault	P04	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Suction Temp Sensor	P17	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Inlet Temp Sensor Fault of Air-Conditioning	P013	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Inlet Temp Sensor Fault of Hot Water	P018	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Outlet Temp Sensor Fault of Air-Conditioning	P023	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Outlet Temp Sensor Fault of Hot Water	P028	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Room Temp Sensor Fault	P42	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Inlet Sensor(EVI) Fault	P101	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Outlet Sensor(EVI) Fault	P102	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Distributor Tube Temp Sensor Fault	P152	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Coil Temp Sensor Fault	P153	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Exhaust temp Sensor	P181	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Exhaust Overtemp	P182	The compressor is overload	Check whether the system of the compressor running normally
Antifreeze Sensor Fault	P191	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Outlet Temp Sensor Fault of Water Mixer	P02a	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Pressure Sensor Fault	PP11	The pressure sensor is broken or short circuit	Check or change the pressure sensor or pressure
High Pressure Sensor Fault	PP12	The pressure sensor is broken or short circuit	Check or change the pressure sensor or pressure

Low AT Protection	TP	The ambient temp. is low	Check the ambient temp value
Aux Superheat Protection	E04	The electric-heater protection switch is broken	Check whether the electric heater runs at the temperature above 150℃ for a long time
Excess Water Temp Diff Prot.	E06	Water flow is not enough and low differential pressure	Check the pipe water flow and whether water system is jammed or not
Communication Fault	E08	Communication failure between wire controller and mainboard	Check the wire connection between remote wire controller and main board
HP Protection	E11	The high-pressure switch is broken	Check the pressure switch and cold circuit
LP Protection	E12	The low-pressure switch is broken	Check the pressure switch and cold circuit

Protect/fault	Fault display	Reason	Elimination methods
Prim Anti-freezing Prot	E19	The ambient temp. is low	Check the ambient temp value
Secondary Anti-freezing Prot	E29	The ambient temp. is low	Check the ambient temp value
Flow Switch Protection	E032	No water/little water in water system	Check the pipe water flow and water pump
Outlet Water Overtemp.	E065	No water/little water in water system	Check the pipe water flow and water pump
Outlet Water Temp Low Temp Prot.	E071	No water/little water in water system	Check the pipe water flow and water pump
Communication Fault (speed control module1)	E081	Speed control module and main board communication fail	Check the communication connection
Communication Fault (speed control module2)	E082	Speed control module and main board communication fail	Check the communication connection
Display and Mainboard Match Error	E084	The wire controller software is not match the mainboard software	Check the wire control software number and the mainboard software number
Communication Fault with Hydraulic Module	E08c	Hydraulic Module and mainboard communication fail	Check the communication connection
Fan Motor1 Overload Prot	E103	The fan motor is overload	Check whether the fan motor runs normally
Fan Motor2 Overload Prot	E203	The fan motor is overload	Check whether the fan motor runs normally
Antifreeze	E171	Use side water system temp. is low	1.Check the water temp. or change the temp. sensor 2.Check the pipe water flow and whether water system is jammed or not
Fan Motor 1 Fault	F031	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact
Fan Motor 2 Fault	F032	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact

13.3.2. Frequency conversion board fault table

Protect/fault	Fault display	Reason	Elimination methods
IPM Overcurrent Shutdown Fault	F00	IPM Input current is large	Check and adjust the current measurement
Compressor Activation Failure	F01	Lack of phase, step or drive hardware damage	Check the measuring voltage check frequency conversion board hardware
Pre-Charge Failure	F03	The PFC circuit protection	Check the PFC switch tube short circuit or not
DC Bus Overload	F05	DC bus voltage>Dc bus Overload-voltage protection value	Check the input voltage measurement
DC Bus Underload	F06	DC bus voltage<Dc bus Underload-voltage protection value	Check the input voltage measurement
AC Input Underload	F07	The input voltage is low, causing the input current is low	Check the input voltage measurement
AC Input Overload	F08	The input voltage is too high, more than outage protection current RMS	Check the input voltage measurement
Input voltage Sample Fault	F09	The input voltage sampling fault	Check and adjust the current measurement
Comm. Err DSP-PFC	F12	DSP and PFC connect fault	Check the communication connection
Communication Fault (DSP)	F11	DSP and Inverter board communication failure	Check the communication connection
Comm. Err DSP-MainBoard	F151	DSP and Mainboard communication failure	Check the communication connection
IPM Overheat Stop	F13	The IPM module is overheat	Check and adjust the current measurement
Compressor Overcurrent Shutdown Fault	E051	The compressor is overload	Check whether the system of the compressor running normally
Input voltage Lacking Phase	F15	The input voltage lost phase	Check and measure the voltage adjustment
IPM Current Sample Fault	F18	IPM sampling electricity is fault	Check and adjust the current measurement
Sensor Fault of Module/ Radiator	F17	The transducer is overheat	Check and adjust the current measurement
IGBT Power Device Overheat Alarm	F20	The IGBT is overheat	Check and adjust the current measurement
Weak Magnetic Warn	F16	Compressor magnetic force is not enough	Check and adjust the current measurement
AC Input OverCurrent Alarm	F22	Input current is too large	Check and adjust the current measurement
EEPROM Error Warning	F23	MCU error	Check whether the chip is damaged Replace the chip
Destroyed EEPROM Activation Ban Alarm	F24	MCU error	Check whether the chip is damaged Replace the chip
The input Current Sampling Is Faulty	F25	The V15V is overload or undervoltage	Check the V15V input voltage in range 13.5V~16.5V or not

IGBT Power Device Overheat Fault	F26	The IGBT is overheat	Check and adjust the current measurement
Comp. Current Frequency Reduction Alarm	F33	The compressor current frequency reduction	Check and adjust the current measurement
Input Voltage Overlimiting Protection	F10	Input voltage>Input Overload--voltage protection value	Check whether the input voltage is higher than 265V
Compressor Default Phase	F14	The compressor lost phase	Check whether compressor cables are connected properly and reliably
EEPROM Fault	F29	Failed to read the memory chip	Check the frequency conversion board
Compress Overspeed Protection	F21	The compressor is running abnormally	Check whether the compressor cable is nor--mal and whether the compressor is blocked

Protect/fault	Fault display	Reason	Elimination methods
Fan Temperature Sensor Fault	F120	The temp. sensor is broken or short circuit	Check or change the temp. sensor
Fan IPM Overheat Protection	F106	The fan IPM drive plate has poor heat dissipation	Check heat dissipation conditions
Fan IPM Overcurrent Protection	F105	The fan IPM hardware running current is too large	Check whether the fan is blocked
Fan Default Phase Protection	F101	The fan lost phase	Check whether fan cables are connected properly and reliably
Fan Current Sampling Fault	F112	Fan sampling electricity is fault	Check whether the fan drive plate is abnormal
Fan Start Fault	F102	The fan fails to start	Check whether the fan is blocked
Fan Software Overcurrent	F113	The fan software running current is too large	Check whether the fan is blocked
Fan Overspeed Protection	F109	The fan speed is too high	Check whether the fan drive board is abnormal

14. MODBUS RTU PROTOCOL

MODBUS RTU PROTOCOL

From: To:

Version V1.6 update: 2020/6/17

1.Transmission Format

Baud Rate	9600bps
Start bit	1
Byte width	8
Parity	N
Stop bits	1
Slave address	H10 (Default as 1)

2.Packet Format

Address	Function	Data	CRC checksum
16bits	16bits 03: Function of reading multi registers 16: Function of presenting multi registers	N*16bits	16bits

3.Data types

Data Types	Description
TEMP	have symbol byte，0.1℃resolution，formula：T*10，temperature range :-30~97℃（When the temperature show 25 ℃，the protocol data transmission is 250;When the temperature show -25 ℃，the protocol data transmission is -250 ；when bit15 is 1 represents the negative number，when the bit15 is 0，it represents Integer;），When the value is 32767,it represents the sensor failure
DIGI1	No symbol byte，unit :1，When show 123,the data transmission is 123；
DIGI2	No symbol byte，unit :10，When show 1230,the data transmission is 123；
DIGI3	No symbol byte，unit :100，When show 12300,the data transmission is 123；
DIGI4	No symbol byte，unit :5，When show 10,the data transmission is 2；
DIGI5	No symbol byte，unit :0.1，When show 12.3,the data transmission is 123；

DIGI6	No symbol byte，unit :0.001，When show 0.123,the data transmission is 123；
DIGI9	No symbol byte，unit :0.01，When show 0.12,the data transmission is 12；

4.Mailing address

Address	Function	Number	Content	mode	Default	Description	Remark
1011	03/16		ON/OFF	read/write		0-OFF/1-ON	DIGI1
1012	03/16		Mode	read/write		H05=1：0-Hot water/1-Heating/2-Cooling/3-Hot water + heating/4-Hot water + Cooling H05=0：0-Hot water/1-Heating/3-Hot water + heating	DIGI1
1013	03/16		Reserved	read/write			
1014	03/16		Reserved	read/write			
1015	03/16		Reserved	read/write			
1016	03/16		Manual control	read/write		bit0：Manual defrost(0-off 1-on) bit1：Mute flag bit (0-off 1-on) bit2：A key manual heating (0-off 1-on)	DIGI1
1017	03/16		Reserved	read/write			
1018	03/16	H01	if with disable automatic restart (0-no/1-yes)	read/write	1	0-no/1-yes	DIGI1
1019	03/16		Reserved	read/write			
1020	03/16		Reserved	read/write			
1021	03/16	H05	Cooling Mode	read/write	1	0-No/1-Yes	DIGI1
1022	03/16		Reserved	read/write			
1023	03/16	H07	Controller choice	read/write	0	0-display control 1-remote control	DIGI1
1024	03/16	H10	Unit address	read/write	1	1~32	DIGI1
1025	03/16		Reserved	read/write			
1026	03/16		Reserved	read/write			
1027	03/16	H27	EVI enabled	read/write	3	0-no EVI 1-EVI on cooling 2-EVI on heating 3-EVI both heating and cooling	DIGI1
1028	03/16	H28	Hot water mode enabled	read/write	1	0-no/1-yes	DIGI1

1029	03/16	H21	Temperature unit	read/write	0	0-℃/1-F	DIGI1
1030	03/16	H22	Silence mode	read/write	1	0-no/1-yes	DIGI1
1031	03/16		Reserved	read/write			
1032	03/16	H18	Electric heater energy stage	read/write	3	1-Electric heater stage 1 2-Electric heater stage 2 3-Electric heater stage 3	DIGI1
1033	03/16	H20	3-way valve polarity	read/write	0	0-ON on hot water mode/1-OFF on hot water mode	DIGI1
1034	03/16	H29	Model running parameter code	read/write	0	0~20	DIGI1
1035	03/16	H25	Control temp choice when heat/cool mode	read/write	0	0-outlet water temp./1-room temp.	DIGI1
1036	03/16	H30	Hydraulic module enabled	read/write	0	0-no,1-yes	
1037	03/16	A03	Heat pump shutdown ambient temp	read/write	-25℃	-40.0~10.0℃	TEMP1
1038	03/16	A04	Antifreeze setting temp	read/write	4℃	A22~10.0℃	TEMP1
1039	03/16	A05	Antifreeze setting temp difference	read/write	3℃	1.0~50.0℃	TEMP1
1040	03/16	A06	Exhaust temp protect setting	read/write	120℃	60.0~130.0℃	TEMP1
1041	03/16	H31	Water pump type	read/write	0	0-not water flow function 1- Grundfos 25-75 2- Grundfos 25-105 3- Grundfos 25-125	DIGI1
1042	03/16	A11	low pressure sensor enabled	read/write	0	0-no,1-yes	DIGI1
1043	03/16		Reserved	read/write			
1044	03/16		Reserved	read/write			
1045	03/16	H32	Force running time of DHW change to heating	read/write	120	1~180min	DIGI1
1046	03/16		Reserved	read/write			
1047	03/16		Reserved	read/write			
1048	03/16		Reserved	read/write			
1049	03/16		Reserved	read/write			
1050	03/16		Reserved	read/write			
1051	03/16		Reserved	read/write			
1052	03/16	A21	Ambient/Suction/Coil Sensor type	read/write	0	0-5K/1-2K	DIGI1
1053	03/16	A22	Antifreeze min temp setting	read/write	4℃	-20℃~10℃	TEMP1
1054	03/16		Reserved	read/write			

1055	03/16		Reserved	read/write			
1056	03/16		Reserved	read/write			
1057	03/16		Reserved	read/write			
1058	03/16		Reserved	read/write			
1059	03/16	F01	Fan motor type	read/write	3	1-Double speed motor/3-DC fan motor	DIGI1
1060	03/16	F02	Coil temp setting when fan high speed on cool mode	read/write	50℃	-15.0~60.0℃	TEMP1
1061	03/16		Reserved	read/write			
1062	03/16	F03	Coil temp setting when fan low speed on cool mode	read/write	10℃	-15.0~60.0℃	TEMP1
1063	03/16		Reserved	read/write			
1064	03/16		Reserved	read/write			
1065	03/16		Reserved	read/write			
1066	03/16	F05	Coil temp setting when fan high speed on heat mode	read/write	10℃	-15.0~60.0℃	TEMP1
1067	03/16		Reserved	read/write			
1068	03/16	F06	Coil temp setting when fan low speed on heat mode	read/write	20℃	-15.0~60.0℃	TEMP1
1069	03/16		Reserved	read/write			
1070	03/16		Reserved	read/write			
1071	03/16		Reserved	read/write			
1072	03/16		Reserved	read/write			
1073	03/16		Reserved	read/write			
1074	03/16	F10	Fan quantity	read/write	0	0-single/1-double	DIGI1
1075	03/16		Reserved	read/write			
1076	03/16		Reserved	read/write			
1077	03/16		Reserved	read/write			
1078	03/16		Reserved	read/write			
1079	03/16		Reserved	read/write			
1080	03/16		Reserved	read/write			
1081	03/16	F18	Fan motor min Speed in cooling	read/write	300r	300~1300	DIGI1
1082	03/16		Reserved	read/write			
1083	03/16	F19	Fan motor min Speed in Heating	read/write	300r	300~1300	DIGI1

1084	03/16		Reserved	read/write			
1085	03/16		Reserved	read/write			
1086	e	F21	Timer mute	read/write	0	0-no/1-yes	DIGI1
1087	03/16	F22	Manual-control Fan Speed	read/write	0	0-no/1-yes	DIGI1
1088	03/16		Reserved	read/write			
1089	03/16	F23	DC fan rated speed	read/write	600r	300~1300	DIGI1
1090	03/16		Reserved	read/write			
1101	03/16		Reserved	read/write			
1102	03/16		Reserved	read/write			
1103	03/16	F25	Cooling fan max speed	read/write	700r	300~1300	DIGI1
1104	03/16	F26	Heating fan max speed	read/write	700r	300~1300	DIGI1
1105	03/16		Reserved	read/write			
1106	03/16		Reserved	read/write			
1107	03/16		Reserved	read/write			
1108	03/16		Reserved	read/write			
1109	03/16		Reserved	read/write			
1110	03/16	D01	Start defrosting setpoint	read/write	-7℃	-30~5.0℃	TEMP1
1111	03/16		Reserved	read/write			
1112	03/16	D02	Exit defrosting setpoint	read/write	13℃	0.0~30.0℃	TEMP1
1113	03/16	D03	Defrosting cycle	read/write	45min	30~90Min	DIGI1
1114	03/16	D04	Max defrosting time	read/write	8min	1~12 Min	DIGI1
1115	03/16		Reserved	read/write			
1116	03/16	D07	Electric heater control	read/write	0	0-no/1-yes	DIGI1
1117	03/16	D08	Sliding defrost ambient temp	read/write	2℃	-30~10.0℃	TEMP1
1118	03/16	D09	Sliding defrost: ambient temp difference	read/write	14℃	1~50.0℃	TEMP1
1119	03/16	D10	Sliding defrost: coil temp difference	read/write	10℃	1~50.0℃	TEMP1
1120	03/16		Reserved	read/write			
1121	03/16	D11	Sliding defrost: in coil temp	read/write	-30℃	-30.0~50.0℃	TEMP1
1122	03/16		Reserved	read/write			

1123	03/16	D12	Defrosting compressor frequency	read/write	70	30~90Hz	DIGI1
1124	03/16		Reserved	read/write			
1125	03/16		Reserved	read/write			
1126	03/16		Reserved	read/write			
1127	03/16		Reserved	read/write			
1128	03/16		Reserved	read/write			
1129	03/16		Reserved	read/write			
1130	03/16		Reserved	read/write			
1131	03/16	E01	EEV1 EEV adjust mode	read/write	1	0-Manual/1-Auto	DIGI1
1132	03/16	E02	EEV1 target superheat	read/write	5	-20.0~20.0℃	TEMP1
1133	03/16	E03	EEV1 EEV initial steps	read/write	350	0~500N	DIGI1
1134	03/16		Reserved	read/write			
1135	03/16		Reserved	read/write			
1136	03/16		Reserved	read/write			
1137	03/16	E07	EEV min Steps	read/write	100	0~500N	DIGI1
1138	03/16	E08	Cooling initial Steps	read/write	200	0~500N	DIGI1
1139	03/16	E09	EVI1：adjustment mode	read/write	1	0-Manual/1-Auto	DIGI1
1140	03/16	E10	EVI1：initial steps	read/write	350	0~500N	DIGI1
1141	03/16		Reserved	read/write			
1142	03/16		Reserved	read/write			
1143	03/16	E13	EVI target superheat	read/write	3	-20.0~20.0℃	TEMP1
1144	03/16	E14	EVI：min steps	read/write	100	0~500N	DIGI1
1145	03/16		Reserved	read/write			
1146	03/16		Reserved	read/write			
1147	03/16	E17	Defrost steps	read/write	480	10~500N	DIGI1
1148	03/16	E18	Target superheat for cooling	read/write	3	-20.0~20.0℃	TEMP1
1149	03/16		Reserved	read/write			
1150	03/16		Reserved	read/write			
1151	03/16		Reserved	read/write			

1152	03/16	G01	Sterilize target temp	read/write	63	60~70℃	TEMP1
1153	03/16	G02	Sterilize maintain time	read/write	0	0~60min	DIGI1
1154	03/16	G03	Sterilize start time	read/write	1	0~23h	DIGI1
1155	03/16	G04	Sterilize cycle	read/write	30	1~30days	DIGI1
1156	03/16	G05	Sterilize function	read/write	1	0-no/1-yes	DIGI1
1157	03/16	R01	Hot water target temp	read/write	55	R36-R37	TEMP1
1158	03/16	R02	Heating target temp	read/write	45	R10~R11	TEMP1
1159	03/16	R03	Cooling target temp	read/write	7	R08~R09	TEMP1
1160	03/16	R04	Heating restart difference	read/write	2	0~10℃	TEMP1
1161	03/16	R05	Heating constant temp downtime difference	read/write	1	0~10℃	TEMP1
1162	03/16	R08	Min cooling setpoint	read/write	8	-30.0~R09℃	TEMP1
1163	03/16	R09	Max cooling setpoint	read/write	28	R08~80.0℃	TEMP1
1164	03/16	R10	Min heating setpoint	read/write	15	-30.0~99.0℃	TEMP1
1165	03/16	R11	Max heating setpoint	read/write	50	-30.0~99.0℃	TEMP1
1166	03/16	R15	Exiting outlet water high temp difference	read/write	2	0~15℃	TEMP1
1167	03/16	R29	Heating compensation-on low ambient temp	read/write	-5	-35~4℃	TEMP1
1168	03/16	R30	Heating compensation-off low ambient temp	read/write	-23	-35~4℃	TEMP1
1169	03/16	R31	Low-AT max-compensation aim	read/write	40	20~60℃	TEMP1
1170	03/16	R32	Hot water compensation-on high ambient temp	read/write	55	10~60℃	TEMP1
1171	03/16	R33	Hot water compensation-off high ambient temp	read/write	55	10~60℃	TEMP1
1172	03/16	R34	Hot water compensation-on high ambient temp target temp	read/write	45	20~60℃	TEMP1
1173	03/16	R35	Electric heater functions	read/write	0	0-no use/1-water line electric heater /2-water tank electric heater	DIGI1
1174	03/16	R06	Cooling restart difference	read/write	2	0.0~10.0℃	TEMP1
1175	03/16	R07	Cooling constant temp downtime difference	read/write	1	0.0~10.0℃	TEMP1
1176	03/16	R36	Min hot water setpoint	read/write	15	0~75℃	TEMP1
1177	03/16	R37	Max hot water setpoint	read/write	58	0~75℃	TEMP1
1178	03/16		Reserved	read/write			
1179	03/16		Reserved	read/write			

1180	03/16		Reserved	read/write			
1191	03/16		Reserved	read/write			
1192	03/16	R39	Heating mode auto restart ambient temp	read/write	10	5~20℃	TEMP1
1193	03/16	R40	Ambient temp of water pump running	read/write	2	-10~20℃	TEMP1
1194	03/16	R41	Ambient temp of hot water pump running	read/write	2	-10~20℃	TEMP1
1195	03/16	R16	Hot water restart difference	read/write	5	0~10℃	TEMP1
1196	03/16	R17	Hot water constant temp downtime difference	read/write	2	0~10℃	TEMP1
1197	03/16	P01	Water pump running mode	read/write	2	0-Normal/1-Economic/2-Interval	DIGI1
1198	03/16	P02	Water pump running interval time	read/write	30	1~120min	DIGI1
1199	03/16	P03	Water pump running duration	read/write	3	1~30min	DIGI1
1200	03/16		Reserved	read/write			
1201	03/16	P05	Hot water pump working mode	read/write	2	0-Normal/1-Economic/2-Interval	DIGI1
1202	03/16	P06	Water pump manual function	read/write	0	0-no,1-yes	
1203	03/16		Reserved	read/write			
1204	03/16		Reserved	read/write			
1205	03/16		Reserved	read/write			
1206	03/16		Timer function---start	read/write	0	0-NO/1-YES	DIGI1
1207	03/16		Timer function--hour start setting	read/write	0	0~23	DIGI1
1208	03/16		Timer function---closed	read/write	0	0-NO/1-YES	DIGI1
1209	03/16		Timer function--hour closed setting	read/write	0	0~23	DIGI1
1210	03/16		Timer function--minute start setting	read/write	0	00~59	DIGI1
1211	03/16		Timer function—minute closed setting	read/write	0	00~59	DIGI1
1218	03/16	C01	Compressor manual frequency	read/write	0	0~120Hz	DIGI1
1219	03/16	C02	Compressor minimum frequency	read/write	30	20~60Hz	DIGI1
1220	03/16	C03	Compressor maximum frequency	read/write	90	30~120Hz	DIGI1
1221	03/16	C04	Compressor model selection	read/write	0	0~99	DIGI1
1222	03/16	C05	Compressor minimum frequency of low ambient temp.（Cooling）	read/write	50	0~60Hz	DIGI1
1223	03/16	C06	Compressor frequency control mode	read/write	1	1-120	DIGI1

1224	03/16	C07	Frequency resonance point 1	read/write	0	0~120	DIGI1
1225	03/16	C08	Frequency resonance point 2	read/write	0	0~120	DIGI1
1226	03/16	C09	Frequency resonance point 3	read/write	0	0~120	DIGI1
1227	03/16		Reserved	read/write			
1228	03/16	R42	Max water heating temp.	read/write	55	20~60℃	TEMP1
1229	03/16	R43	Max water heating temp. (Under Low Temp.)	read/write	50	20~60℃	TEMP1
1230	03/16	R44	Max Water heating temp. (Under High Temp.)	read/write	40	20~60℃	TEMP1
1231	03/16	R45	Electric heater starts (No Delay) ambient temp)	read/write	-10	-50~20℃	TEMP1
1232	03/16	R46	the temp restart difference of the outlet water overheat protection	read/write	5	0~15	TEMP1
1233	03/16		Reserved	read/write			
1234	03/16		Weather compensation slope	read/write		0~3.5	DIGI5
1235	03/16		Weather compensation offset	read/write		0~85	TEMP1
1236	03/16		Weather compensation function enable during heating	read/write		0-no,1-yes	DIGI1
1237	03/16		Reserved	read/write			
1238	03/16		Reserved	read/write			
1239	03/16		Reserved	read/write			
1240	03/16		Reserved	read/write			
1241	03/16		Reserved	read/write			
1242	03/16		Reserved	read/write			
1243	03/16		Reserved	read/write			
1244	03/16		Timer mute function on enable	read/write		0-off/1-on	DIGI1
1245	03/16		Timer mute on hour	read/write		0-23h	DIGI1
1246	03/16		Timer mute on minute	read/write		0-59min	DIGI1
1247	03/16		Timer mute function off enable	read/write		0-off/1-on	DIGI1
1248	03/16		Timer mute off hour	read/write		0-23h	DIGI1
1249	03/16		Timer mute off minute	read/write		0-59min	DIGI1
1250	03/16		system time enable	read/write		system time enable	
1251	03/16		system current minute	read/write		system current minute	
1252	03/16		system current hour	read/write		system current hour	
1253	03/16		system current day	read/write		system current day	

1254	03/16		system current month	read/write		system current month	
1255	03/16		system current year	read/write		system current year	
1256	03/16		7*24 hours timer on/off Sunday	read/write		/	
1257	03/16		7*24 hours timer on/off Sunday	read/write		/	
1258	03/16		7*24 hours timer on/off Monday	read/write		/	
1259	03/16		7*24 hours timer on/off Monday	read/write		/	
1260	03/16		7*24 hours timer on/off Tuesday	read/write		/	
1261	03/16		7*24 hours timer on/off Tuesday	read/write		/	
1262	03/16		7*24 hours timer on/off Wednesday	read/write		/	
1263	03/16		7*24 hours timer on/off Wednesday	read/write		/	
1264	03/16		7*24 hours timer on/off Thursday	read/write		/	
1265	03/16		7*24 hours timer on/off Thursday	read/write		/	
1266	03/16		7*24 hours timer on/off Friday	read/write		/	
1267	03/16		7*24 hours timer on/off Friday	read/write		/	
1268	03/16		7*24 hours timer on/off Saturday	read/write		/	
1269	03/16		7*24 hours timer on/off Saturday	read/write		/	
1270	03/16		Reserved	read/write			
2011	16		Unit state	read		0-off/1-on	DIGI1
2012	16		Unit mode	read		0-cooling/1-heating/2-defrost/3-sterilize/4-hot water	DIGI1
2013	16		Temperature value after limiting	read			TEMP1
2014	16		Temperature value after weather compensation during heating	read			TEMP1
2015	16		Reserved	read			
2016	16		Reserved	read			
2017	16		Reserved	read			
2018	16	O124	DTU state	read		0-OFF/1-ON	DIGI1

2019	16	O01~014	Load output	read		bit0：O01 compressor output（0-OFF/1-ON） bit1：Reserved bit2：O03 fan high speed output（0-OFF/1-ON） bit3：O04 fan low speed output（0-OFF/1-ON） bit4：O05 water pump output（0-OFF/1-ON） bit5：O06 hot water pump output（0-OFF/1-ON） bit6：O07 4 way valve 1（0-OFF/1-ON） bit7：O08 Electric heater stage 1（0-OFF/1-ON） bit8：O09 Electric heater stage 2（0-OFF/1-ON） bit9：O10 3 way valve（0-OFF/1-ON） bit10：O11 alarm output（0-OFF/1-ON） bit11：O12 Crankcase Heater（0-OFF/1-ON） bit12：O13 Pan heater（0-OFF/1-ON） bit13：O21 heating water pump（0-OFF/1-ON） bit14：O22 Hydraulic module water loop electric heater（0-OFF/1-ON） bit15：O23 Hydraulic module DHW tank electric heater（0-OFF/1-ON）	DIGI1
2020	16	O15	EEV Steps	read		0~500N	DIGI1
2021	16	O16	Reserved	read		0~500N	DIGI1
2022	16	O17	EVI EEV Steps	read		0~500N	DIGI1
2023	16	O18	Reserved	read		0~500N	DIGI1
2024	16		Reserved	read			
2025	16		Reserved	read			
2026	16		Reserved	read			
2027	16		Reserved	read			
2028	16		Reserved	read			
2029	16		Reserved	read			
2030	16		Reserved	read			
2031	16		Reserved	read			

2032	16		Compressor accumulative running time	read			DIGI1
2033	16		Reserved	read			
2034	16	S01~S10	Switch state	read		bit0：S01 high pressure switch （0-on/1-off） bit1：S02 Low pressure switch （0-on/1-off） bit2：S03 water flow switch （0-on/1-off） bit3：S04 Electric heater overheat switch （0-on/1-off） bit4：S05 Remote ON/OFF （0-on/1-off） bit5：S06 Remote heating/cooling （0-on/1-off） bit6：S07 hot Water flow switch （0-on/1-off） bit7：Reserved bit8：Reserved bit9: Heating/cooling ON/OFF （0-on/1-off） bit10：Reserved bit11：Reserved bit12：Reserved bit13：Reserved bit14：Reserved bit15：Reserved	DIGI1
2035	16	T40	Heating return water temp	read			
2036	16	T41	Heating outlet water temp	read			
2037	16	T42	Mixing outlet water temp	read			
2038	16	T43	DHW return water temp	read			
2039	16	T44	DHW outlet water temp	read			
2040	16		Reserved	read			
2041	16		Reserved	read			
2042	16	T36	Compressor currents	read		real test value	DIGI5
2043	16	T37	DC line voltage	read		real test value	DIGI1
2044	16	T38	IPM temp	read		real test value	TEMP1
2045	16	T01	Inlet water temp	read		real test value	TEMP1
2046	16	T02	Outlet water temp	read		real test value	TEMP1
2047	16	T08	DHW tank water temp	read		real test value	TEMP1

2048	16	T04	Ambient temp	read		real test value	TEMP1
2049	16	T03	Coil temp	read		real test value	TEMP1
2050	16		Reserved	read			TEMP1
2051	16	T05	Suction temp	read		real test value	TEMP1
2052	16		Reserved	read			TEMP1
2053	16	T12	Discharge temp	read		real test value	TEMP1
2054	16		Reserved	read			TEMP1
2055	16	T06	Anti-freeze temp	read		real test value	TEMP1
2056	16		Reserved	read			TEMP1
2057	16	T35	AC input currents	read		real test value	DIGI5
2058	16	T09	Room temp	read		real test value	TEMP1
2059	16		Reserved	read			TEMP1
2060	16		Reserved	read			TEMP1
2061	16	T33	IPM overheat stop running	read		real test value	TEMP1
2062	16	T34	Ac input voltage	read		real test value	DIGI1
2063	16	T10	EVI inlet temp	read		real test value	TEMP1
2064	16	T11	EVI outlet temp	read		real test value	TEMP1
2065	16		Reserved	read			TEMP1
2066	16		Reserved	read			TEMP1
2067	16		Reserved	read			DIGI5
2068	16		Reserved	read			DIGI5
2069	16	T15	low pressure value	read			DIGI5
2070	16		Reserved	read			DIGI5
2071	16	T30	Compressor frequency setting	read		real test value	DIGI1
2072	16	T31	Compressor running frequency setting	read		real test value	DIGI1
2073	16	T32	inverter board max frequency	read		real test value	DIGI1
2074	16	T27	DC fan 1 speed	read		real test value	DIGI1
2075	16	T28	DC fan 2 speed	read		real test value	DIGI1
2076	16	T29	DC fan target speed	read		real test value	DIGI1
2077	16	T39	Water flow	read			DIGI9
2078	16		Reserved	read			
2079	16		Reserved	read			
2080	16		Reserved	read			

2081	16		Failure 7	read		bit0: IPM overheat bit1: compressor start failure bit2: compressor over currents bit3: Input voltage phase loss bit4: IPM current sampling fault bit5: Overheat protection of drive board devices bit6: PFC failure bit7: DC busbar overvoltage bit8: DC bus undervoltage bit9: AC input voltage undervoltage bit10: AC input overcurrent shutdown bit11: Input voltage sampling fault bit12: DSP and PFC communication failure bit13: Drive plate temperature fault bit14: DSP and communication board communication failure bit15: mainboard communication failure	DIGI1
2082	16		Failure 8	read		bit0: IPM overheat stop bit1：Reserved bit2：Reserved Bit3: 15VDV under voltage bit4：Reserved bit5：Reserved bit6：Reserved bit7：Reserved bit8：Reserved bit9：Reserved bit10：Reserved bit11：Reserved bit12：Reserved bit13：Reserved bit14：Reserved bit15：Reserved	DIGI1

2083	16		Failure 9	read		bit0: Voltage electro-mechanical current down frequency alarm bit1: Compressor weak magnetic protection alarm bit2: Power unit overheating alarm bit3: Reserved bit4: AC input current down alarm bit5: EEPROM failure warning bit6: Reserved bit7: / bit8: Reserved bit9: Reserved bit10:Reserved bit11:Reserved bit12:Reserved bit13:Reserved bit14:Reserved bit15:Reserved	DIGI1
2084	16			read			DIGI1

2085	16		Failure 1	read		bit0：Reserved bit1：Reserved bit2：Heating return water temp sensor failure(0-no/1-yes) bit3：Heating outlet water temp sensor failure(0-no/1-yes) bit4：High pressure protection（0-no/1-yes) bit5：Reserved bit6：Low pressure protection（0-no/1-yes) bit7：Reserved bit8：water flow protection（0-no/1-yes) bit9：Electric heating overload protection（0-no/1-yes) bit10：Winter first class anti-freeze protection(0-no/1-yes) bit11：Winter secondary class anti-freeze protection（0-no/1-yes) bit12：anti-freeze protection（0-no/1-yes) bit13：Reserved bit14：Room temp（0-no/1-yes) bit15：Reserved	DIGI1

2086	16		Failure 2	read		bit0：Exhaust temperature overprotection (0-no/1-yes) bit1：Reserved bit2：Reserved bit3：Fan 1 overload speed limit (0-no/1-yes) bit4：Fan 2 overload speed limit (0-no/1-yes) bit5：Reserved bit6：Outlet water over heat (0-no/1-yes) bit7：Mixing outlet water temp sensor failure(0-no/1-yes) bit8：Hot water return temp sensor failure (0-no/1-yes) bit9：Hot water outlet water temp sensor failure(0-no/1-yes) bit10：Reserved bit11：Reserved bit12：Reserved bit13：Reserved bit14：Reserved bit15：Reserved	DIGI1

2087	16		Failure 3	read		bit0：Reserved bit1：Reserved bit2：Reserved bit3：Reserved bit4：high pressure protection 3 times (0-no/1-yes) bit5：Reserved bit6：low pressure protection 3 times (0-no/1-yes) bit7：Reserved bit8：water flow protection 3 times (0-no/1-yes) bit9：Electric heating protection 3 times (0-no/1-yes) bit10：Reserved bit11：Reserved bit12：Anti-freeze protection 3 times (0-no/1-yes) bit13：Reserved bit14：Reserved bit15：Reserved	DIGI1

2088	16		Failure 4	read		bit0：Discharge over heat protection 3 times (0-no/1-yes) bit1：Reserved bit2：Reserved bit3：Reserved bit4：Outlet water overtemp protection 3 times (0-no/1-yes) bit5：Reserved bit6：Reserved bit7：Reserved bit8：Reserved bit9：Reserved bit10：Reserved bit11：Reserved bit12：Reserved bit13：Reserved bit14：Reserved bit15：Reserved	DIGI1

2089	16		Failure 5	read		bit0：Inlet water temp failure（0-no/1-yes） bit1：Outlet water temp failure（0-no/1-yes） bit2：Coil temp failure（0-no/1-yes） bit3：Ambient temp failure（0-no/1-yes） bit4：Suction temp failure（0-no/1-yes） bit5：Anti-freeze temp sensor failure（0-no/1-yes） bit6：Reserved bit7：Reserved bit8：Reserved bit9：EVI inlet temp failure（0-no/1-yes） bit10：EVI outlet temp failure（0-no/1-yes） bit11：discharge temp failure（0-no/1-yes） bit12：Reserved bit13：System 1 pressure sensor failure（0-no/1-yes） bit14：low ambient temp failure（0-no/1-yes） bit15：Reserved	DIGI1

2090	16		Failure 6	read		bit0：Reserved bit1：Reserved bit2：Reserved bit3：Reserved bit4：Reserved bit5：Reserved bit6：Reserved bit7：Reserved bit8：Hot water temp failure（0-no/1-yes） bit9：Reserved bit10：Reserved bit11：Fan 1 failure（0-no/1-yes） bit12：Fan 2 failure（0-no/1-yes） bit13：Communication failure(main board with fan motor module board)（0-no/1-yes） bit14：Reserved bit15：Communication failure(main board with fan motor 2 module board)（0-no/1-yes）	DIGI1
2101	16		Reserved	read			
2109	16		Reserved	read			
2110	16		Reserved	read			
2111	16		Reserved	read			
2112	16		Reserved	read			
2113	16		Reserved	read			
2114	16		Reserved	read			
2115-2180	16		Reserved	read			

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