SUNSYSTEM®

Heat Pump monobloc
SUNSYSTEM MONO PLUS
for heating and cooling
(with Wi-Fi control)

TECHNICAL PASPORT
INSTALLATION AND OPERATION MANUAL

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Dear clients, before using the device, familiarize yourself with this instruction for installation, storage and operation. We hope that the appliance you have purchased will contribute to creating coziness in your home and reducing energy costs. The purpose of this technical description and operating instructions is to familiarize you with the product and the conditions for its correct installation and operation. Compliance with the instructions in this instruction is in the interest of the buyer and is one of the warranty conditions.

SUNSYSTEM MONO PLUS inverter air source heat pump is specially designed for domestic hot water, heating and cooling of the home.

SUNSYSTEM MONO PLUS is a new generation heat pump, specially developed with the new R32 freon with a greener future in mind. The model has a highly efficient Mitsubishi inverter compressor with EVI technology (direct steam injection in the compressor) and a built-in energy-saving circulation pump.

Both economical and safe for the environment, SUNSYSTEM MONO PLUS is a highly efficient heat pump system that captures the „heat from the outside air“ - a renewable energy source - and transfers it into the building. It is possible to connect to underfloor heating, which brings the incomparable comfort of a constantly warm floor, or to radiators. Fan convectors are installed for heating and cooling. The heat pump maintains the ideal temperature in your home while also producing hot water up to 55°C.

Heating with a heat pump is much more environmentally friendly and efficient compared to a fossil fuel boiler.

GENERAL FEATURES:

1. General Features

1. Low running costs and high efficiency

·A high coefficient of performance (COP) of up to 5 results in lower running costs compared with traditional ASHP technology.

·No immersion heater supplement is required.

2. Reduced Capital Costs

·Simple installation

3. High Comfort Levels

·High storage temp. results in increased hot water availability.

4. No potential danger of any inflammable, gas poisoning, explosion, fire, electrical shock which are associated with other heating systems.

5. A digital controller is incorporated to maintain the desired water temperature.

6. Long-life and corrosion resistant composite cabinet stands up to severe climates.

7. **Mitsubishi** compressor ensures outstanding performance, ultra energy efficiency, durability and quiet operation.

8. Self-diagnostic control panel monitors and troubleshoots heat pump operations to ensure safe and reliable operation.

9. Intelligent digital controller with friendly user interface and blue LED back light.

10. Separate isolated electrical compartment prevents internal corrosion and extends heat pump life.

11. The heat pump can operate down to ambient air temperature of -25°C.

1. BASIC INSTRUCTIONS AND WARNINGS

Before starting the installation process, read the entire instruction.

The installation of the device must strictly follow the instructions, otherwise the warranty is void.

Any modification or replacement of the original parts with others automatically voids the warranty given by the manufacturer. Use of the device in environments and conditions other than those described in this manual automatically voids any claims made.

Improper execution of electrical bonding that does not conform to good practice may result in injury.

Electrical wiring must be performed by a qualified electrician.

The device must not be placed in an aggressive environment that could damage it (dusty rooms, explosive substances in the air, open air, etc.).

In order to be sure of the correct operation of the relief valve, periodic annual checks of its operation should be made. If necessary clean it of limescale and make sure it is not blocked.

A 0.8 MPa (8 bar) safety valve must be connected to the inlet of the water container, which guarantees that the pressure will not exceed the nominal one. It is forbidden to place a shut-off valve between the water container and the safety valve.

The boiler is intended for drinking water storage, so it must necessarily comply with the valid national regulations for drinking water, or in case of damage the validity of the warranty will be void.

The device should never be operated without water in the water tank.

The power cable has a standard tip, which must be connected to a standard outlet (16A; 230V). The outlet must have a separate power supply from the mains and there must be no other connected consumers on this circuit.

The device can be used by 1 person familiar with the product's operating instructions. Children over 8 years old and people with disabilities can use the device only under the supervision of an instructed person.

During operation, it is forbidden to move, lift, clean or repair the device.

The installation of the device must be carried out according to the current standards by an authorized specialist.

The device must not be blocked or objects placed on it. If the temperature exceeds 850C during operation, contact a service center immediately.

Make sure the device does not pose a threat to anyone. Access to children and uninstructed persons should be restricted.

Do not place the unit in a room where it cannot be removed.

Service and maintenance may only be performed by an authorized service technician. In case of damage, first contact the technician who installed the device.

Never clean the device with preparations containing sand, soda, acids, alcohols. Clean only with a damp cotton cloth, making sure that the appliance is disconnected from the mains.

2. HEAT PUMP ENERGY SAVING TIPS

If you do not plan to use hot water for a prolonged period, then you might choose to turn the heat pump off or decrease the temp. setting of the control several degrees to minimize energy consumption.

We offer the following recommendations to help conserve energy and minimize the cost of operating your heat pump without sacrificing comfort.

2.1. A maximum water temp. of 60°C is recommended.

2.2. It is recommended to turn off the heat pump when ambient air temp. is less than -30°C or if on vacation for longer than a week.

2.3. To save energy, it is recommended that the heat pump is operated during daytime when the ambient temperature is higher.

2.4. The heat pump must be installed outdoors. To use the risk of freezing, always use a solution of propylene glycol as a heat carrier.

3. HEAT PUMP INSTALLATION

3.1. The following items are needed and are to be supplied by the installer for all heat pump installations:

3.1.1. Plumbing fittings.

3.1.2. Level surface for proper drainage.

3.1.3. Ensure that a suitable electrical supply line is provided. See the rating plate on the heat pump for electrical specifications. Please take a note of the specified current rating. No junction box is needed at the heat pump; Connections are made inside of the heat pump electrical compartment. Conduit may be attached directly to the heat pump jacket.

3.1.4. It is advised to use PVC conduit for the electrical supply line.

3.1.5. Use an additional water circulation pump in case of low flow.

3.1.6. It is necessary to install a magnetic filter at the inlet of the heat carrier in the heat pump.

3.1.7. The plumbing should be insulated to reduce its heat loss.

Note: *We recommend installing shut-off valves on the inlet and outlet water connections for ease of serviceability.*

3.2. Installation details:

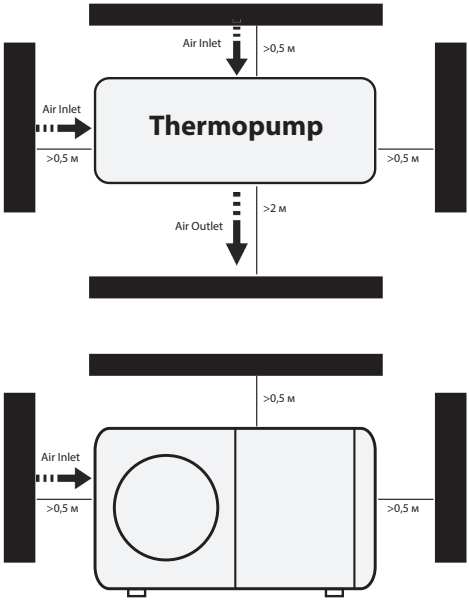
Prevailing local conditions, such as the proximity and height of walls and proximity to public access areas, must be taken into account in any installation. The heat pump must be positioned to provide clearance on all sides for maintenance and inspection.

3.2.1. The place to install the heat pump must have good ventilation and the air inlet/outlet must not be obstructed.

3.2.2. The installation site must have good drainage and be built on a solid foundation.

3.2.3. Do not install the unit in areas accumulated with pollutants such as aggressive gas (chlorine or acid), dust, sand and leaves, etc.

3.2.4. For easier and better maintenance and troubleshooting, there should be no objects and walls closer than 1 m around the unit and no obstructions within 2 meters, vertically, of the air ventilation unit.



Sheme 1

3.2.5. The heat pump must be mounted with shock-resistant bushings to prevent vibration and/or imbalance.

3.2.6. Although the controller is waterproof, care should be taken to avoid direct sunlight and high temperature. In addition, the heat pump must be placed in such a way as to ensure good visibility of the controller.

3.2.7. Plumbing pipes must be installed with adequate support to prevent possible damage due to vibration. The pressure of the running water must be maintained above 1bar. Otherwise, an additional pump must be installed..

3.2.8. The acceptable operating voltage range should be within ±10% of the rated voltage.

⚠	**The heat pump unit must be grounded for safety purposes.**

3.3. Mandatory conditions for installation of the device:

3.3.1. Installation of a magnetic filter at the inlet of the heat carrier in the heat pump. The connection size of the filter must be equivalent or larger than the connection connections of the heat pump.

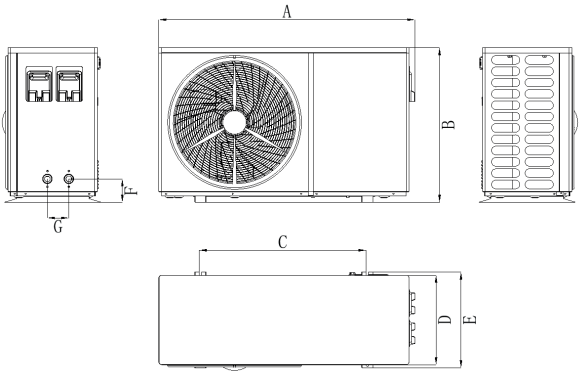
3.3.2. Installation of a relay to monitor problems in the supply voltage (under- and over-voltage). The adjusted tolerance should be ± 5% of the nominal supply voltage described in the operating instructions.

3.3.3. When installing pipes between indoor and outdoor units longer than 5 m. - to fill out a protocol from an installer (with a certificate for working with freons) for the amount of freon refilled. The information should be added to the warranty card.

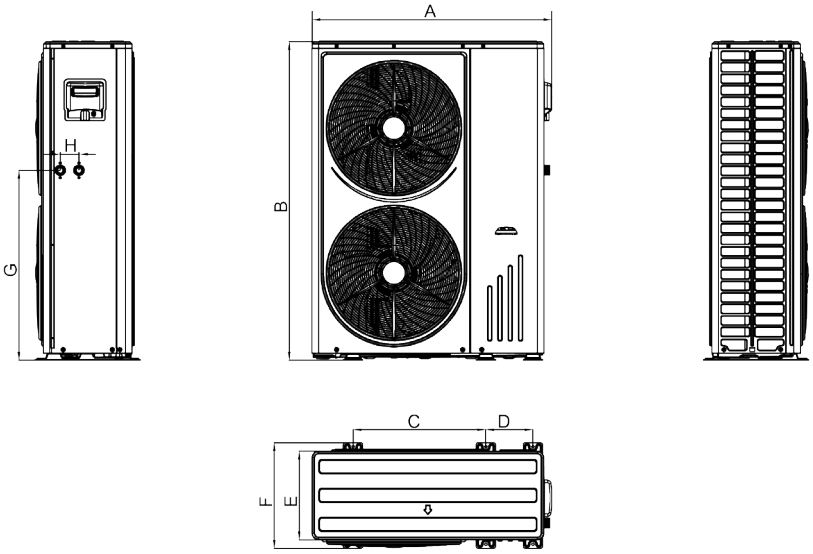
3.3.4. It is mandatory to observe the minimum distances from objects and obstacles described in the installation and operation instructions.

4. INSTALLATION OF THE HEAT PUMP

4.1. Dimensions of the heat pump.



SUNSYSTEM MONO PLUS 60 - SUNSYSTEM MONO PLUS 90

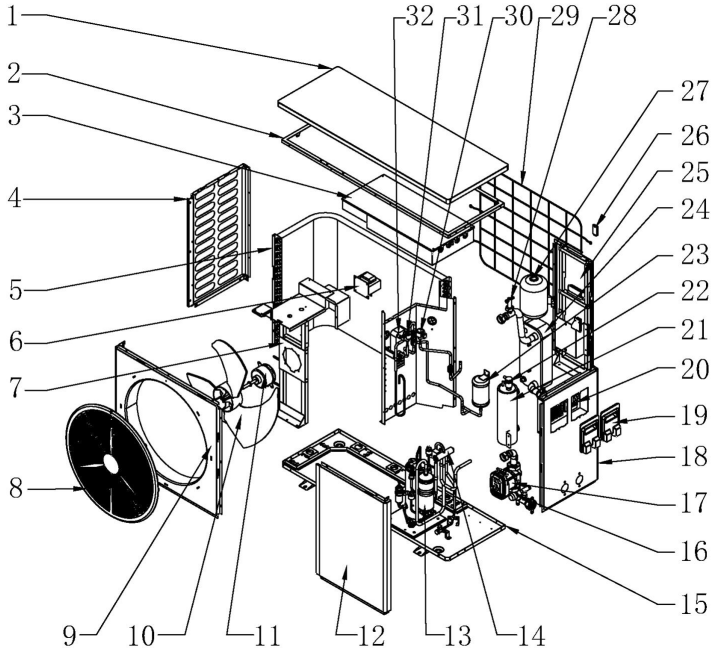


SUNSYSTEM MONO PLUS 130 - SUNSYSTEM MONO PLUS 185 - SUNSYSTEM MONO PLUS 230

Model	A	B	C	D	E	F	G
MONO PLUS 60	960	710	768	414	425	109	99
MONO PLUS 90	1263	875	848	410	440	345	112
MONO PLUS 130	1263	875	848	410	440	345	112
MONO PLUS 185	1263	1377	848	410	440	110	645
MONO PLUS 230	1263	1377	848	410	440	110	645

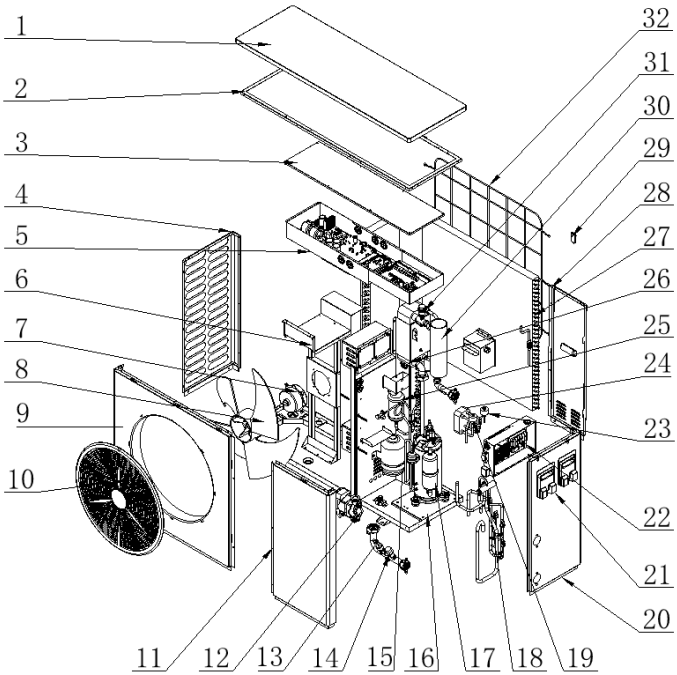
4.2. Heat pump components.

SUNSYSTEM MONO PLUS 60



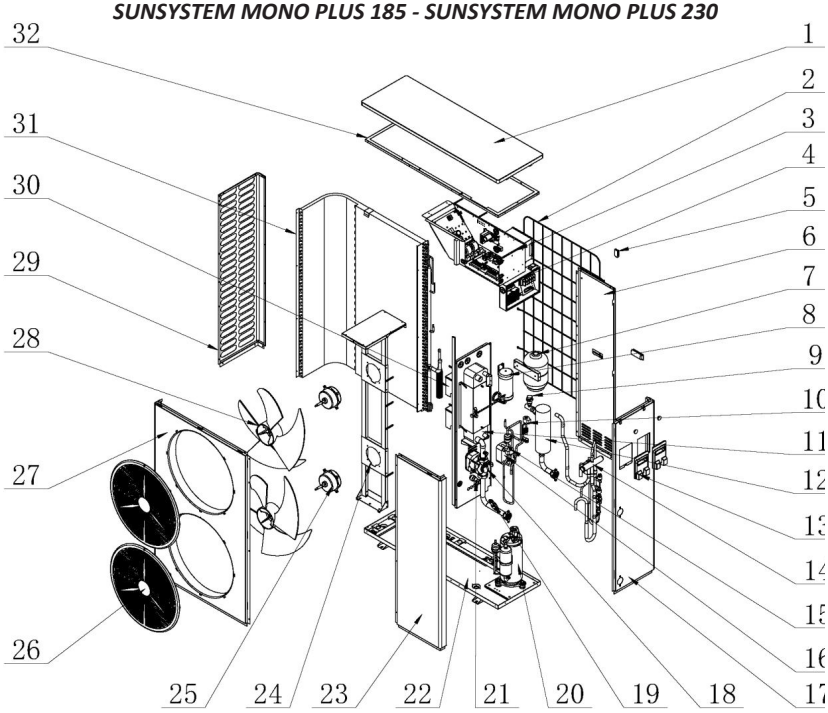
№	SPARE PARTS	№	SPARE PARTS
1.	Top Cover	17	Water Pump
2.	Fixed Frame	18.	Right Plate
3.	Electrical Box	19.	Handle
4.	Left Plate	20.	Junction Box
5.	Finned Heat Exchanger	21.	Electric Heater
6.	Reactor	22.	Exhaust Valve
7.	Motor Support	23.	Liquid Reservoir
8.	Mesh Cover	24.	Plate Heat Exchanger
9.	Air Guide Plate	25.	Back Service Plate
10.	Fan Blade	26.	Ambient Temp. Sensor Holder
11.	Fan Motor	27.	Expansion Tank
12.	Front Service Plate	28.	Water Flow Switch
13.	Compressor	29.	Back Net
14.	Four-way Valve Assembly	30.	EEV
15.	Chassis	31.	EEV of EVI
16.	Pressure Relief Valve	32.	Plate Heat Exchanger of EVI

SUNSYSTEM MONO PLUS 90 - SUNSYSTEM MONO PLUS 130



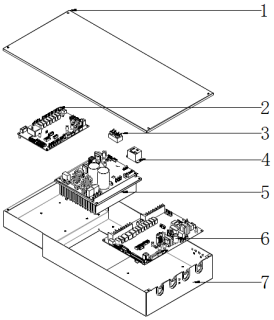
№	SPARE PARTS	№	SPARE PARTS
1.	Top Cover	17	Compressor
2.	Fixed Frame	18.	Four-way Valve Assembly
3.	Electrical Box Cover	19.	EEV of EVI
4.	Left Plate	20.	Right Plate
5.	Electrical Box	21.	Handle
6.	Motor Support	22.	Junction Box
7.	Fan Motor	23.	EEV
8.	Fan Blade	24.	Plate Heat Exchanger of EVI
9.	Air Guide Plate	25.	Liquid Reservoir
10.	Mesh Cover	26.	Plate Heat Exchanger
11.	Front Service Plate	27.	Finned Heat Exchanger
12.	Water Pump	28.	Back Service Plate
13.	Water Flow Switch	29.	Ambient Temp. Sensor Holder
14.	Pressure Relief Valve	30.	Electric Heater
15.	Expansion Tank	31.	Exhaust Valve
16.	Chassis	32.	Back Net

SUNSYSTEM MONO PLUS 185 - SUNSYSTEM MONO PLUS 230

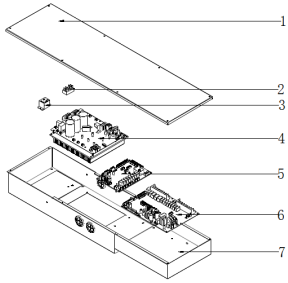


№	SPARE PARTS	№	SPARE PARTS
1.	Top Cover	17	Right Plate
2.	Back Net	18.	Water Pump
3.	Electrical Box	19.	Water Flow Switch
4.	Junction Box	20.	Compressor
5.	Ambient Temp. Sensor Holder	21.	Pressure Relief Valve
6.	Back Service Plate	22.	Chassis
7.	Expansion Tank	23.	Front Service Plate
8.	Liquid Reservoir	24.	Motor Support
9.	Exhaust Valve	25.	Fan Motor
10.	EEV	26.	Mesh Cover
11.	Plate Heat Exchanger	27.	Air Guide Plate
12.	Electric Heater	28.	Fan Blade
13.	Handle	29.	Left Plate
14.	Four-way Valve Assembly	30.	Reactor
15.	EEV of EVI	31.	Finned Heat Exchanger
16.	Plate Heat Exchanger of EVI	32.	Fixed Frame

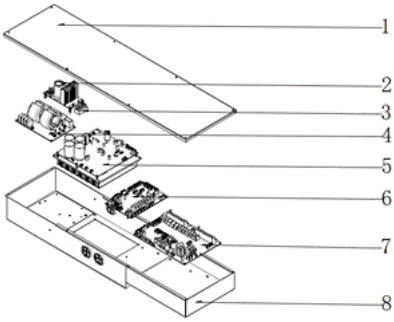
4.3. Main Parts of the Unit Electrical Box



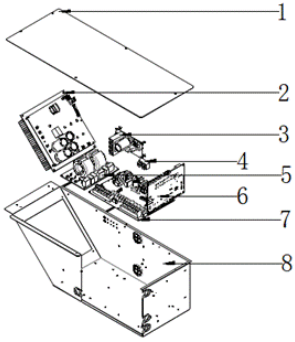
MONO PLUS 60	
1	Electrical Box Cover
2	External Main Board
3	Terminal Block
4	Relay
5	Driver Board
6	Internal Main Board
7	Electrical Box



MONO PLUS 90	
1	Electrical Box Cover
2	Terminal Block
3	Relay
4	Driver Board
5	External Main Board
6	Internal Main Board
7	Electrical Box



MONO PLUS 130	
1	Electrical Box Cover
2	Fan Board
3	Terminal Block
4	Filter Board
5	Driver Board
6	External Main Board
7	Internal Main Board
8	Electrical Box



MONO PLUS 160/185/230	
1	Electrical Box Cover
2	Driver Board
3	Fan Board
4	Terminal Block
5	Filter Board
6	External Main Board
7	Internal Main Board
8	Electrical Box

4.4. Installation location.

⚠	**Choose a place with good air circulation so that the cooled air can flow in and the warm air can flow out.**
⚠	**Do not install in room corners, niches or between walls. This can lead to „mixing“ between the blown air and the intake air.**
⚠	**In heating mode, „mixing“ leads to re-suction of the cooled blown air. This can lead to reduced efficiency of the heat pump and problems with defrosting. Avoid „mixing the air flows“.**
⚠	**In cooling mode, „mixing“ results in re-suction of the heated blown air. This can lead to accidents due to high pressure. Avoid „mixing of air flows“.**

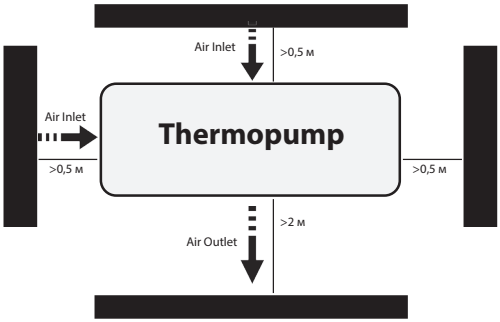
When installing in a location exposed to the wind, the influence of the wind in the area of the fans must be prevented. A strong wind can interfere with the airflow through the evaporator.

Keep a minimum distance of 3m to walkways, drainpipes or sealed surfaces. Due to the cooling of the air in the blowing area, there is a risk of ice formation at outside temperatures below 10 °C.

For easier and better maintenance and troubleshooting, there should be no objects and walls around the equipment that are closer than 1 m and no obstacles above it within 2 meters, vertically, of the air ventilation device .

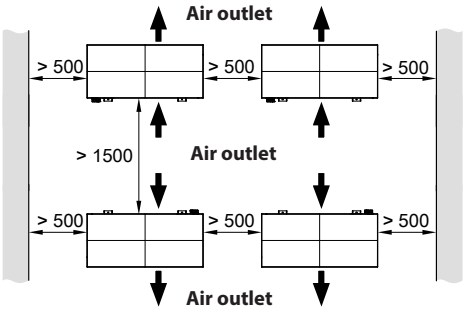
4.5. Minimum distances during installation.

4.5.1. Minimum distances in mm for 1 outdoor unit with 1 and 2 fans:

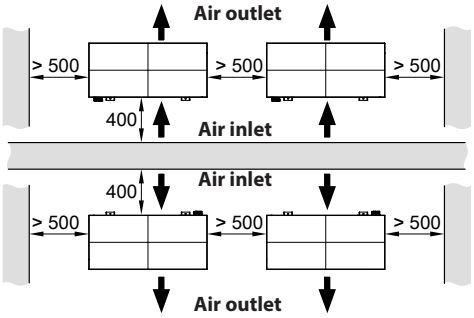


4.5.2. Minimum distances in mm for a cascade of heat pumps (max. 5 outdoor units):

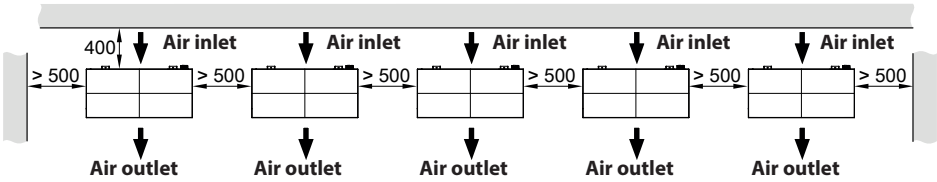
a) Opposite placement without partition wall :



b) Opposite placement with partition wall :



c) Arrangement in a row:

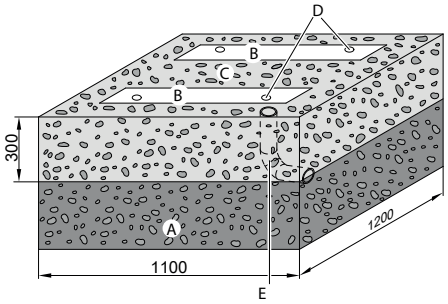


4.6. Types of installations

4.6.1. Floor installation.

a) Foundations.

Install the foundation brackets on 2 horizontal strip foundations. We recommend making a concrete foundation according to the following figure below. The specified layer thicknesses are average values. These values must be agreed with the local conditions. Observe the construction and technical rules.



Designations:

A/ Frost protection for the foundation (compacted gravel, e.g. 0 to 32/56 mm), layer thickness;

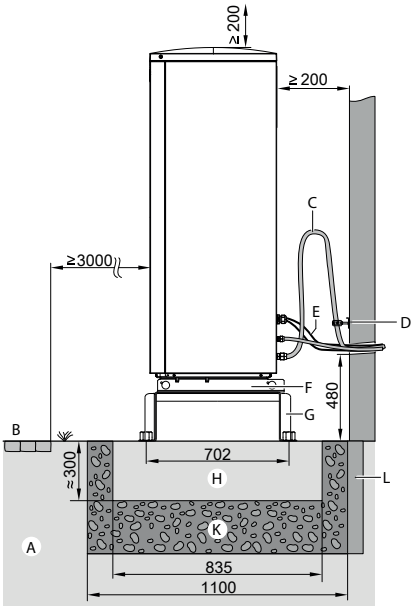
B/Strip foundation;

C/ Gravel layer for percolation of condensate;

D/Bracket attachment points;

E/ Only with cable passage below the level of ground: Sewer pipe DN 125 with cover and 3 pipe elbows 30°, cable entry seal with end sleeve.

в) Installation of a floor with a bracket, running the pipelines above ground level.



Designations:

A/ Land;

B/ Path, terrace;

C/ Pipe elbow for compensation of vibrations in the hot gas pipeline;

D/ Pipe clamps with EPDM backing;

E/ Modbus indoor/outdoor unit connection cable and outdoor unit network connection cable:;

F/ Holes in the bottom cover for free condensate drainage: Do not close the openings.;

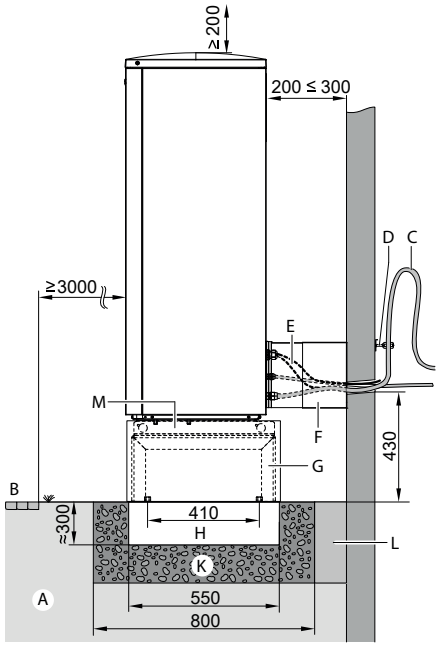
G/ Brackets for floor mounting;

H/ Strip foundation;

K/ Frost protection for the foundation (compacted gravel, e.g. 0 to 32/56 mm), layer thickness;

L/ Elastic separation layer between the foundation and the building.

c) Floor installation with console and designer cladding: Running the pipelines above ground level.



Designations:

A/ Land;

B/ Path, terrace;

C/ Pipe elbow for compensation of vibrations in the hot gas pipeline;

We recommend vibration mounting elbow, especially for pipelines < 5 m.;

D/ Pipe clamps with EPDM backing;

E/ Modbus indoor/outdoor unit connection cable and outdoor unit network connection cable:;

F/ Design cover for the wall connection;

G/ Designer cover with console;

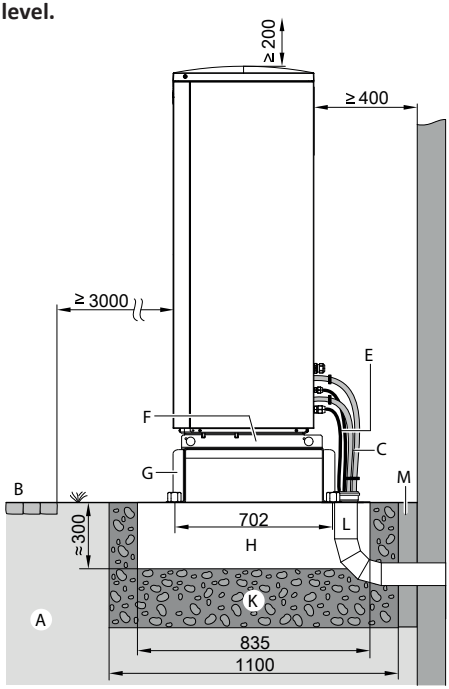
H/ Strip foundation;

K/ Frost protection for the foundation (compacted gravel, e.g. 0 to 32/56 mm), layer thickness;

L/ Elastic separation layer between the foundation and the building.

M/ Holes in the bottom cover for free condensate drainage: Do not close the openings.;

d) Installation of a floor with a console, running the pipes below ground level.



Designations:

A/ Land;

B/ Path, terrace;

C/ Refrigerant piping;

E/ Modbus indoor/outdoor unit connection cable and outdoor unit network connection cable:;

F/ Holes in the bottom cover for free condensate drainage:

Do not close the openings.;

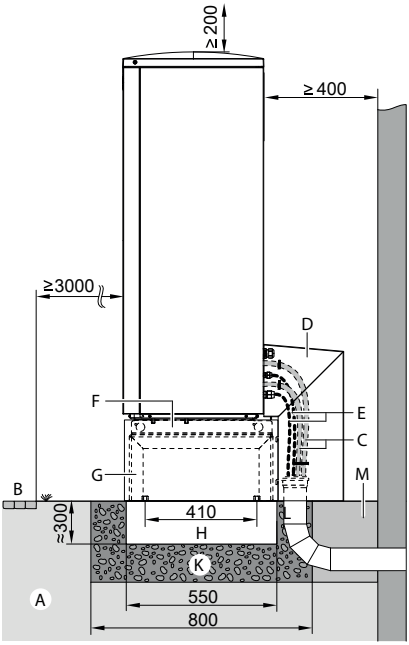
G/ Brackets for floor mounting;

H/ Strip foundation;

K/ Frost protection for the foundation (compacted gravel, e.g. 0 to 32/56 mm), layer thickness;

L/ Sewer pipe DN 125 with cover and 3 pipe elbows 30°, cable passage seal with end sleeve;
M/ Elastic separation layer between the foundation and the building.

e) Floor installation with console and designer cladding: Running the installations below ground level.



A/ Land;

B/ Path, terrace;

C/ Refrigerant piping;

D/ Design cover for the connection to the floor;

E/ Modbus indoor/outdoor unit connection cable and outdoor unit network connection cable:;

F/ Holes in the bottom cover for free condensate drainage: Do not close the openings.;

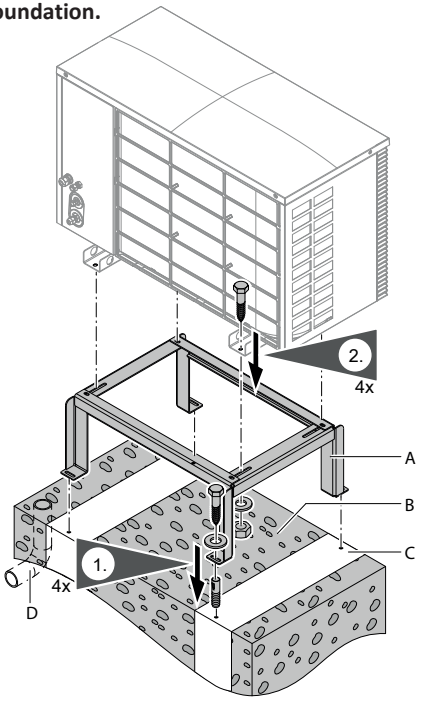
G/ Designer cover with console;

H/ Strip foundation;

K/ Frost protection for the foundation (compacted gravel, e.g. 0 to 32/56 mm), layer thickness;

L/ Sewer pipe DN 125 with cover and 3 pipe elbows 30°, cable passage seal with end sleeve;
M/ Elastic separation layer between the foundation and the building.

f) Installation of the outdoor unit on a foundation.



A/ Brackets for floor mounting;

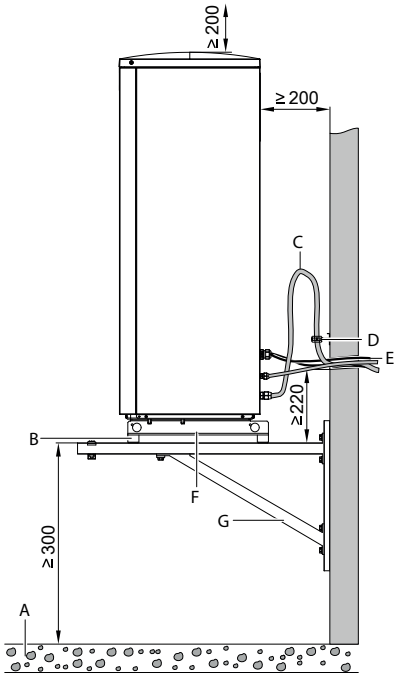
B/ Gravel layer for percolation of condensate;

C/ Concrete foundation;

D/ Pipe type KG DN125 (only when running pipelines below ground level).

4.6.2. Wall mounting.

a) Wall mounting with a set of wall mounting brackets.



A/ Gravel layer for percolation of condensate;

B/ Vibration isolation;

C/ Pipe elbow for compensation of vibrations in the hot gas pipeline;
We recommend vibration mounting elbow, especially for pipelines < 5 m.;

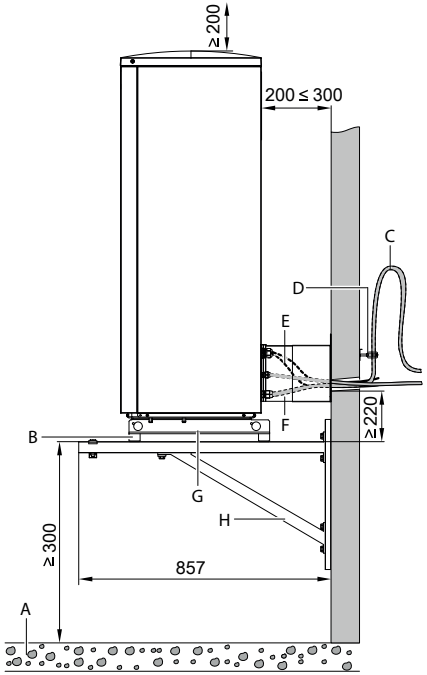
D/ Pipe clamps with EPDM backing;

E/ Modbus indoor/outdoor unit connection cable and outdoor unit network connection cable:;

F/ Holes in the bottom cover for free condensate drainage: Do not close the openings.;

G/ Bracket for wall mounting.

b) Wall mount with wall mount bracket kit and designer trim.



A/ Gravel layer for percolation of condensate;

B/ Vibration isolation;

C/ Pipe elbow for compensation of vibrations in the hot gas pipeline;
We recommend vibration mounting elbow, especially for pipelines < 5 m.;

D/ Pipe clamps with EPDM backing;

E/ Modbus indoor/outdoor unit connection cable and outdoor unit network connection cable:;

F/ Design cover for the wall connection;

G/ Holes in the bottom cover for free condensate drainage: Do not close the openings.;

H/ Bracket for wall mounting.

4.7. Drainage and Condensation

Condensation will occur from the evaporator when the unit is running and drain at a steady rate, depending upon ambient air temp. and humidity. The more humid the ambient conditions, the more condensation will occur. The bottom of the unit acts as a tray to catch rainwater and condensation.

Keep the drain holes, located on the bottom pan of the unit base, clear from debris at all times.

4.8. Suggested Installation Methods:

DC Inverter Heat Pump can provide heating/ cooling and domestic hot water. Floor heating loops and Radiator 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.

DC Inverter Heat Pump with a main circulation pump built inside. When install the unit, installers should connect the heat pump with other parts including the buffer tank (for space heating/cooling), storage water tank (for domestic hot water) . External fittings are also needed including a safety valve, a water charge valve, Three-way valve. Temperature sensor should be added in the storage water tank. An additional electric heater can be installed in the DHW tank or the buffer tank which can get the control signal from the heat pump.

1) Schemes 2 and 3 illustrate how to install the system.

2) 3-way valve: For domestic hot water mode, 3-way valve powers on. For underfloor heating or cooling, 3-way valve powers off.

3) When both heating(or cooling) and domestic hot water don't reach the setting temp., hot

water is priority.

4) The hot water tank with coil for domestic hot water should be specially customized.

5) The heat exchange capacity of the coil should be ≥ the rated heating capacity of the heat

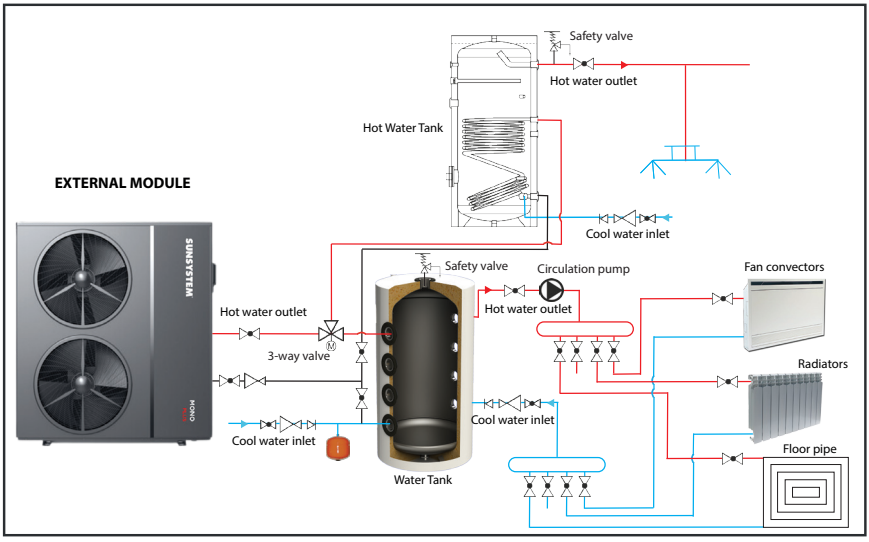
pump.

6) The unit is delivered ready for operation and is filled with R32 refrigeant.

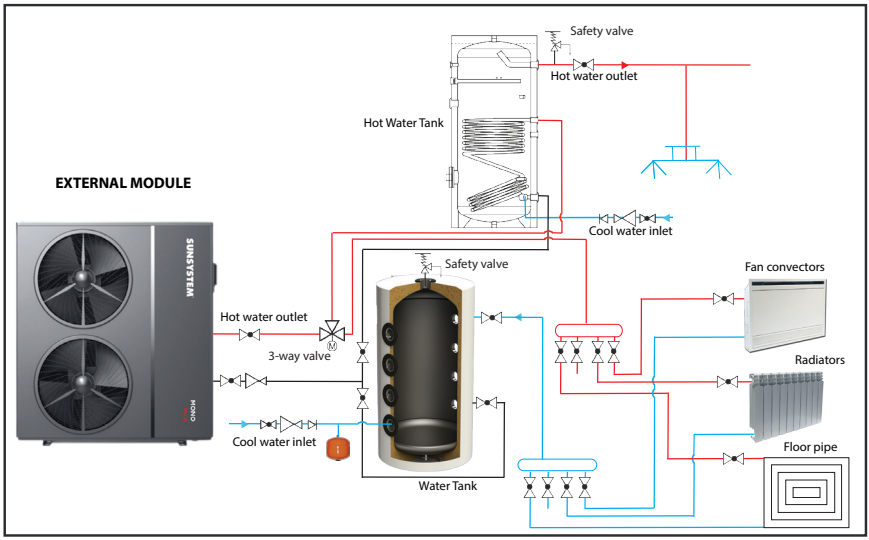
7) The refrigerant R32 are flammable and explosive, It's prohibited from installing in one

environment which have operating or potential ignition sources.

Sheme 2. Scheme of installation 1



Sheme 2. Scheme of installation 2



4.9. Plumbing requirements

a)The inlet water temperature setting from the heating or cooling mode can be adjusted by the target temperature setting interface;

b) The pressure of the circulation pump must be large enough. Its actual water flow cannot be less than the water flow on the nameplate.

4.9.1. Water connections.

Quick Connect fittings are recommended to be installed on the water inlet and outlet connections. It is recommended to use stainless steel or PPR pipes for the heat pump plumbing. The water inlet and outlet connection to the heat pump accepts stainless steel or PPR pipe fittings.

4.9.2. Plumbing Installation Requirements:

1. When water pressure exceeds 3 bar, please use reducing valve to reduce the water pressure below 2,5 bar.

2. Each part connected to unit needs to be connected with method of loose joint and installed with intermediate valve.

3. Ensure that all plumbing has been properly completed and then proceed to do a water leakage and pressure test.

4. All the pipelines and pipe fittings must be insulated to prevent heat loss.

5. Install a drain valve at the lowest point of the system to enable the system to be drained during freezing conditions (winterizing).

6. Install a check valve on the water outlet connection in order to prevent back siphoning when water pump stops.

7. In order to reduce the back pressure, the pipes should be installed horizontally.

8. And minimize the elbows (90 degrees connections). If a higher flow rate is required, install a bypass valve

⚠	It is mandatory to install a magnetic filter at the inlet of the heat carrier in the heat pump.

5. ELECTRICAL CONNECTIONS

⚠	**Risk of electrical shock or electrocution. Ensure that all high voltage circuits are disconnected before commencing heat pump installation. Contact with these circuits could result in death or serious injury to users, installers or others, due to electrical shock and may also cause damage to property.**
⚠	**Label all wires prior to disconnection when servicing the heat pump. Wiring errors can cause improper and dangerous operation. Check and ensure proper operation after servicing.**

5.1. Power supply.

a). If the supply voltage is too low or too high, it can cause damage and/or result in unstable operation of the heat pump unit, due to high in rush currents on start up.

b)The minimum starting voltage should be above 90% of rated voltage. The acceptable operating voltage range should be within ±10% of the rated voltage.

c)Ensure the cable specifications meet the correct requirements for the specific installation. The distance between the installation site and mains power supply will affect the cable thickness.

Follow the local electrical standards to select the cables, circuit breakers and isolator breakers.

5.2. Grounding and Over Current Protection.

In order to prevent electrical shock in case of leakage from unit, install the heat pump according to local electrical standard.

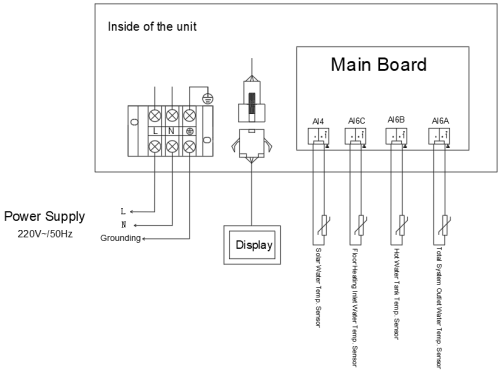
a). Do not interrupt the voltage supply to the heat pump frequently as this may result a shorter life expectance of the heat pump.

b). When installing over current protection, ensure that the correct current rating is met for this specific installation.

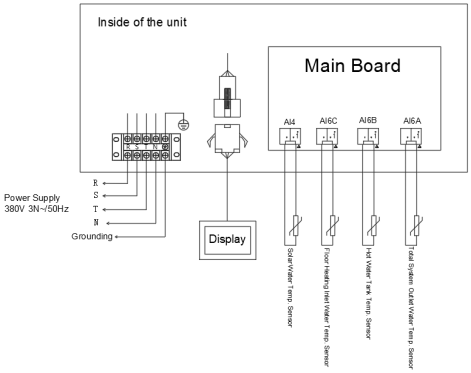
c). If an additional auxiliary heater is need to be controlled by the heat pump controller, the relay (or power) of the aux-heater must be connected to the relevant output of the controller.

5.3. Electrical binding of details from the heat pump.

5.3.1. Power supply: 220V~/50Hz



5.3.2. Power supply: 380V 3N~/50Hz



5.3.3. Binding the elements to the terminal block.

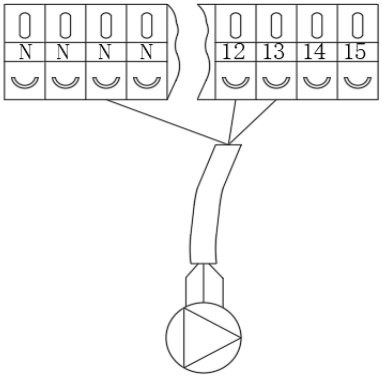
№	CONNECT TO:	№	CONNECT TO:
N	*Null Line*	*13-N*	*External Heat Source*
1-2	*Thermostat (H Signal)*	*14-15*	*External Heat Source*
1-3	*Thermostat (C Signal)*	*16-N*	*Anti-freeze Electric Heater Belts*
4-5	*Solar Signal*	*17-N*	*Lower Return Pump*
6-N	*Outside Circulator Pump*	*18-N*	*Solar Pump*
7-N	*Electric Heater for Water Tank*	*19-N*	*Mixing Water Pump*
8-N	*2# Three-Way Valve (Heating Direction)*	*20-21*	*Defrost Indication*
9-N	*2# Three-Way Valve (Cooling Direction)*	*22-23*	*Fault Indication*
10-N	*3# Three-Way Valve (Open Circulation)*	*24-27*	*Linkage Switch*
11-N	*3# Three-Way Valve (Close Circulation)*	*25-27*	*Smart Grid (SG)*
12-N	*1# Three-Way Valve (DHW Direction)*	*26-27*	*Smart Grid (EVU)*

5.3.4. For Three-way Valve

a) The electromagnetic three-way valve is used to switch the Heating & Cooling waterway and the hot water waterway.

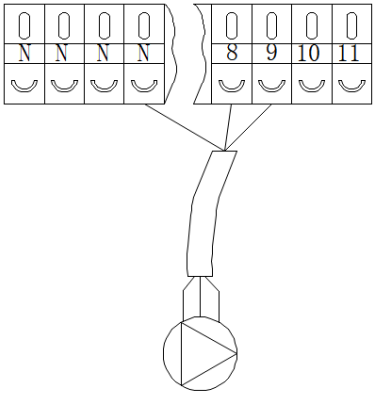
During construction and installation, it is necessary to connect the three-way valve control line to the corresponding point on the terminal block of the unit.

When the unit running Heating & Cooling mode, the 12# wiring point has 220V voltage output, and the 13# point has no output; when the unit is running hot water mode, the 13# point has 220V voltage output, and the 12# point has no output. When wiring, it is necessary to confirm each waterway interface of the electromagnetic three-way valve to ensure that the three-way valve is switched to the correct waterway when the unit is running.



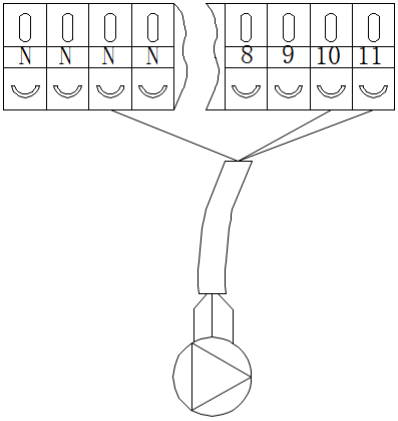
1#Electromagnetic 3-way valve

b) The 2# electromagnetic three-way valve is used to switch the Heating & Cooling water channels of the air conditioner. During construction and installation, the control line of the three-way valve needs to be connected to the corresponding point on the terminal block of the unit. When the air conditioner of the unit is heating, the 8# wiring point has 220V voltage output, and the 9# point has not output; when the unit is cooling, the 9# point has 220V voltage output, and the 8# point has no output. When wiring, it is necessary to confirm each waterway interface of the electromagnetic three-way valve to ensure that the three-way valve is switched to the correct waterway when the unit is running.



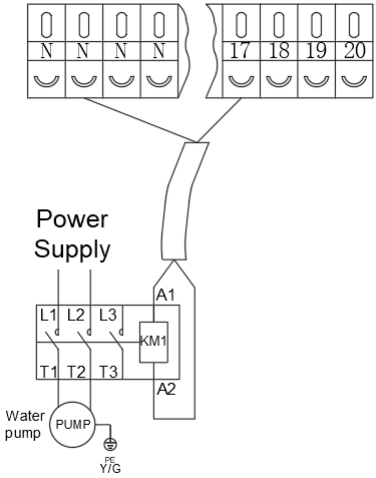
2#Electromagnetic 3-way valve

c) 3# Electromagnetic three-way valve wiring
The 3# electromagnetic three-way valve is used to control whether the water in the balance water tank enters the floor heating waterway in area B.
When the floor heating water temperature is too high, the three-way valve switches direction. At this time, the floor heating water circuit circulates in the floor heating pipe, and the hot water in the balance tank does not enter the floor heating. The 11# point maintains 220V output, and the 10# point has no output; the local heating water temperature If it is too low, the hot water in the balance water tank will enter the floor heating in zone B after the three-way valve is reversed. At this time, the 10# point maintains 220V output, and the 11# point has no output. When wiring, it is necessary to confirm each waterway interface of the electromagnetic three-way valve to ensure that the three-way valve is switched to the correct waterway when the unit is running.

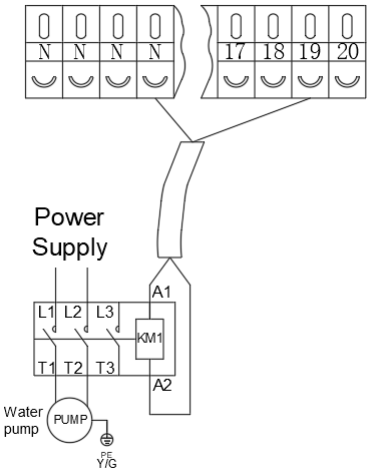


3#Electromagnetic 3-way valve

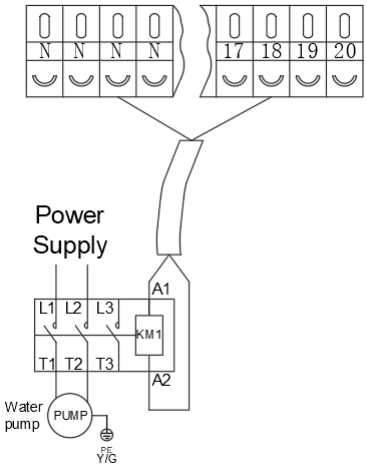
5.3.5. For Water Pump



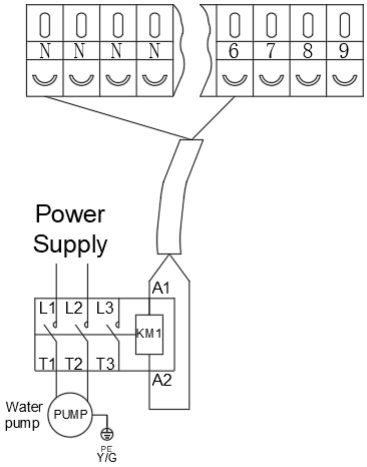
Lower Return Water Pump



Mixing Water Pump

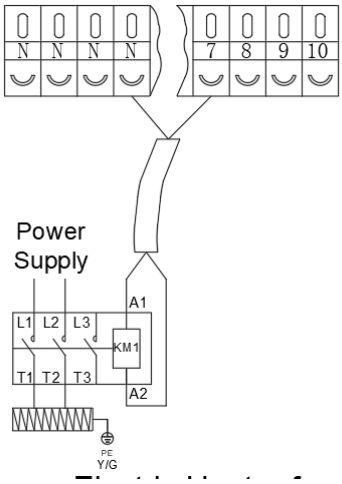


Solar Pump



Outside Circulator Pump

5.3.6. Electric heater for water tank



5.3.7. For Thermostat

"Power input" provides the voltage of "thermostat", and does not directly supply power to the motherboard interface.
Port "**L1**" supplies 220V to the RT connector.
Port "**L1**" is connected to single-phase power from the unit's main power port **L**.
There are three methods of connecting the thermostat cable (as pictured above), depending on the application.

Method 1.

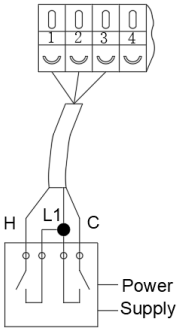
When "thermostat control" is set to "single zone mode switch":
When the signal **C** is closed, zone **A** starts cooling operation;
When the **C** signal is disconnected and the **H** signal is closed, zone **A** starts heating operation;
When both the **C** signal and the **H** signal are disconnected, the **A** area is closed;

Method 2.

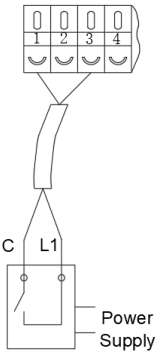
When "thermostat control" is set to "single zone switch":
When the **C** signal is closed, the **A** area is open;
When the **C** signal is disconnected, the **A** area is closed;

Method 3.

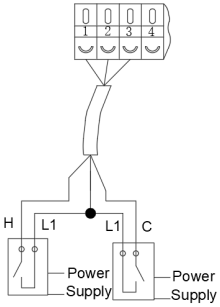
When "thermostat control" is set to "dual zone switch":
When the **C** signal is closed, the **A** area is opened; when the C signal is disconnected, the **A** area is closed;
When the H signal is closed, the **B** area is opened; when the H signal is disconnected, the **B** area is closed;
(Note: Zone **B** is only used for heating operation) .



Method 1

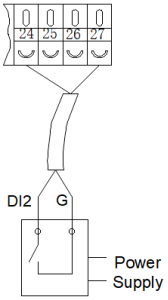


Method 2



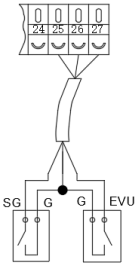
Method 3

5.3.7. For Wire Control Switch



5.3.8. For Smart Grid

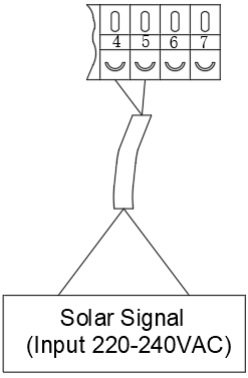
The smart grid wiring is shown in the figure below, SG is the smart grid signal, EVU is the photovoltaic signal.



Smart Grid, Photovoltaic Power

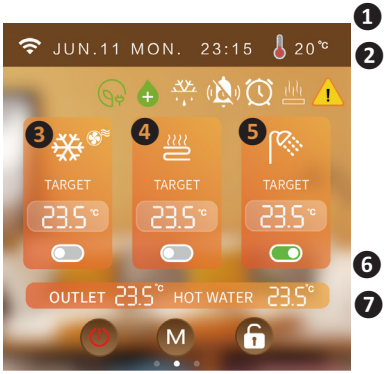
5.3.9. For Solar Signal (220V power input, L and N)

When [solar temperature probe] is set to "disabled", it is necessary to connect the solar signal to control the start and stop of the solar water pump. The wiring is shown in the figure below.



6. WIRE CONTROLLER

6.1. The Appearance of The Wired Controller



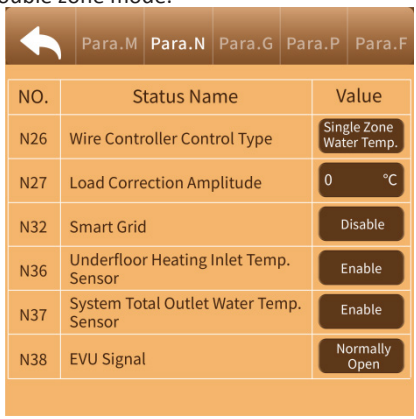
① Сигнал, време, околна температура
② Иконите показват значението: безплатно електричество, стерилизация, размразяване, заглушаване на времето, функция за синхронизиране, функция за отопление, повреда
③ Режим на охлаждане/отопление на зона А, икона за инсталиране на терминала, целева температура за охлаждане/ отопление, превключвател за зона А.
④ Режим на подово отопление на зона В, целева температура на подово отопление, превключвател на зона В.
⑤ Режим за гореща вода, целева температура на гореща вода, превключвател за гореща вода.
⑥ Обща температура на изходящата вода, температура на гореща вода.
⑦ Общо ВКЛ./ИЗКЛ., Режим, Отключване/ заключване на екрана.

7. WIRE CONTROLLER - OPERATION GUIDANCE

7.1. Definition of Buttons.

7.1.1. Single/Double Zone.

In the OFF state, Slide left on the main page - click "General" - click "Parameter" - enter password " 168" - click "N Parameters" -Scroll to page 3 and click on N26 to select single and double zone mode.



NO.	Status Name	Value
N26	Wire Controller Control Type	Single Zone Water Temp.
N27	Load Correction Amplitude	0 ℃
N32	Smart Grid	Disable
N36	Underfloor Heating Inlet Temp. Sensor	Enable
N37	System Total Outlet Water Temp. Sensor	Enable
N38	EVU Signal	Normally Open

7.1.2. No Hot Water in Single Zone.

In the main interface, click " ⏻ " to switch on and off the machine, click " M " to switch heating / cooling mode.

7.1.3. Single Zone + Hot Water.

a) When the unit is in the off state (A zone and hot water are in the off state), short press the " ⏻ " total on/off button, and all the A zone and hot water functions w ⏻ e turned on.
b) When the A-zone is in the off state, click the " " A-zone switch button, and the A-zone will be turned on.
c) Hot water in the off state, click " " hot water switch button, hot water on.
d) With hot water function, the target temperature of hot water is displayed.

(Note: " " stands for on, " " stands for off)

7.1.4. No Hot Water in Double Zone

a) When the unit is in the off state (both zone A and zone B are in the off state), short press the " ⏻ " total on/off button, zone A and zone B will all be turned on.

b) When the A zone is in the off state, click the " ▭ " A zone switch button, and the A zone will be turned on.

c) Zone B is in the off state, click the " ▭ " B zone switch button, B zone power on.

d) Zone A is in cooling mode, Zone B (floor heating) can not be turned on.

f) No hot water function, does not display the target temperature of hot water.

7.1.5. Double Zone + Hot Water

a) When the unit is in the off state (both zone A and zone B are in the off state), short press the " ⏻ " total on/off button, zone A and zone B will all be turned on.

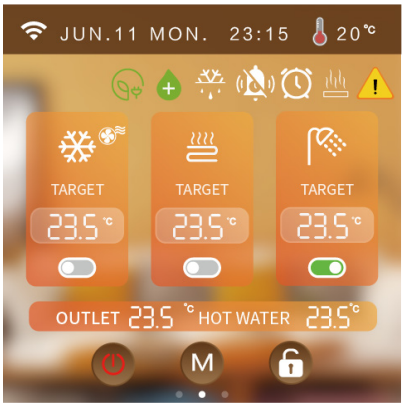
b) When the A zone is in the off state, click the " ▭ " A zone switch button, and the A zone will be turned on.

c) Zone B is in the off state, click the " ▭ " B zone switch button, B zone on

d) Zone A is in cooling mode, Zone B (floor heating) can not be turned on.

e) Mode icon dynamically displayed on behalf of the compressor on, static means the compressor off.

f) No hot water function, the target temperature of hot water is not displayed.



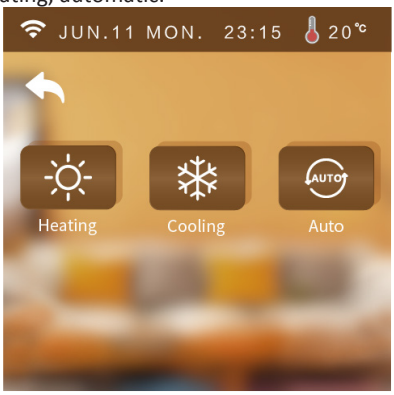
7.1.6. Lock/Unlock Function

At the main interface, press " 🔒 " to lock/ unlock.

7.1.7. Setting Mode

At the main interface, short press " Ⓜ " mode key to jump to the corresponding interface according to the current mode supported by the unit.

For example, when the unit supports cooling and heating modes, short press the " Ⓜ " mode key to enter the mode setting: cooling, heating, automatic.



Note: Enter the password "168" in "Parameter" and set the heating & cooling type by modifying N02.

7.1.8. Setting Target Temperature.
According to the main page display mode status setting, click on the target temperature to set the desired target temperature.

7.1.9. Screen Saver / Screen Off.

1) Turn on the screen saver

In all interfaces, for 60s without touching the screen, the screen brightness will automatically drop to 20% brightness, for 6min without touching the screen, the wire controller automatically jump to the screensaver interface, for 8min without touching the screen, the wire controller into a hibernation state.
Hibernation state, click on the screen wire controller bright screen display is still screensaver interface (only bright screen does not perform other actions).
The brightness of the controller 20% state: click on the screen controller brightness increased to 100% (Only bright screen does not perform other actions, and does not switch the interface.)

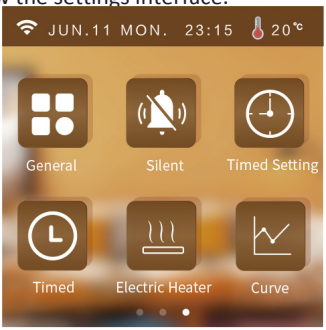
2) Turn off the screen saver function

In all interfaces, for 60s without touching the screen, the screen brightness will automatically drop to 20% brightness, for 6min without touching the screen, the wire controller into the hibernation state.
hibernation state, click on the screen controller bright screen display back to the main interface (Only bright screen does not perform other actions).
The brightness of the controller is 20%: click on the screen to increase the brightness of the controller to 100% (Only bright screen does not perform other actions, and does not switch the interface).

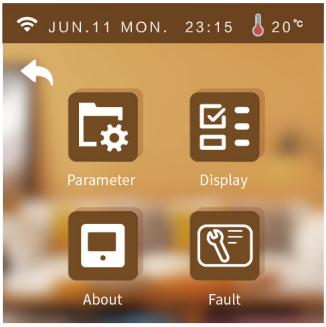
7.1.10. Fault Display.
When the unit has a fault, the main interface fault icon flashes, click "  " to check the fault content of the current unit.
Click " Fault one-button reset" to reset the fault**.**

7.1.11. Check Parameter Status
At the main interface, swipe from left to right to view the current operating status.
(When the temperature sensor fails, "-.-" will be displayed on the screen.)

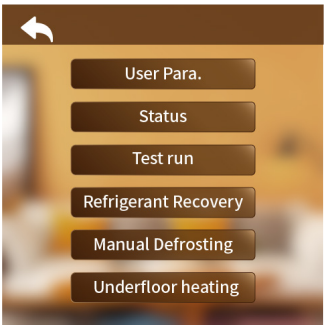
7.2. Parameter Setting Interface.
At the main interface, swipe from right to left to view the settings interface.



7.2.1. Setting Interface.
At the setting interface, press “  ” to enter the system parameter interface.



1) Customer Management Interface.
a) At the system parameter interface, press “  ” and input the password “400866” to enter the restore default setting interface.
b) At the system parameter interface, press “  ” and input the password “168” to enter the customer management interface.

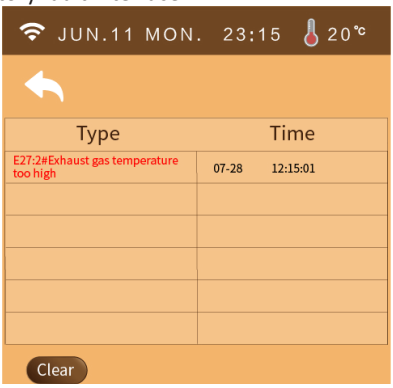


***User parameter**
Press “User Para” to set the user parameter.
***Status**
Press "Status" to view the system status of the unit.
***Test run**
Press "Test run" for test run of unit function.
***Manual Defrosting**
a) Enter the Customer Parameters interface; (see "Customer Parameters Interface" for details.)
b) Click on "Manual Defrosting".
c) Select the module to be defrosted by yourself.
(The content of the displayed modules is determined by the "Number of modules" parameter, e.g. if the number of modules is 2, the current number of defrosting modules can be set to 2.)
***Underfloor Heating**
Press "Underfloor Heating" to set the floor heating preheat function

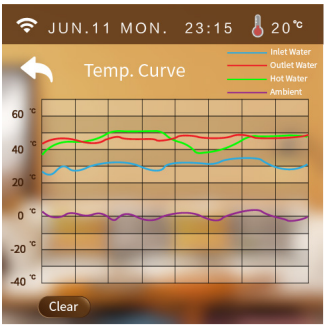
2) Display Interface
At the system parameter interface, press “ ” to enter the display interface.

7.2.2. Information Interface
At the system parameter interface, press “ ” to enter the information interface.

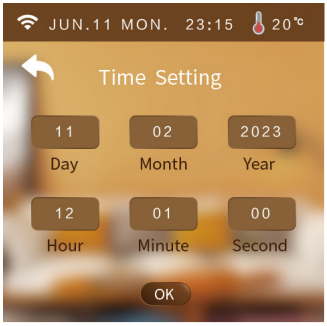
7.2.3. History Fault Interface.
At the system parameter interface, press “ ” and then input “168” to enter the history fault interface.



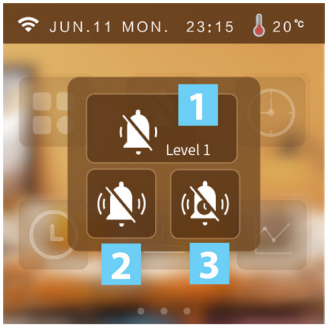
7.2.4. Curve Interface
At the setting interface, press “ ” to enter the curve interface.
*Every 20min to collect temp. data, every 1h to save the data. If less than 1h, the data within this period will not be saved.
*The temp. curve is with power-down memory function.



7.2.5. Time Setting Interface.
At the setting interface, press "  " to enter the time setting interface.
While the unit is ^{0}C, the time setting page is as follows:



7.2.6. Manual Mute Interface.
In the settings screen, press "  " enter the mute function .



1) Mute Level

 Level 1:Indicates that the unit is currently in the first level of silence.

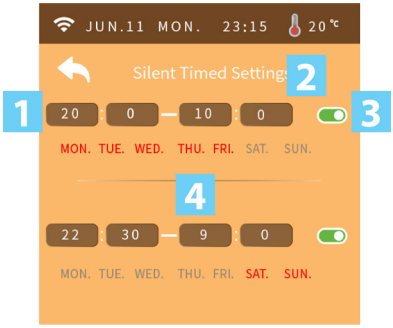
 Level 2:Indicates that the unit is currently in secondary silence.

2) Mute Mode

 :Indicates that the unit is not currently muted.

 :Indicates that the unit is currently muted.

3) Timer Mute
Press "  " to enter the timer mute setting interface.

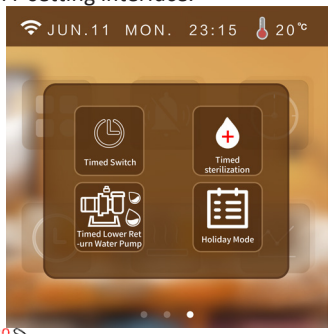


① Mute setting start time
② Mute setting end time
③ While the mute setting is valid, the background is green;
④ While the mute setting is invalid, the background is gray.
⑤ Press MON~SUN to choose which day to be valid for the timer. The day will become red after pressing.
Note: If timed on time is equal to timed off time, the segment cannot take effect.
If timing is not on or the timing on week is not selected, the segment of timing cannot take effect.
If the timings are set to cross, the opening time or end time will be executed according to the earliest time.

7.2.7. Timed Function

1) Timed ON/OFF Setting

At the setting interface, click " " and then click "Timer Switch" to enter the Timer ON/OFF setting interface.



" " indicates that the timer switch function is on.

Note:If timed on time is equal to timed off time, the segment cannot take effect.

If timing is not on or the timing on week is not selected, the segment of timing cannot take effect.

If the timings are set to cross, the opening time or end time will be executed according to the earliest time.

2) Timed Sterilization Function

At the setting interface, press " " in the settings screen, then press "Timed Sterilization" Enter the timed sterilization function.

Click on the button to turn on the sterilization function.

For example, the sterilization function is on and the timer function is also in effect, which turns on at 10.30am on Sunday morning

Operating conditions: Turn on the sterilization parameters (G01).

" " indicates that the timer sterilization function is on.

Note: The time is included for the day of the week, otherwise the time will not work.

3) Timed Turn-on Lower Return Pump

At the setting interface, press " " in the settings screen, then press"Timed on return pump" enter the timed turn-on of the lower return pump.

Operating conditions: Turn on the lower return pump parameters (N21 and P08) .

" "indicates that the timed pump-down function is enabled,

" "indicates that the timed pump-down function is not enabled,

4) Holiday Mode

At the setting interface, press " " in the settings screen, then press " " select holiday mode.

Operating conditions: The heating mode of the unit is enabled, otherwise it cannot enter the holiday mode.

" "indicates that the timed holiday function is enabled.

Note: When holiday leave home mode and holiday at home mode are turned on at the same time, holiday leave mode is the highest authority. Holiday enter when executing the holiday mode when executing the target temperature, exit holiday mode to execute the normal setting target temperature, enter the holiday mode when not allowed to operate the line controller, operation of the line controller will pop-up window whether to exit the holiday mode.

Use scenarios:

a) Holiday at home mode: you can set the indoor temperature and water temperature for each time period (for example: the temperature is colder in the early morning you can set a period of time to set the target temperature higher, the temperature is more suitable at noon you can set a period of time to set the target temperature lower, the temperature drops in the evening set a period of time to set the target temperature higher).

b) Holiday leave mode: when no one lives at home, you can keep the room a minimum temperature operation.

7.2.8. Heating Function

1) Force Start Water Tank Electric Heater
At the setting interface enter the electric heater interface.Select ON/OFF.
Operating conditions:
a) The unit is turned on the hot water function and the current operation contains hot water mode.
b) If the hot water temperature of the unit > the target temperature of hot water, the hot water temperature of the unit < the target temperature of hot water - the hot water Temp. difference
c) Unit hot water temperature < hot water target temperature - 1°
d) The electric tank heating function is enabled.
e) If one of the conditions a-d is not met, the electric heater cannot be forced on.

2) Force Start Hot Water Mode
Enter the hot water mode interface.Select ON/OFF.
Operating conditions:
The unit turns on the hot water function, otherwise it cannot be turned on to forced hot water mode.

3) Auxiliary Electric Heater
Enter the electric heater interface. Select ON/OFF.
Operating conditions:
The unit turns on the auxiliary electric heater function(parameter M39), otherwise it cannot be turned on to forced auxiliary electric heater mode.

4) Force Start External Heat Source
Enter the external heat source interface.Select ON/OFF.
Operating conditions:
The unit turns on the external heat source(parameter M40 and N37), otherwise it cannot be turned on to forced external heat source mode.

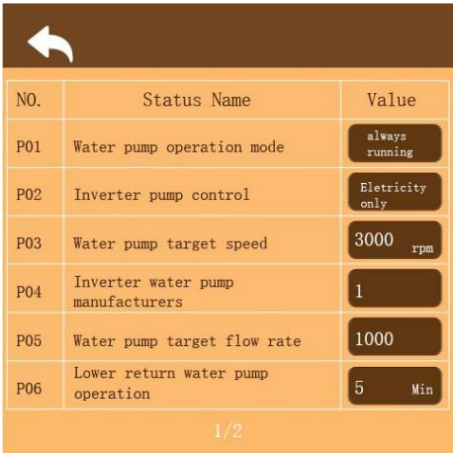
5) Underfloor Heating Drying
Enter the underfloor heating drying interface. Select ON/OFF.
Operating conditions:
The unit underfloor heating inlet temperature sensor on, otherwise the underfloor heating drying function cannot be switched on.

7.2.9. Preheat Function

a) When the machine enters the warm-up mode, the main page flashes
b) Quick warm-up
In the main interface, will pop-up window, select "Fast" to enter the fast warm-up function, fast warm-up time is 10min, click the blank position to return to the main interface.
c) Exit the warm-up function.
In the main interface will pop-up window, select "Cancel" to directly exit the warm-up function; click on the blank position to return to the main interface.

7.2.10. Water Pump Operation Mode

At the system parameter interface, press "  " and input the password "168" to enter the customer management interface. Click P01 parameter to modify the pump operation mode. You can choose Always running / intermittent operation / stop temp. Reached.



7.2.11. Climate Curve

At the system parameter interface, press "" and input the password "168" to enter the customer management interface. Setting parameters M10-M21.

1. Cooling climate curve

a) Users can choose to enable any one curve according to the following table.

b) Users can set the curve parameters by themselves, set the parameters as follows: Curve 9 Cooling Ambient Temp.1, Curve 9 Cooling Ambient Temp.2, Curve 9 Cooling Outlet Temp.1, Curve 9 Cooling Outlet Temp.2.(The target temperature value is calculated according to the linear relationship y=kx+b.)

Ambient Temp.	-10≤TA<15	15≤TA<22	22≤TA<30	30≤TA
Low Temp.1	16	11	8	5
Low Temp.2	17	12	9	6
Low Temp.3	18	13	10	7
Low Temp.4	19	14	11	8
Low Temp.5	20	15	12	9
Low Temp.6	21	16	13	10
Low Temp.7	22	17	14	11
Low Temp.8	23	18	15	12
High Temp.1	20	18	17	16
High Temp.2	21	19	18	17
High Temp.3	22	20	19	17
High Temp.4	23	21	19	18
High Temp.5	24	21	20	18
High Temp.6	24	22	20	19
High Temp.7	25	22	21	19
High Temp.8	25	23	21	20

2. Heating climate curve

a) Users can choose to enable any one curve according to the following table.

b) Users can set the curve parameters by themselves, set the parameters as follows: Curve 9 Heating Ambient Temp.1, Curve 9 Heating Ambient Temp.2, Curve 9 Heating Outlet Temp.1, Curve 9 Heating Outlet Temp.2.(The target temperature value is calculated according to the linear relationship y=kx+b.)

Ambient Temp.	≤-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4
Low Temp.1	38	38	38	38	38	37	37	37	37	37	37	36	36	36	36	36	36
Low Temp.2	37	37	37	37	37	36	36	36	36	36	36	35	35	35	35	35	35
Low Temp.3	36	36	36	35	35	35	35	35	35	34	34	34	34	34	34	33	33
Low Temp.4	35	35	35	34	34	34	34	34	34	33	33	33	33	33	33	32	32
Low Temp.5	34	34	34	33	33	33	33	33	33	32	32	32	32	32	32	31	31
Low Temp.6	32	32	32	32	31	31	31	31	31	31	31	31	30	30	30	30	30
Low Temp.7	31	31	31	31	30	30	30	30	30	30	30	30	29	29	29	29	29
Low Temp.8	29	29	29	29	28	28	28	28	28	28	28	28	27	27	27	27	27
High Temp.1	55	55	55	55	54	54	54	54	54	54	54	54	53	53	53	53	53
High Temp.2	53	53	53	53	52	52	52	52	52	52	52	52	51	51	51	51	51
High Temp.3	52	52	52	52	51	51	51	51	51	51	51	51	50	50	50	50	50
High Temp.4	50	50	50	50	49	49	49	49	49	49	49	49	48	48	48	48	48
High Temp.5	48	48	48	48	47	47	47	47	47	47	47	47	46	46	46	46	46
High Temp.6	45	45	45	45	44	44	44	44	44	44	44	44	43	43	43	43	43
High Temp.7	43	43	43	43	42	42	42	42	42	42	42	42	41	41	41	41	41
High Temp.8	40	40	40	40	39	39	39	39	39	39	39	39	38	38	38	38	38
Ambient Temp.	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Low Temp.1	35	35	35	35	35	35	34	34	34	34	34	34	33	33	33	33	33
Low Temp.2	34	34	34	34	34	34	33	33	33	33	33	33	32	32	32	32	32
Low Temp.3	33	33	33	33	32	32	32	32	32	32	31	31	31	31	31	31	30
Low Temp.4	32	32	32	32	31	31	31	31	31	31	30	30	30	30	30	30	29
Low Temp.5	31	31	31	31	30	30	30	30	30	30	29	29	29	29	29	29	28
Low Temp.6	30	30	30	29	29	29	29	29	29	29	28	28	28	28	28	28	27
Low Temp.7	29	29	29	28	28	28	28	28	28	28	27	27	27	27	27	27	26

Low Temp.8	*27*	*27*	*27*	*26*	*26*	*26*	*26*	*26*	*26*	*26*	*26*	*25*	*25*	*25*	*25*	*25*	*25*
High Temp.1	*53*	*53*	*53*	*53*	*53*	*52*	*52*	*52*	*52*	*52*	*52*	*52*	*52*	*51*	*51*	*51*	*51*
High Temp.2	*51*	*51*	*51*	*51*	*51*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*49*	*49*	*49*	*49*
High Temp.3	*50*	*50*	*50*	*50*	*50*	*49*	*49*	*49*	*49*	*49*	*49*	*49*	*49*	*48*	*48*	*48*	*48*
High Temp.4	*48*	*48*	*48*	*48*	*48*	*47*	*47*	*47*	*47*	*47*	*47*	*47*	*47*	*46*	*46*	*46*	*46*
High Temp.5	*46*	*46*	*46*	*46*	*46*	*45*	*45*	*45*	*45*	*45*	*45*	*45*	*45*	*44*	*44*	*44*	*44*
High Temp.6	*43*	*43*	*43*	*43*	*43*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*41*	*41*	*41*	*41*
High Temp.7	*41*	*41*	*41*	*41*	*41*	*40*	*40*	*40*	*40*	*40*	*40*	*40*	*40*	*39*	*39*	*39*	*39*
High Temp.8	*38*	*38*	*38*	*38*	*38*	*37*	*37*	*37*	*37*	*37*	*37*	*37*	*37*	*36*	*36*	*36*	*36*
Ambient Temp.	*14*	*15*	*16*	*17*	*18*	*19*	*≥20*										
Low Temp.1	*33*	*32*	*32*	*32*	*32*	*32*	*32*										
Low Temp.2	*32*	*31*	*31*	*31*	*31*	*31*	*31*										
Low Temp.3	*30*	*30*	*30*	*30*	*30*	*29*	*29*										
Low Temp.4	*29*	*29*	*29*	*29*	*29*	*28*	*28*										
Low Temp.5	*28*	*28*	*28*	*28*	*28*	*27*	*27*										
Low Temp.6	*27*	*27*	*27*	*27*	*27*	*26*	*26*										
Low Temp.7	*26*	*26*	*26*	*26*	*26*	*25*	*25*										
Low Temp.8	*25*	*25*	*24*	*24*	*24*	*24*	*24*										
High Temp.1	*51*	*51*	*50*	*50*	*50*	*50*	*50*										
High Temp.2	*49*	*49*	*48*	*48*	*48*	*48*	*48*										
High Temp.3	*48*	*48*	*47*	*47*	*47*	*47*	*47*										
High Temp.4	*46*	*46*	*45*	*45*	*45*	*45*	*45*										
High Temp.5	*44*	*44*	*43*	*43*	*43*	*43*	*43*										
High Temp.6	*41*	*41*	*40*	*40*	*40*	*40*	*40*										
High Temp.7	*39*	*39*	*38*	*38*	*38*	*38*	*38*										
High Temp.8	*36*	*36*	*35*	*35*	*35*	*35*	*35*										

8. APPENDIX

8.1. Parameters

Note: Parameters can only be modified when the unit is powered off, otherwise the parameters cannot be modified successfully.

Code	Parameter	Unit	Range
N01	Power Mode	/	0 Standard/1 Powerful/2 Eco/3 Auto
N02	Heating & Cooling Type	/	0 Heating only/1 Heating & Cooling / 2 Cooling only
N04	Four-Way Valve Setting	/	0 Heating open valve/1 Cooling open valve
N05	Wire control switch type	/	0 Toggle switch/1 Pulse switch
N06	Unit Start/Stop Control	/	0 Union/1 Remote/2 Local/3 Wire Control/4 Net control
N07	Power Down Memory	/	0 Disable/1 Enable
N08	Incoming Power Self-Start	/	0 Disable/1 Enable
N11	Hot Water Function	/	0 Disable/1 Enable
N20	Tank Electric Heating	/	0 Disable/1 Enable
N21	Lower Return Pump	/	0 Disable/1 Enable
N22	Solar	/	0 Disable/1 Enable
N23	Linkage Switch Setting	/	0 Disable/1 Linkage Action is Valid/2 Linkage Closure is Valid/3 Power ON/OFF via Wire Controller /4 Control DHW Electric Heater via Wire Controller/5 Control External Heat Source via Wire Controller
N26	Wire Controller Control Type	/	0 Single Zone/ 2 Double Zone
N32	Smart Grid	/	0 Disable/1 Enable
N36	Underfloor Heating Inlet Temp. Sensor	/	0 Disable/1 Enable
N37	System Total Outlet Water Temp. Sensor	/	0 Disable/1 Enable
N38	EVU PV Signal	/	0 Normally open/1 Normally closed
N39	SG Grid Signal	/	0 Normally open/1 Normally closed
N41	Solar Temp. Sensor	/	0 Disable/1 Enable
N48	Zone A cooling end	/	0 Radiator/ 1 Fan Coil/ 2 Underfloor Heating
N49	Zone A heating end	/	0 Radiator/ 1 Fan Coil/ 2 Underfloor Heating
M01	Cooling Setting Temp.	^0C	15~35
M02	Heating Setting Temp.	^0C	0~85
M03	Hot Water Setting Temp.	^0C	0~80
M08	Heating Setting Temp.(B)	^0C	40~60
M10	A Zone Cooling Curve	/	0 Disable/ 1 Low Temp. Curve 1/ 2 Low Temp. Curve 2/ 3 Low Temp. Curve 3/4 Low Temp. Curve 4/ 5 Low Temp. Curve 5/ 6 Low Temp. Curve 6/ 7 Low Temp. Curve 7/ 8 Low Temp. Curve 8/ 9 High Temp. Curve 1/ 10 High Temp. Curve 2/ 11 High Temp. Curve 3/ 12 High Temp. Curve 4/ 13 High Temp. Curve 5/ 14 High Temp. Curve 6/ 15 High Temp. Curve 7/ 16 High Temp. Curve 8/ Custom Curve

M11	*A Zone Heating Curve*	*/*	*0 Disable/ 1 Low Temp. Curve 1/ 2 Low Temp. Curve 2/ 3 Low Temp. Curve 3/4 Low Temp. Curve 4/ 5 Low Temp. Curve 5/ 6 Low Temp. Curve 6/ 7 Low Temp. Curve 7/ 8 Low Temp. Curve 8/ 9 High Temp. Curve 1/ 10 High Temp. Curve 2/ 11 High Temp. Curve 3/ 12 High Temp. Curve 4/ 13 High Temp. Curve 5/ 14 High Temp. Curve 6/ 15 High Temp. Curve 7/ 16 High Temp. Curve 8/ Custom Curve*
M12	*B Zone Cooling Curve*	*/*	*0 Disable/ 1 Low Temp. Curve 1/ 2 Low Temp. Curve 2/ 3 Low Temp. Curve 3/4 Low Temp. Curve 4/ 5 Low Temp. Curve 5/ 6 Low Temp. Curve 6/ 7 Low Temp. Curve 7/ 8 Low Temp. Curve 8/ 9 High Temp. Curve 1/ 10 High Temp. Curve 2/ 11 High Temp. Curve 3/ 12 High Temp. Curve 4/ 13 High Temp. Curve 5/ 14 High Temp. Curve 6/ 15 High Temp. Curve 7/ 16 High Temp. Curve 8/ Custom Curve*
M13	*B Zone Heating Curve*	*/*	*0 Disable/ 1 Low Temp. Curve 1/ 2 Low Temp. Curve 2/ 3 Low Temp. Curve 3/4 Low Temp. Curve 4/ 5 Low Temp. Curve 5/ 6 Low Temp. Curve 6/ 7 Low Temp. Curve 7/ 8 Low Temp. Curve 8/ 9 High Temp. Curve 1/ 10 High Temp. Curve 2/ 11 High Temp. Curve 3/ 12 High Temp. Curve 4/ 13 High Temp. Curve 5/ 14 High Temp. Curve 6/ 15 High Temp. Curve 7/ 16 High Temp. Curve 8/ Custom Curve*
M14	*Custom Curve of Cooling Ambient Temp.1*	*^{0}C*	*-5~46*
M15	*Custom Curve of Cooling Ambient Temp. 2*	*^{0}C*	*-5~46*
M16	*Custom Curve of Cooling Outlet Temp. 1*	*^{0}C*	*5~25*
M17	*Custom Curve of Cooling Outlet Temp. 2*	*^{0}C*	*5~25*
M18	*Custom Curve of Heating Ambient Temp. 1*	*^{0}C*	*-25~35*
M19	*Custom Curve of Heating Ambient Temp.2*	*^{0}C*	*-25~35*
M20	*Custom Curve of Heating Outlet Temp.1*	*^{0}C*	*25~65*
M21	*Custom Curve of Heating Outlet Temp.2*	*^{0}C*	*25~65*
M35	*Min. Ambient Temp.of Automatic Cooling*	*^{0}C*	*20~29*
M36	*Max. Ambient Temp.of Automatic Cooling*	*^{0}C*	*10~17*
M37	*Holiday away Home Heating*	*^{0}C*	*20~25*
M38	*Holiday away Home Hot Water*	*^{0}C*	*20~25*
M39	*Auxiliary Electric Heater*	*/*	*0 Disable/1 Heating only/2 Hot water only/3 Heating & Hot water*
M40	*External Heat Source*	*/*	*0 Disable/1 Heating only/2 Hot water only/3 Heating & Hot water*

M55	Underfloor Heating Preheating Temp.	^{0}C	25~35
M56	Underfloor Heating Preheating Interval	Min	10~40
M57	Underfloor Heating Preheating Time	H	48~96
M58	Underfloor Heating Water Temp. Return Difference	^{0}C	0~10
M59	Underfloor Heating Room Temp. Return Difference	^{0}C	0~10
M60	Underfloor Heating Before Drying	DAY	4~15
M61	Underfloor Heating During Drying	DAY	3~7
M62	Underfloor Heating After Drying	DAY	4~15
M63	Underfloor Heating Drying Temp.	^{0}C	30~55
F06	Variable Frequency Fan Speed Adjustment	/	0 Manual/1 Ambient Temp. Linear/2 Fin Temp. Linear
F07	Fan Manual Operation	rps	0~2000
P01	Water Pump Operation Mode	/	0 Keep Running/1 Stop When Temp. Reached/2Intermittent Operation
P02	Water Pump Control Type	/	1 Control Speed/2 Control Flow Rate/3 ON/OFF/4 Control Power
P03	Water Pump Target Speed	rpm	1000~4500
P04	Water Pump Manufacturers	/	0~4
P05	Water Pump Target Flow Rate	undefined	0~4500
P06	Lower Return Water Pump Operation	Min	5~120
P07	Lower Return Water Pump Sterilization	/	0 Disable/1 Enable
P08	Lower Return Water Pump Timed	/	0 Disable/1 Enable
G01	Timed Sterilization Function	/	0~1
G02	Sterilization Temp.	^{0}C	60~70
G03	Sterilization Max. cycle	Min	90~300
G04	Sterilization high Temp. time	Min	5~60

8.2. Error Code

Code	Description	Causes	Solutions
E01	*Wire controller communication fault*	*1.The connection between wire controller and main board is poor.* *2. Wire controller fault.* *3. Main board fault.* *4. Communication wire and strong electricity wire put together, resulting in power interference communication*	*1. Reconnect the wire controller cable.* *2. Replace the wire controller.* *3. Replace the main board.* *4. Communication wire is placed separately from the strong electricity wire.*
E03	*0#Compressor high pressure*	*1. Check for refrigerant leaks* *2. The throttle device is dirty and blocked, damaged* *3. Compressor bearing damage, causing mechanical part friction, exhaust temperature rise* *4. High pressure switch fault* *5. Main board fault* *6. Compressor fault*	*1.Refill refrigerant* *2.Clean/replace throttle device* *3.Replace compressor* *4.Replace the high pressure switch* *5.Replace the main board* *6.Replace the compressor*
E04	*0#Compressor low pressure*	*1.Insufficient water flow* *2.Low chilled water inlet water temperature* *3.Refrigerant leakage or insufficient refrigerant charge* *4.Scale in evaporator*	*1.Check the temperature difference between the inlet and outlet water and adjust the water flow* *2.Check the installation* *3.Leak detection or filling with sufficient refrigerant* *4.Remove water scale*
E06	*0#Inverter communication fault*	*1. Power supply voltage fault* *2. Inverter board fault* *3. Main board fault*	*1. Replace the power cord* *2. Replace the inverter board* *3.Replace the main board*
E06	*0#Communication fault*	*1. Communication lines and strong wires placed together, resulting in communication power interference* *2. Poor connection between the module machine and the main board.* *3. Main board fault*	*1.Communication wire is placed separately from the strong electricity wire.* *2.Reconnect the wires* *3.Replace the main board.*
E10	*Floor heating water inlet temperature fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E11	*Total outlet water temperature fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E11	*System total outlet water temperature fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E11	*0#Plate exchanger outlet water Temp. fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E11	*0# Total water outlet Temp. fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*

E12	*Hot water tank temperature fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E12	*Buffer tank upper temperature fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E12	*Buffer tank lower temperature fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E13	*Indoor temperature fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E14	*0# Ambient Temp. fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E16	*0#Exhaust temperature fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E21	*EEPROM data error*	*Data reading error*	*Shutdown and restart*
E21	*0#EEPROM data error*		
E24	*0#Plate Inlet Water Temp. too High*	*1. Low water flow* *2. Clogged water pipes* *3. Water pipe damage* *4. Sensor fault*	*1. Clear the blockage* *2. Check whether the water flow of the pump meets the requirements* *3. Replace the water pipe* *4. Replace the sensor*
E25	*0#Cooling Evaporation is Too Low*		
E25	*0#Plate Exchanger Outlet Water Temp. Too Low*		
E25	*0#Plate Inlet Water Temp. too Low*		
E26	*0#Outlet and Inlet Water Temp. Difference Abnormal*		
E26	*0#Outlet and Inlet Water Temp. Difference is Too Large*		
E27	*0#Exhaust temperature too high*		
E31	*0#J5 pressure sensor fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E32	*0#J6 pressure sensor fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E44	*0#Plate Exchanger Inlet Water Temp. Fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*

E55	*0#Suction temperature fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E56	*Solar Temp. sensor fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E58	*0#Coil Temp. Fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E59	*0#Suction temperature too low*	*1. Too much/too little refrigerant* *2.Temperature sensor fault* *3. Main board fault*	*1.Refill the refrigerant according to the nameplate* *2.Replace the temperature sensor* *3.Replace the main board*
E60	*0#Frequent emergency defrost*	*1. Ambient temperature sensor is damaged* *2.Dirty and blocked heat exchanger* *3. Lack of refrigerant*	*1.Replace the ambient temperature sensor* *2.Clean the heat exchanger* *3.Refill the refrigerant according to the nameplate*
E61	*0#Abnormal Temp. difference between suction and exhaust*	*1.Inlet and outlet water temp. sensor fault.* *2.The valve in water system is not open.* *3.Waterway blockage, may appear in the heat exchanger or valve part.* *4.Improper water pump selection* *5.The water pump is broken .* *6.Pipe size is too small.* *7.Heat exchanger is fouling.*	*1. Need to replace the temp. sensor.* *2.Clean or replace the blocked part.* *3.Change the pump according to the water flow and water head.* *4.Need to change the water pipe.* *5.Reset the water flow switch manually.* *6.Choose the suitable pipe size.* *7.Clean the dirt of the heat exchanger surface.*
E62	*Fan coil communication fault 1-32*	*1. Connection cable fault* *2. Power input fault* *3. Main board fault*	*1. Check wiring and rewire* *2. Replace the power cord* *3. Replace the main board*
E63	*0#Communication abnormal*	*1. Communication lines and strong wires placed together, resulting in communication power interference* *2. Poor connection between the module machine and the main board.* *3. Main board fault*	*1.Communication wire is placed separately from the strong electricity wire.* *2.Reconnect the wires* *3.Replace the main board*
E63	*0#Internal and external machine communication fault*		
E64	*0#Protocol version too low*	*Program error*	*Update procedure*
E65	*0#Abnormal model setting*	*1. Main board code error* *2. The program did not restore the factory settings*	*1.Resetting the main board code* *2.Re-download the program*
E66	*System maintenance data error*	*System maintenance data error*	*Recovery parameters in parameter setting*
E67	*Water Tank Electric Heater Overload* *0#Auxiliary electric heater overload*	*1.Voltage input error* *2.Water tank damage*	*1.Check power supply wiring/reconnect power supply voltage* *2.Repair of water tank*
E68	*0# Insufficient water flow*	*1.The water system is blocked* *2.Water pump is not suitable* *3. Water pipe is small* *4.The water flow switch is stuck and cannot be reset.*	*1.Check if the pump is running properly/ Clean or replace the blocked part* *2.Change the pump according to the water flow and water head* *3.Need to change the water pipe* *4.Reset the water flow switch manually.*

E69	*0# Refrigerant gas side Temp. fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
E70	*0#Refrigerant liquid side Temp. fault*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
F16	*0#Compressor low pressure too low*	*1.Insufficient water flow* *2.Low chilled water inlet water temperature* *3.Refrigerant leakage or insufficient refrigerant charge* *4.Scale in evaporator*	*1.Check the temperature difference between the inlet and outlet water and adjust the water flow* *2.Check the installation* *3.Leak detection or filling with sufficient refrigerant* *4.Remove water scale*
F17	*0#Compressor high pressure too high*	*1. Less refrigerant* *2.The throttle device is dirty and blocked, damaged* *3. Compressor bearing damage, causing mechanical part friction, exhaust temperature rise* *4.High pressure switch fault* *5.Main board fault* *6.Compressor fault*	*1.Refill refrigerant* *2.Clean/replace throttle device* *3.Replace compressor* *4.Replace the high pressure switch* *5.Replace the main board* *6.Replace the main board compressor*
F61	*0#Abnormal speed of fan 1*	*1.Loose connection cable* *2.Unstable voltage* *3. Main board fault* *4. Fan fault*	*1.Reconnect the motherboard and fan wiring* *2. Replace the stable voltage* *3. Replace the Main board* *4. Replace the fan*
F61	*0#Abnormal speed of fan 2*		
F62	*Fault of fan coil 01-32*	*1. Power input is not normal* *2. Whether the fan coil is rotating* *3. Whether the fan coil is blocked* *4. The fan coil is damaged*	*1. Reconnect the power supply* *2. Check whether the motor is stuck* *3. Clean the fan coil* *4. Replace the fan coil*
F63	*0#Ambient Temp. Restricts compressor Opening*	*1.Whether the wiring is loose/ damaged* *2.Temperature sensor fault* *3.Main board fault*	*1.Rewiring/replacement of wires* *2. Replace the temperature sensor* *3. Replace the main board*
F64	*0#Inverter Fault*	*1.Loose connection cable* *2.Unstable voltage* *3. Main board fault* *4. Driver board fault*	*1.Reconnect the wires* *2. Replace the stable voltage* *3. Replace the Main board* *4. Replace the driver board fault*
F65	*0#Inverter Model Setting in Progress*	*1. Loose connection cable* *2. Pump fault* *3. Inverter fault* *4. Main board fault*	*1. Reconnect the wires* *2. Replace the pump* *3. Replace the inverter* *4. Replace the main board*
F66	*0#Inverter pump fault*	*1.The water system is blocked.* *2. Loose connection cable* *3. Pump fault* *4. Inverter fault* *5. Main board fault*	*1. Clean or replace the blocked part* *2. Reconnect the wires* *3. Replace the pump* *4. Replace the inverter* *5. Replace the main board*
F66	*Inverter water pump fault*		
F66	*0#Inverter pump warning [80%]*		

9. Wi-Fi FUNCTION

9.1. Software Installation

Download Eco-Home from Google Store or Apple Store.

9.2. Login / Registration

(1) Existing accounts can be logged in directly, in the following steps:

(2) If you forget your password you can choose to login in with your verification code and select "Forget Password": Enter your phone number and get the verification code.

(3) Users who don't have an account can click "Sign Up Now!" to create an account.

(4) Set the password.

(5) Enter your Email, then you will get a verification code.

9.3. Add Device

Step 1:
Turn on the phone's Bluetooth and Wi-Fi function, then connect to the Wi-Fi . The Wi-Fi must be able to connect to the Internet normally.

Step 2:
Choose Wi-Fi and enter the password.

Step 3:
After successful networking, scan the wire controller QR code or enter the serial number to bind the unit.Return to the main page after successful binding.

- Device sharing
Click "share device", click the unit you want to share, click "Add a share", enter the shared account information, and confirm the share.

9.4. Software Function Operation

- After the device is bound successfully, enter the operation interface of "Eco-Home" (Device name, modifiable)

- In the main interface, click the unit to enter the operation interface.

(1) Heating & Cooling

(2) Hot Water

(3) Floor Heating

9.5. Modify Device Name / Delete Device

Click in the following order to enter device details, and click "Device Name" to rename the device. Click "Delete the Device" to remove the device.

9.6. Mode settings

Click to select the mode you need to set.

9.7. Timing

Click "Timing", then click "+", set the timer and save it.

9.8. Set Parameters

(1) Set Target Temp.

Support to modify the content of the parameters is: Hot water target temperature, Cooling target temperature, Heating target temperature, Floor heating target temperature, and temperature units (in the modification of temperature units, the controller will re-read the main board and upload it to the APP one by one).

(2) Temperature curve.

The current curve shows the temperature respectively: Exchanger water outlet Temperature, Exchanger water inlet Temperature, Ambient Temperature, DHW Temperature. Real-time curve updates.

9.9. Mine

Click "Mine" for user information, commom problems, about, and logout.

10. TECHNICAL PARAMETERS OF THE HEATING AND COOLING MONO PLUS

Model: SUNSYSTEM	MONO PLUS 60 - 1PH	MONO PLUS 90 - 1PH	MONO PLUS 130- 1PH
Power supply	230V/1Ph/50-60Hz		
Refrigerant Type	R32		
[Space Heating] Ambient Temp. (DB/WB): 7°C/6°C, Water Temp. (Inlet/Outlet): 30°C/35°C.			
Max. Heating Capacity (kW)	1.73~6.06	4.52~9.40	4.52~12.60
Power Input (kW)	0.28~1.31	0.89~2.03	0.89~2.74
COP	6.18~4.63	5.08~4.62	5.08~4.60
[Space Heating] Ambient Temp. (DB/WB): 7°C/6°C, Water Temp. (Inlet/Outlet): 50°C/55°C.			
Max. Heating Capacity (kW)	1.12~5.29	3.69~9.30	3.73~12.23
Power Input (kW)	0.26~2.03	1.50~3.31	1.59~4.31
COP	4.31~2.61	2.46~2.81	2.35~2.84
[Space Cooling] Ambient Temp. (DB/WB): 35°C / -, Water Temp. (Inlet/Outlet): 12°C/7°C.			
Max. Cooling Capacity (kW)	0.97~4.86	2.80~7.60	3.25~9.76
Power Input (kW)	0.21~1.76	1.10~2.22	0.87~3.74
EER	4.62~2.76	2.55~3.42	3.74~2.61
[Hot Water] Ambient Temp. (DB/WB): 20°C/15°C, Water Temp. from 15°C to 55°C.			
Max. Heating Capacity (kW)	7.32	11.04	13.50
Power Input (kW)	1.73	2.43	3.06
COP	4.22	4.54	4.41
Electric Heater Rated Input (kW)	3	3	3
Max. Power Input (kW)	5.1(2.1+3)	6.8(3.8+3)	7.7(4.7+3)
Max. Running Current (A)	23.2(9.5+13.7)	31(17.3+13.7)	35.1(21.4+13.7)
Compressor Brand	Panasonic		
Circulating Pump	Built-in		
Water Side Heat Exchanger	Plate Heat Exchanger		
Air Side Heat Exchanger	Finned Heat Exchanger		
Expansion Tank (L)	2	2	2
Display	4-inch Colored Touch Screen		
Rated Water Flow (m^3/h)	1	1.6	2.1
Water Pressure Drop (kPa)	17	20	22
Water Pipe Connection (inch)	G1 1/4"	G1 1/4"	G1 1/4"
Sound Pressure Level dB(A) at 1m	38~46	43~55	43~55
Sound Power Level dB(A) at 1m	50~60	58~69	58~69
Operation Range (°C)	-25~43		
Max. Outlet Water Temp. (°C)	60		
Water Proof Class	IPX4		
Electricity Shock Proof	I		
Net Dimensions (L×W×H) (mm)	1180×440×715	1263x440 x 875	1263x 440 x 875
Net Weight (kg)	82	107	111

Model: SUNSYSTEM	MONO PLUS 90 - 3PH	MONO PLUS 130- 3PH	MONO PLUS 185 - 3PH	MONO PLUS 230- 3PH
Power supply	400V/3Ph/50-60Hz			
Refrigerant Type	R32			
[Space Heating] Ambient Temp. (DB/WB): 7°C/6°C, Water Temp. (Inlet/Outlet): 30°C/35°C.				
Max. Heating Capacity (kW)	4.52~9.40	4.52~12.60	6.15~18.57	8.43~23.04
Power Input (kW)	0.89~2.03	0.89~2.74	1.03~4.38	1.41~5.15
COP	5.08~4.62	5.08~4.60	5.97~4.24	5.98~4.47
[Space Heating] Ambient Temp. (DB/WB): 7°C/6°C, Water Temp. (Inlet/Outlet): 50°C/55°C.				
Max. Heating Capacity (kW)	3.69~9.30	3.73~12.23	3.44~17.13	4.41~22.6
Power Input (kW)	1.50~3.31	1.59~4.31	0.78~6.18	1.01~8.24
COP	2.46~2.81	2.35~2.84	4.41~2.77	4.37~2.74
[Space Cooling] Ambient Temp. (DB/WB): 35°C / -, Water Temp. (Inlet/Outlet): 12°C/7°C.				
Max. Cooling Capacity (kW)	2.80~7.60	3.25~9.76	3.12~15.25	3.80~19.38
Power Input (kW)	1.10~2.22	0.87~3.74	0.71~5.01	0.88~6.31
EER	2.55~3.42	3.74~2.61	4.39~3.04	4.32~3.07
[Hot Water] Ambient Temp. (DB/WB): 20°C/15°C, Water Temp. from 15°C to 55°C.				
Max. Heating Capacity (kW)	11.04	13.50	22.29	23.86
Power Input (kW)	2.43	3.06	5.16	5.45
COP	4.54	4.41	4.32	4.38
Electric Heater Rated Input (kW)	3/6/9(optional)			
Max. Power Input (kW)	6.8(3.8+3) 9.8(3.8+6) 12.8(3.8+9)	7.7(4.7+3) 10.7(4.7+6) 13.7(4.7+9)	9.6(6.6+3) 12.6(6.6+6) 15.6(6.6+9)	13(10+3) 16(10+6) 19(10+9)
Max. Running Current (A)	19.2(5.5+13.7) 14.6(5.5+9.1) 19.2(5.5+13.7)	21.5(7.8+13.7) 16.9(7.8+9.1) 21.5(7.8+13.7)	25.2(11.5+13.7) 20.6(11.5+9.1) 25.2(11.5+13.7)	30.6(16.9+13.7) 26(16.9+9.1) 30.6(16.9+13.7)
Compressor Brand	Panasonic		Mitsubishi	
Circulating Pump	Built-in			
Water Side Heat Exchanger	Plate Heat Exchanger			
Air Side Heat Exchanger	Finned Heat Exchanger			
Expansion Tank (L)	2	2	5	5
Display	4-inch Colored Touch Screen			
Rated Water Flow (m^3/h)	1.6	2.1	3.1	4
Water Pressure Drop (kPa)	20	22	26	51
Water Pipe Connection (inch)	G1 1/4"	G1 1/4"	G1 1/4"	G1 1/4"
Sound Pressure Level dB(A) at 1m	43~51	43~53	44~55	45~57
Sound Power Level dB(A) at 1m	58~66	58~67	60~71	61~73
Operation Range (°C)	-25~43			
Max. Outlet Water Temp. (°C)	60			
Water Proof Class	IPX4			
Electricity Shock Proof	I			
Net Dimensions (L×W×H) (mm)	1263x 440 x 875		1263x 440 x 1377	
Net Weight (kg)	121	125	133	138

tel.: +359 700 17 343
www.burnit.bg