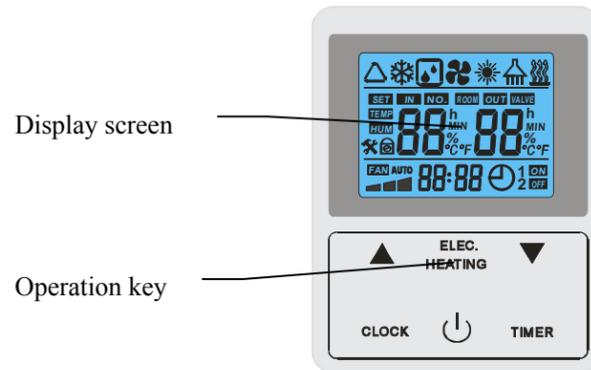


Operating Instructions

The main unit of this heat pump has a power-down memorizing function which can save the running status upon shutdown; also, it has real-time clock display function. The timer refers to absolute time. Cycler timer startup/shutdown can be set.

➤ Display Screen and Operation Panel



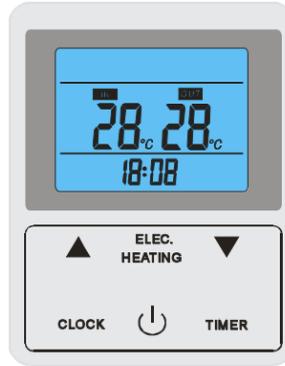
➤ Display Area

After wire controller is powered on, the display screen will display all characters as shown in the diagram above; wait for 10s, and it will automatically return to standby status.

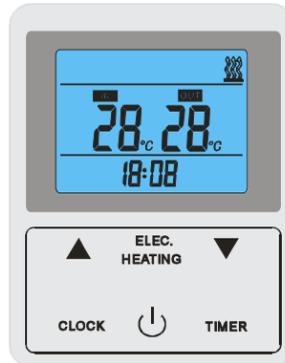
- The first line displays the unit running mode;
- The second line displays water temperature, setting of parameters, query of parameters and failure codes;
- The third line displays clock and timer status.

➤ **Instructions to Screen Display**

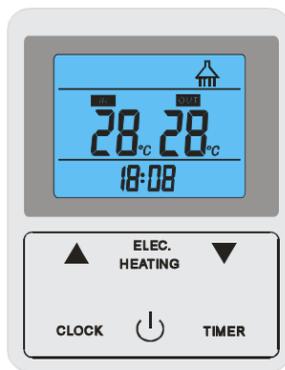
- Wire controller only displays temperature of upper part, temperature of lower part, and time upon standby status as shown in the following diagram;



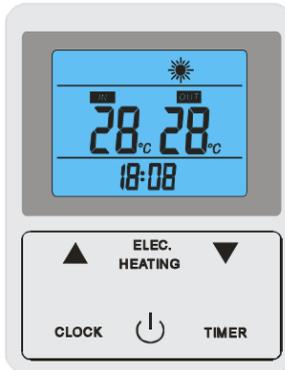
- Press electrical heating key “ELEC.HEATING” manually under standby status to start electrical heating. The, the icon of electrical heating “” is displayed as shown in the following diagram;



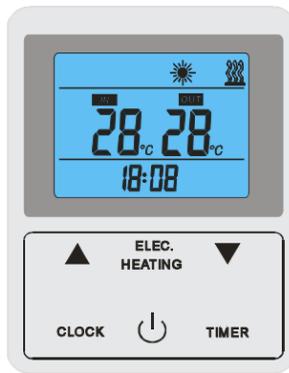
- Press start/stop key “” to manually start the unit. When the compressor is not started, icon “” will be displayed as shown in the following diagram;



- When the compressor is started but the electrical heating is not started under startup status, icon “☀️” will be displayed as shown in the following diagram;



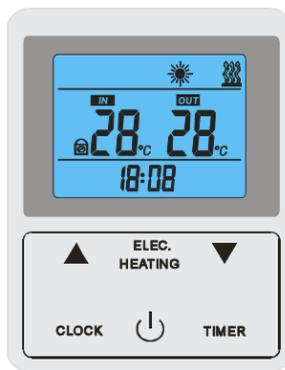
- When the compressor and the electrical heating are both started under startup status, icons “☀️” and “🔥” will be simultaneously displayed as shown in the following diagram;



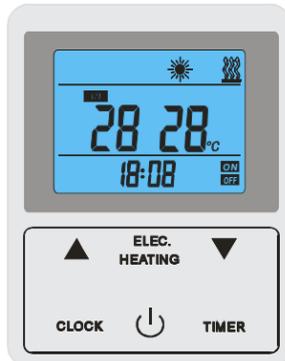
- When the compressor, the electrical heating and the solar water pump are all started under startup status, icon “☀️”, “🔥” and “△” will be simultaneously displayed as shown in the following diagram;



- Long press “▲” and “▼” for 3s and the keys will be locked. At this point, icon “🔒” will be turned on. Key locking is shown in the following diagram under startup status;



- Press “TIMER” to set timer setting. Timer on/off function can be set by pressing “▲” and “▼”. When timer on is set, “ON” will be displayed on the wire controller; when timer off is set, “OFF” will be displayed on the wire controller; the following diagram indicates timer on and timer off;



➤ **Operation Keys**

- **“⏻” Key**

Press this key to enter shutdown status under startup status. Working mode, timer status and clock will be displayed;

Press this key to enter startup status under shutdown status. It will run according to set mode and temperature of upper and lower parts, working mode and timer status will be displayed;

Press “**⏸**” key to enter forced defrosting status 5s later under standby status. After entering forced defrosting status, press start/stop key or reach the set defrosting temperature to exit.

- **“▲” or “▼”**

Press this key to set and query parameters, adjust clock and timer, etc.;

- **“CLOCK” Key**

Press this key to enter clock setting status under startup or standby status;

Press this key to cancel timer on (off) under timer on (off) setting status;

- **“TIMER” Key**

Press this key to enter timer status;

◇ Note: Timer on and timer off can be selected simultaneously (timer power-down is memorized);

- **“ELEC.HEATING” Key**

Press this key to enter electrical heating start mode;

Long press this key for 5s to set if the unit has ventilation mode;

➤ **Setting and Parameter Query**

- **Clock Setting**

Under standby status of the unit, press “CLOCK” key to enter hour setting mode of clock. Meanwhile, hour parameter of clock begins to blink. Press “▲” or “▼” to adjust hour parameter; press “CLOCK” key again to enter minute setting mode of clock. Press “▲” or “▼” to adjust minute parameter; after completion of setting, press “CLOCK” key again to save and exit from clock setting.

Under startup status of the unit, press “CLOCK” key to enter clock setting mode. Meanwhile, clock begins to blink. Press “CLOCK” key again to enter hour setting mode of clock. Meanwhile, hour parameter of clock begins to blink. Press “▲” or “▼” to adjust hour parameter; press “CLOCK” key again to enter minute setting mode of clock. Press “▲” or “▼” to adjust minute parameter; after completion of setting, press “CLOCK” key again to save and exit from clock setting.

- **Timer Setting**

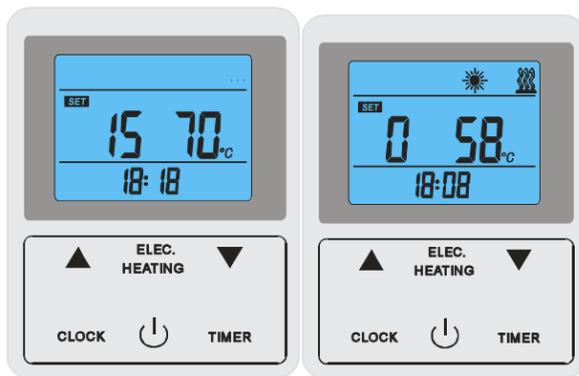
Under startup or standby status, press “TIMER” key to enter clock setting

mode of timer on. Timer on clock and icon “ON” begin to blink. Press “TIMER” key again to enter hour setting mode of timer on clock setting. Then, hour parameter begins to blink. Press “▲” or “▼” to adjust hour parameter; press “TIMER” key again to enter minute setting mode of timer on clock setting. Then, minute parameter begins to blink. Press “▲” or “▼” to adjust minute parameter; after completion of timer on clock setting, press “TIMER” key again to enter timer off setting mode. Timer off clock and icon “OFF” begin to blink. Press “TIMER” key again to enter hour setting mode of timer off clock setting. Then, hour parameter begins to blink. Press “▲” or “▼” to adjust hour parameter; press “TIMER” key again to enter minute setting mode of timer off clock setting. Then, minute parameter begins to blink. Press “▲” or “▼” to adjust minute parameter; after completion of setting, press “TIMER” key again to save and exit from timer setting status.

✧ Notes:

- a) After completion of timer on setting, press “⏏” key to set independent timer on.
 - b) Under timer setting status, press “CLOCK” key to cancel timer setting.
- System Parameters and Temperature Query
 - a) Under standby status, press “▲” or “▼” to enter standby system parameter and temperature query mode. At this point, code and parameter begin to blink. Press “▲” or “▼” to turn pages and browse each parameter in a cycle.
 - b) Under startup status, press “▲” or “▼” to enter startup system parameter and temperature query mode. At this point, code and parameter begin to blink. Press “▲” or “▼” to turn pages and browse each parameter in a cycle.
 - System parameter setting (**this function is mainly used by professionals for installation and maintenance. Users shall not set it by themselves**)

Under standby system parameter and temperature query mode, press “▲” or “▼” to browse parameter to modify as shown in the following diagram.



Press “⏏” key and “ELEC.HEATING” key simultaneously to enter parameter setting mode; at this point, this parameter begins to blink. Press “▲” or “▼” to modify this parameter. Press “⏏” key and “ELEC.HEATING” key simultaneously again to save and exit from parameter setting mode. Press “▲” or “▼” again to browse the next parameter to modify. The setting is same as above. After completion of setting, press “⏏” key to save and exit from setting mode, or wait for 10s to automatically save and exit from setting mode.

Warnings:

The system parameters of the unit are already set upon delivery. The users shall not set parameters by themselves. If debugging is required, professionals must be invited to complete debugging. Otherwise, unit operation failure may be caused and the unit may even be damaged.

➤ **System Parameters**

Parameter	Meaning	Range	Default	Remark
0	Set water temperature of water tank TS1	10°C~60°C	55°C	Adjustable
1	Heating return difference temperature setting TS6	2°C~15°C	5°C	Adjustable
2	TS2 Water temperature of water tank TS2 upon startup of electrical auxiliary heating HT1	10°C~90°C	55°C	Adjustable
3	Electrical auxiliary heating HT1 startup delay t1	0~90	30	Adjustable
4	Electrical auxiliary heating HT1 weekly startup temperature TS3	60°C~90°C	55°C	Adjustable
5	High-temperature disinfection holding time t2	0min~90min	10min	Adjustable
6	Heating & defrosting cycle t3	30min~90min	40min	Adjustable
7	Heating & defrosting entry temperature TS4	-30°C~0°C	-7°C	Adjustable
8	Heating & defrosting exit temperature condition TS5	2°C~30°C	13°C	Adjustable
9	Heating & defrosting exit time t4	1min~12min	8min	Adjustable
10	Regulation of electronic expansion valve	0/1	1	0-Manual 1-Automatic
11	Targeted degree of superheat	-20°C~20°C	5°C	Adjustable
12	Manual regulation of step number of electronic expansion valve	10~50	35	Adjustable
13	Solar water pump startup return difference TSET	1°C~20°C	5°C	Adjustable
A	Temperature of lower part of water tank T1*	-9~99°C		
B	Temperature of upper part of water tank T2*	-9~99°C		
C	Coil temperature T3*	-9~99°C		
D	Back temperature T4*	-9~99°C		

E	Temperature of water collector T5*	-9~99℃		
F	Opening of electronic expansion valve*	0~50		
G	Ambient temperature T6*	-9~99℃		

➤ **Control Instructions**

● **Compressor**

The compressor control startup/shutdown according to the set temperature of lower part of water tank T1; the compressor starts to heat when temperature of lower part of water tank is less than or equal to the set water temperature TS1-TS6 °C (TS1=Parameter 00; TS6=Parameter 01) until the water temperature reaches the set water temperature TS1.

● **Fan**

- a) The fan runs 5s in advance before startup of compressor;
- b) The fan continuously runs 30s before shutdown after the compressor is shut down;
- c) The fan stops running during defrosting.

● **Electrical Auxiliary Heating HT1**

- a) The controller must start electrical heating mode;
- b) Forced startup of electrical heating upon defrosting (no matter if electrical heating key is pressed);
- c) When the ambient temperature is less than 5℃, the compressor shuts down, and the electrical heating is started to cancel startup delay; when the temperature of upper part is greater than water temperature of electrical heating HT1 start water tank TS2, the electrical heating will be shut down; when the temperature of upper part is less than or equal to water temperature of electrical heating HT1 start water tank TS2-3, the electrical heating will be restarted; this function is shielded upon ambient temperature sensor failure.

● **High-temperature Disinfection Function**

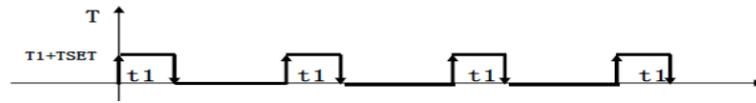
- a) Electrical heating is automatically started once (it can be started under both

constant temperature shutdown and standby statuses) according to the set number of days of high-temperature disinfection (defaulted as 7 days. Timing is started when the unit is powered on, and timing is started again after power disconnection); maintain the water temperature $T2 \geq TS3$ to start timing. Exit from this program 10min later.

- d) When the set number of days of high-temperature disinfection is reached, high-temperature disinfection function will be started. At this point, the time is calculated. When it reaches 3h, the disinfection status will be forcefully exited.

● **Solar Water Pump P2**

- a) Startup: It is started when temperature sensor T5 is $>$ Bottom temperature of water tank T1 + TSET.
- b) Shutdown: (It is shut down when any of the following conditions are fulfilled)
- ✓ Temperature sensor $T5 \leq$ Bottom temperature of water tank T1+1
 - ✓ The running time exceeds t1 as shown in the following diagram:



Note: After solar water pump P2 reaches startup condition, it will shut down after running for t1; test the temperature 3min later and run for t1 after relevant conditions are fulfilled (t1=30min).

- c) Automatic mode: Refer to a mode in which solar water pump automatically starts according to timer and temperature difference during unit heating.

● **Solar Drain Valve**

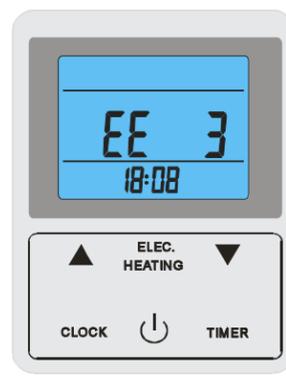
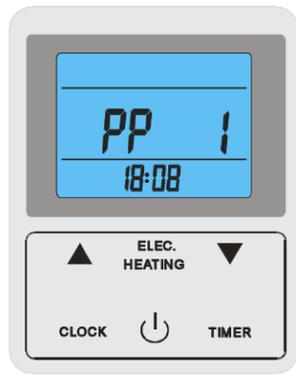
- a) When the temperature sensor on top of water tank T2 is \geq set temperature of solar drain valve, solar drain valve will be opened.
- b) When the temperature sensor on top of water tank T2 is $<$ set point of temperature of solar drain valve i.e. 15°C, solar drain valve will be closed.

➤ **Failures and Troubleshooting**

Phenomenon	Cause	Troubleshooting
The water outlet is cold water. The display screen is not on.	The power plug is not properly inserted; Control status of minimum temperature of temperature controller; The temperature controller is damaged; The circuit board of indicator lamp is damaged;	Insert the power plug properly; Adjust the temperature of temperature controller to a relatively high status. Inform the repair personnel;
No water flows out from hot water outlet.	The supply of tap water is stopped; The hydraulic pressure is too low; The inlet valve of tap water is not open;	Wait for recovery of water supply; Wait for increase of hydraulic pressure or add tap water booster pump. Open cold water inlet valve;
Water leakage	The sealing of connecting position of each pipe orifice is unfavorable.	Properly seal the connection of pipe orifice.

➤ **Failures and Protection**

When protection and failure occur to the machine, the temperature display area in the display screen displays relevant protection and failure code as shown in the following diagram. The run/failure indicator lamp of main unit blinks according to a certain pattern to indicate relevant failure and protection.



Protection/failure	Display screen	Main unit run/failure indicator lamp
Standby		Off
Normal startup		On
Temperature sensor failure in lower part of water tank	PP1	☆●(1 Blinking 1 Off)
Temperature sensor failure in upper part of water tank	PP2	☆☆●(2 Blinking 1 Off)
Coil temperature sensor failure	PP3	☆☆☆●3 Blinking 1 Off)
Return air temperature sensor failure	PP4	☆☆☆☆☆●(4 Blinking 1 Off)
Water collector temperature sensor failure	PP5	☆☆☆☆☆☆●(5 Blinking 1 Off)
High voltage protection	EE1	☆☆☆☆☆☆☆●(6 Blinking 1 Off)
Low voltage protection	EE2	☆☆☆☆☆☆☆☆●(7 Blinking 1 Off)
Overheat protection	EE3	☆☆☆☆☆☆☆☆☆☆●(8 Blinking 1 Off)
Defrost	Defrost indication	☆☆☆☆☆☆☆☆.....(Long Blinking)
Communication failure	EE8	Not Blinking