Installation and operating instructions

System Controller
for Solar and Heating Systems

⏱ 12:00

68°C

| − | SET | + | Heating |
| Clock | ESC | Holiday | ⏻ |

Fission on intelligent controller of the solar water heater

⚠ *Please read this manual carefully before install and use.*

Orders to record

1.Safety information

1.1 Installation and commissioning

When the new wiring, make sure no damage to the structure of fire prevention measures.
Controller cannot be installed in the room with a flammable and explosive gas mixture.
Installation location cannot exceed allowed environmental conditions.
In the connection line, confirm the parameters of the power supply and demand matching.
All connections to the controller on the equipment must be compatible with the technical parameters of the controller.
All operations on open control instrument shall be conducted under the condition of power, in the circuit work shall comply with all safety regulations.
Connection or need to open the operation of the controller(such as replacing the fuse) must be performed by professionals.

1.2 About the manual

This manual describes ：
The installation of solar water heater controller, the function and operation, when installing other components such as solar collector, pumping stations and water tank, should be in accordance with the manufacturer to provide installation instructions for each. Equipment installation, electrical connection, commissioning and maintenance shall be carried out by trained professionals, professional staff must be done through this manual and shall be carried out in accordance with the instruction content.

1.3 Liability exemption

Manufacturers will not be able to monitor the installation of the temperature controller, operation, use, maintenance and the guidance of this or require the use of the environment and consistent approach.Incorrect installation may cause material damage, injury and operation or error cost caused by the use of related to the aforementioned events, this is we don't take a loss. Manufacturers retain no advance notice to change the product, technical data and installation instructions. As long as the obvious found not security products use (for example, the damage), please immediately cut off operation, pay attention to ensure that the use of equipment not surprised.

1.4 Important information

We have carefully check the words and pictures of this manual, and provide our best knowledge and ideas, but wrong Error is unavoidable, please note that we do not guarantee the integrity of the text and images is given in this manual, they are just some cases The son, they only applies to our own system, for incorrect, incomplete, false information, and as a result of damage We do not assume responsibility.

1.5 Symbols to describe

⚠ Safety instructions ： Safety instructions of the manual for a belt warning triangles, this is to indicate the method can cause personal injury and security risks.

Steps: the small triangle "►" instructions steps.

Note: the tag contains information has important operation or function.

1.6 Operation buttons
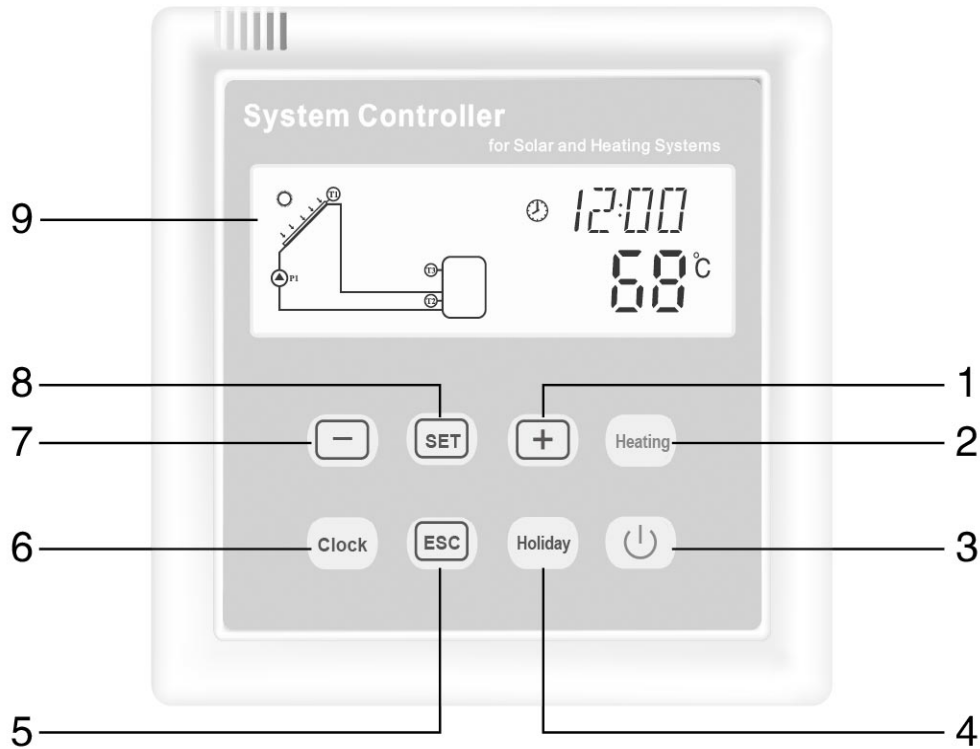
Order no.	According to the key
1	Adjust the "+" key
2	Manual heating "button
3	"Switch" key
4	"Holiday"key
5	"Exit" button
6	"Clock"key
7	Adjust the "−"
8	"Set" button
9	LCD display

2.Ann is installed

Control instrument can only be installed in indoor, cannot be installed on the dangerous place, away from the electromagnetic field. Control instrument must be equipped with an extra plug, plug to keep at least 3 mm distance between each pole or to comply with the requirements of the effective installation. Such as a switch or insurance, please note that the wire should be separated between and use alternating current.
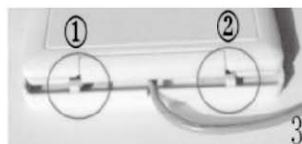
2.1 The installation of the display

►First display at the top of the groove with a screwdriver
 by rotating off (figure 1)

►Will HouGaiBan screwed to the wall (figure 2)
 (note: don't drill hole on the control instrument)

►Display cover insert HouGaiBan groove①②,
 cover tightly (figure 3)

2.2 Control instrument installation

Note: the controller must only be installed in a fixed place
with enough security protection

Fixed controller hangs Taiwan

► Choose a suitable place
► Hangs Taiwan on the metope draw punch with the
   location (note the positive and negative)
► After good fixed hole, into the plastic expansion tubes
► The hangs Taiwan screw twist
► Hang the control instrument is reliable on the flip chart
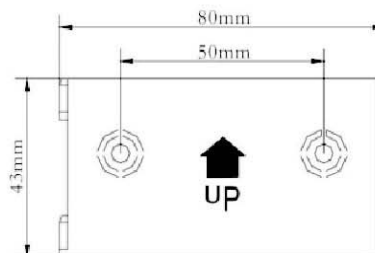
2.3 The preparation for circuit connection

When open the box, please power off and pay attention
to the rules of local power supply.

Open/close the connection cover gusset plate
►Loosen the screw ①②, remove the cover plate move
   up to open the cap
►Block: close the cover down
►With the screws ①②.

2.4 The wire arrangement

Power supply can only under the condition of control instrument shell are closed through. The installation personnel must ensure that the controller IP security protect level during the installation process will not be destroyed.

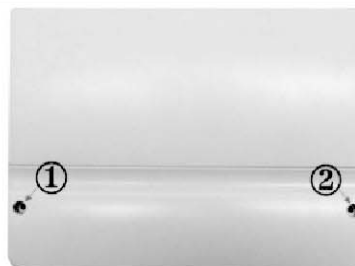According to the type of installation, wiring can be through the hole in the rear of the shell ④ or the lower side of the cover plate through ⑥. Using a suitable tool (such as a knife) cut left and right sides of the plastic sheet ⑤, break off from the plastic hole ⑤ access control apparatus behind cover.

Note: the wire must be installed with clamp, 6 soft stuck wire, wire fastening.
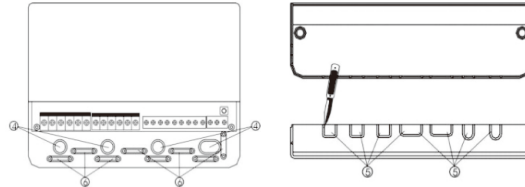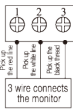
2.5 Terminal connection

⚠ When open the box, please power off and pay attention to the rules of local power supply.
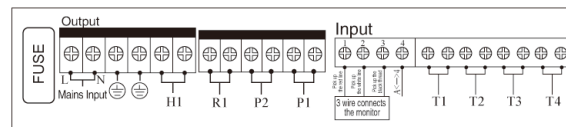
FUSE: 2 A / 250 V FUSE

Power input: in the power input port and L for wire, N is zero line, ⏚ for grounding port

➢ Terminal layout

Displays the connection

Port 1 terminal by red line (+ 5 v)

Port terminal receiving a white line (COM)

Port terminal 3 by black line (GND)

(spare A) port terminal 4, due to the screen using the environment is different, for some special cases, need to long distance transmission, more than 50 m, less than 500 meters distance, you need to controller A terminal, to use this function need to purchase A controllerrequirements in advance. To introduce the cable indoor, outdoor cable fixed, so as not to snap a scratch.

Temperature sensor input port

Input T1: for PT1000 temperature sensor to measure temperature collector.

Input T2 to T4: NTC10K, B = 3950 temperature sensor, is used to measure the temperature of water tank and piping (T4 not in standard configuration).

Installation temperature sensor：

Collector is only allowed with original PT1000 sensors, with a 1.5 m long wires, suitable for any weather conditions, can be heat resistance high temperature 280 ℃, sensor wiring is negative.

Tank and piping allows only with original NTC10K, B = 3950 temperature sensors, with a 1.5 m PVC wire, heat resistance, 105 ℃, sensor wiring is negative.

All of the sensor wiring are low–tension wire, must avoid conduction effect. Can't close to 230 v or 400 v cable (minimum leave distance 100 mm).

If there are external conduction effect will exist, such as the high tension line, cable, dangling train transformer station, radio television equipment, radio station, microwave devices, etc., are connected to the sensor circuit proper shielding measures must be taken. Sensor wiring can be extended to 100 meters, maximum line length and cross section requirements: extended to 50 meters, using 0.75 mm squared line, extended to 100 meters, using 1.5 mm squared line.

Output port

Circulating pump outlet (P1) temperature difference: electromagnetic relay, the biggest switch current 3.5 A.

Water outlet (P2) side circulation pump: electromagnetic relay, the biggest switch current 3.5 A.

Outlet (R1) high temperature bypass circulation pump/valve, electromagnetic relays, one of the biggest switch current 3.5 A

Outlet (H1) auxiliary heat source: electromagnetic relay, the largest 10 a switch current.

3.debugging

⚠ Through to the main power supply before sensors connected to the input end, connect the pump or switch valve to the output terminal.

Will control instrument, after turning on the power supply system can set the time, password, and related parameters set.

3.1 Set a time/week

►According to the "clock" button, display shows the time, display the clock hour zone "00" display
►Press the "+" and "−" to adjust health, adjust the clock hour
►Press the "clock", "00" blinking display screen minutes area
►Press the "+" and "−" to adjust health, adjust clock minutes, after the set
►According to the "clock" key, the screen week area "MO" flashing shows
►Press the "+" "−" to adjust health, adjust the week
►Press "exit" to exit the system Settings, and automatically quit or waiting for 20 seconds.
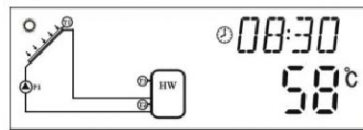
Code	Week
MO	Monday
TU	Tuesday
WE	Wednesday
TH	Thursday
FR	Friday
SA	Saturday
SU	Sunday

3.2 Menu structure
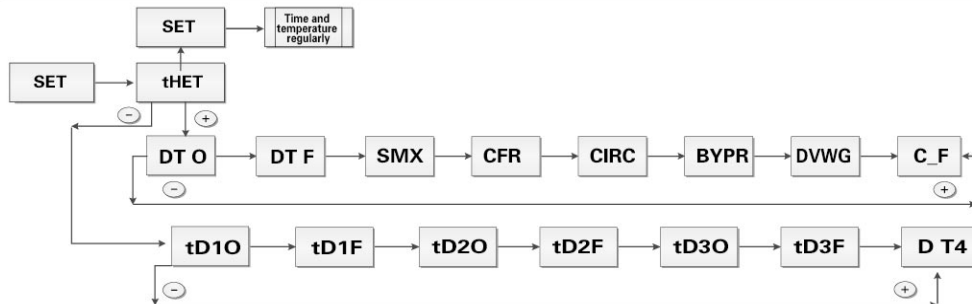
➢ Sub menu control instrument can be set in detail, accurate understanding of the underlying submenu for set up, please.

3.3 The menu Instructions.

Code (main menu)	Code (professional submenu)	instructions	remark
tHET		Timing heating	
	DT O	Start the temperature difference	Press the "+" enter setup operations
	DT F	se the temperature difference	
	SMX	The tank maximum temperature	
	CFR	Collector anti−freeze protection	
	CIRC	Water temperature control loop	This feature priority period is higher than the default temperature cycle
	BYPA	Bypass (high temperature)	
	DVWG	The sterilization function	
	C−F	Degrees Celsius and Fahrenheit transformation	

6

	tD1o	Water end period time 1 cycle starting time and temperature	Press "−" to enter setup operations
	tD1F	Water end period time 1 loop closing time and temperature	
	tD2o	Water end time period 2 cycle starting time and temperature	
	tD2F	Water end time period 2 loop closing time and temperature	
	tD3o	Water end time period 2 cycle starting time and temperature	
	tD3F	Water end time period 2 loop closing time and temperature	
	D T4	Water end time the default temperature cycle temperature Settings	

3.4 System description

1 collector array – 1 tank – a circulating pump – auxiliary heat source
When the collector (T1) and the water tank (T2) can start temperature, the temperature difference between solar cycle (P1) to start the pump.
When the collector (T1) and water tank temperature difference to close the temperature difference between (T2), or water tank (T3) reaches its maximum temperature of the water tank, solar energy circulating pump (P1) closed.
Auxiliary heating: (see "4.1 timing heating)
In the setting of auxiliary heating period, if the water tank temperature (T3) to open, then auxiliary heat source (H1); When the tank temperature (T3) to close the temperature value, then the auxiliary heat source (H1) closed.

T1:Collector temperature sensor (PT1000)
T:The tank bottom temperature sensor (NTC10K)
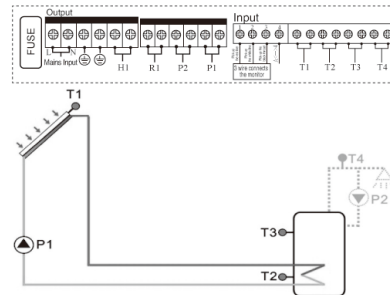T3:The upper water tank temperature sensor (NTC10K)
T4:End with water temperature sensor (NTC10K optional)
P1:Solar energy circulating pump
P2:End with water circulating pump (optional)
R1:High temperature bypass pump/valve (optional)
H1：Auxiliary heat source

Note: when not installed the upper water tank temperature sensor (T3), the system will automatically use lower temperature sensor (T2) to control the auxiliary heating and circulating pump.

4.Commonly used function and parameter Settings (user)

4.1 tHET timing heating

Functional description:
Solar system can increase the auxiliary electrical heating or oil, steam boiler heating equipment, control instrument for automatic temperature control, when the system detects the upper water tank temperature (T3) to set when you start the temperature will start the heating, when the upper water tank temperature (T3) to rise to the closing of the set temperature, stop heating, and can be set up three heating time every day.
Factory Settings: Settings for the first time around 4 start heating, 5:00 closed heating (factory Settings: start heating temperature of 40 ℃, the temperature of 45 ℃). 10:00 to start the second time heating, heating at 10:00 closed; 17:00 start heating, the third time 22:00 closed heating (factory Settings: start heating temperature of 50 ℃, the temperature of 55 ℃).
Start heating temperature adjustable range of 10 ℃ ~ (must be OFF – 2 ℃), stop heating temperature adjustable range (must be ON + 2 ℃ ~ 80 ℃ heating temperature start temperature must be less than stop, or start the benchmark is invalid, stop heating temperature effectively prohibit open electrical heating without water in the tank
Economy mode without automatic heating, reference to economic mode in detail.
If the timing of heating to shut down some time, as long as the same time the beginning of time and

closing time is set to the same time (such as the second time at 10:00 start heating, 10:00 closed heating).

Note:

► **When not installed the upper water tank temperature sensor (T3), the system will automatically use lower temperature sensor (T2) to control the auxiliary heating function.**

►Timed heating stop time must be greater than the heating start time

Example: such as setting time heating start time to 17:00, stop time to surf, then the time heating function is invalid, the correct Settings should be two time setting, the first time, timing heating stop time for the start time to 17:00 23:59, the second time, timing heating begin to prefer stop time to surf.

Set this feature

Under the (tHET) timing heating main menu

───

►Press "set" button, enter tHET timing heating set menu

►Press "set" button, the display shows "tH 1 o 04:00", enter the start time for the first time

►Press the "set" key, the screen area "04" blinking display clock hours

►Press the "+" and "–" key, adjust the clock hour

►Press "set" button, the temperature zone "40 ℃" display

►Press the "+" and "–" key, adjust the heating temperature
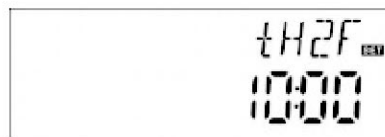
►Press "exit" button from the submenu

tH 1o
04:00

►Press the "+" key, the screen shows "tH 05:00 1 f", enter the closing time for the first time

►Press the "set" key, the screen area "05" blinking display clock hours

►Press the "+" and "–" key, adjust the clock hour

►Press "set" button, the temperature zone "45 ℃" display

►Press the "+" and "–" key, regulate the temperature of a heating closed

►Press "exit" button from the sub menu, set the parameters automatically preserved

tH 1F
05:00

───

►Press the "+" key, the screen shows "tH 2 o 10:00", into the second period start time Settings

►Press "set" button, display the clock hour area according to "10"

►Press the "+" and "–" key, adjust the clock hour

►Press "set" button, the temperature zone "50 ℃" display

►Press the "+" and "–" key, adjust the heating temperature

►Press "exit" button from the submenu

tH2o
10:00
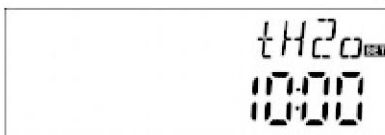
►Press the "+" key, the screen shows "tH 2 f 10:00", into the second period closing time Settings

►Press "set" button, display the clock hour area according to "10"

►Press the "+" and "–" key, adjust the clock hour

►Press "set" button, the temperature zone "55 ℃" display

►Press the "+" and "–" key, regulate the temperature of a heating closed

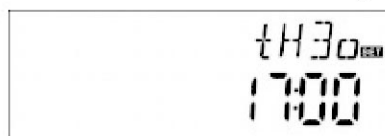►Press "exit" button from the menu, set the parameters automatically preserved

tH2F
10:00

───

►Press the "+" key, the screen shows "tH" 3 o 17:00, into the third session start time Settings

►Press the "set" key, the screen area "17" blinking display clock hours

►Press the "+" and "–" key, adjust the clock hour

►Press "set" button, the temperature zone "50 ℃" display

►Press the "+" and "–" key, adjust the heating temperature
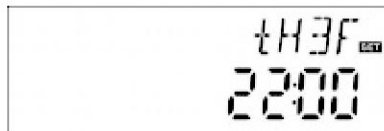
►Press "exit" button from the submenu

tH3o
17:00

►Press the "+" key, the screen shows "tH 3 f 22:00", to enter the third period closing time Settings

►Press the "set" key, the screen area "22" blinking display clock hours

►Press the "+" and "−" key, adjust the clock hour

►Press "set" button, the temperature zone "55 ℃" display

►Press the "+" and "−" key, regulate the temperature of a heating closed

►Press "exit" button from the menu, or wait for 20
seconds automatically quit, set parameters automatically preserved

Note: when the system is without access to oil, steam boiler heating equipment, can be connected to the electric heating as auxiliary heat source, ⌇ symbol timing electrical heating start–up flashing display.

If user use electric heating, power size should be according to the heating tube is equipped with the corresponding ac contactor and safety protection device.

4.2 Time period of water pipe fixed temperature cycle

functional description：

Solar energy system can increase the auxiliary pump (P2), can be set according to your own life and work habits controller, time period of water can be end line automatic temperature control, this is the most energy saving heat utilization, end with water circulation pump start conditions: water tank temperature (T3) is higher than 1 ℃ water side set temperature, water circulating pump to start. When the system is not installed the upper water tank temperature sensor (T3), will automatically use the lower temperature sensor (T2) to control the circulating pump (P2). Can be set up three hours a day.

Factory Settings: set to start for the first 6 hours, 8:00 close; The second time at 10:00 start, at 10:00 shut; Third times 17:00, 22:00 closed (factory setting temperature 40 ℃, when the temperature on the return water pipe (T4) fell to 35 ℃, start the circulation pump (P2), when the temperature on the return water pipe (T4) rose to 40 ℃, closed circulating pump (P2).

If the timing of heating to shut down some time, as long as the same time the beginning of time and closing time is set to the same time (such as the second time at 10:00 start heating, 10:00 closed heating).

Note:

►For "CIRC" end with water circulation pump for all–weather temperature control, temperature control priority is greater than the time control, if the startup "CIRC", time will automatically shut down, temperature control reference "CIRC" operation in detail.

►For regular circulating pump stop time must be greater than regular circulation pump start time, for example: such as setting time circulation pump start time to 17:00, stop time to surf, then the time function is invalid, the correct Settings should be two time setting, the first time, timing heating stop time for the start time to 17:00 23:59, the second time, timing heating began to prefer stop time to surf.

Set this feature：

Under the (tHET) timing heating main menu

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►For "−" button, enter the time cycle menu set, display shows "tD 1 o surf", enter the start time for the first time

►Press "set" button, display the clock hour zone "6" display

►Press the "+" and "−" key, adjust the clock hour

►Press "set" key. Minutes area "00" flashing display

►Press the "+" and "-" key, adjust the clock minutes

►Press "exit" button from the submenu

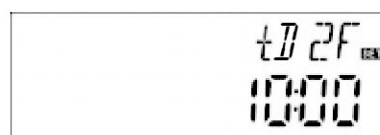►Press the "+" key, the screen shows "tD 08:00 1 f", enter the closing time for the first time

►Press the "set" key, the screen area "08" flashing display clock hours
►Press the "+" and "−" key, adjust the clock hour
►Press "set" button, minutes "00" display
►Press the "+" and "−" key, adjust the clock minutes
►Press "exit" button from the sub menu, set the
   parameters automatically preserveded

`tD 1F`
`08:00`

───
►Press the "+" key, the screen shows "tD 2 o 10:00," into the second period start time Settings
►Press "set" button, display the clock hour area
   according to "10"
►Press the "+" and "−" key, adjust the clock hour
►Press "set" button, minutes "00" display
►Press the "+" and "-" key, adjust the clock minutes
►Press "exit" button from the submenu

`tD 2o`
`10:00`
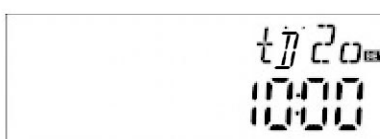
───
►Press the "+" key, the screen shows "tD 10:00" 2 f, into the second period closing time Settings
►Press "set" button, display the clock hour area
   according to "10"
►Press the "+" and "-" key, adjust the clock hour
►Press "set" button, minutes "00" display
►Press the "+" and "-" key, adjust the clock minutes
►"Exit" button from the menu, set the parameters
   automatically preserved

`tD 2F`
`10:00`

───
►Press the "+" key, the screen shows "tD" 3 o 17:00, into the third session start time Settings
►Press the "set" key, the screen area "17" blinking
   display clock hours
►Press the "+" and "-" key, adjust the clock hour
►Press "set" button, minutes "00" display
►Press the "+" and "-" key, adjust the clock minutes
►Press "exit" button from the submenu

`tD 3o`
`17:00`

───
►Press the "+" key, the screen shows "tD 3 f 22:00", to enter the third period closing time Settings
►Press the "set" key, the screen area "22" blinking
   display clock hours
►Press the "+" and "-" key, adjust the clock hour
►Press "set" button, minutes "00" display
►Press the "+" and "-" key, adjust the clock minutes

`tD 3F`
`22:00`

───
►Press the "+" key, the screen shows "D T4 40 ℃",
   enter the temperature setting
►Press "set" button, the temperature zone "40 ℃" display
►Press the "+" and "-" key, adjust the temperature line preset
►Press "exit" button from the menu, or wait for 20 seconds
   automatically quit, set parameters automatically preserved

`DT 4`
`40℃`

───
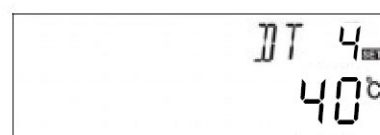
5.Function and parameter Settings (professional)

5.1 Solar energy circulating pump temperature adjustment

5.1 Solar energy circulating pump temperature adjustment

Functional description:

Solar water circulating pump start P1 depends on the temperature adjustment function, as long as the collector and the tank temperature reaches a certain temperature, the circulating pump is up and running.

Example: start temperature parameter value is 8 ℃, stop the parameter value is 4 ℃ temperature difference operation, set a temperature of 20 ℃ at the bottom of the tank. In this case, when the temperature of the thermal collectors to 28 ℃ circulating pump start–up, when the temperature dropped to 24 ℃ circulating pump shut down.

Note: the default device temperature start values of 8 ℃ with close value 4 ℃ after years of experimental standard system is set, only under special circumstances can change this setting value (for example, the need of long–distance transportation), start up and shut down temperature value is set up interaction. In order to avoid the wrong setting the minimum difference between two values set to 2 ℃.

Set the start temperature difference

In (DT) O start temperature adjustment under the main menu

►Press "set" button, enter the DT O start the main menu of temperature adjustment, the screen shows "DT O 8 ℃, the screen shows the values of the parameters" 8 ℃ "flashing shows, into the open set temperature

►Press the "+" and "–" key, adjust the temperature of circulating pump open temperature difference ,Adjustable range OFF + 2 ℃ ~ 20 ℃, factory Settings: 8 ℃

►Set temperature flash state, press "set" key to confirm data, press "exit" button, withdrew from the submenu.

Set off temperature difference

In the closed (DT) F temperature adjustment under the main menu Press "set" button, enter the DT F close to the main menu of temperature adjustment, the display shows "DT F 4 ℃, the screen shows the values of the parameters, according to the" 4 ℃ "twinkle into closed set temperature
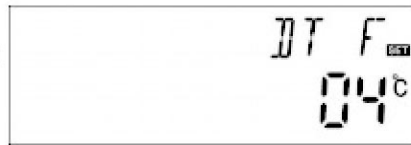
►Press the "+" and "–" key, adjust the temperature of circulating pump shut down temperature difference, the adjustable range of 0 ℃ ~ (ON – 2 ℃), the factory Settings: 4 ℃

►Set temperature flash state, press "set" key to confirm data, press "exit" button, exit menu, or wait for 12 seconds automatically quit, set parameters automatically preserved.

Note: the manual debugging, push the "holiday" short "P1" indicator flashes, P1 port voltage output, wait 3 minutes automatically shut down, closed loop button manually circulation circulation work.

5.2 The maximum SMX tank temperature

Functional description：

When the collector (T1) and the water tank (T2) after start the circulation pump temperature condition, in order to avoid the tank temperature is too high, control instrument to detect temperature (T2) is greater than the water tank on the high temperature protection starting temperature, closed loop. When the tank temperature (T2) is less than the temperature of 5 ℃ high temperature protection, automatic start cycle. When temperature more than water tank on the maximum temperature, even if the difference in temperature cycle condition is met, solar energy will ban the circulation pump start.

Selected SMX (water tank temperature maximum) submenu, display shows "SMX 80 ℃"

►Press "set" button, the display shows the parameter values shows "80 ℃"

►Press the "+" and "–" key, adjust the tank temperature, maximum adjustable range (55 ℃ ~ 95 ℃) factory Settings: 80 ℃   (For example)

►Set temperature flash state, press "set" key to confirm data, press "exit" button, exit menu, or

wait for 12 seconds automatically quit, set parameters automatically preserved

☼Tank temperature protection tag displayed on the screen, this is high temperature has been launched to protect

5.3 The CFR Collector anti-freeze protection

Functional description:
Winter when the temperature of the collector fell to antifreeze protection setting, (factory Settings: 4 ℃), circulating pump open, when the tank temperature (T2) fell 9 ℃, immediately start the electric heating to 20 ℃ or exit the antifreeze protection closed after electric heating, when to area.the temperature 7 ℃, closed circulating pump out of frost protection.
This function only in the antifreeze systems did not use to use, can be used in the use of water to make heat medium system, prevent freezes solar system.
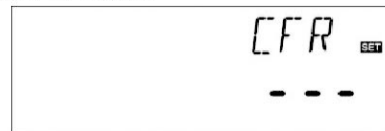Selected CFR (collector anti-freeze protection submenu, display shows "CFR –" factory Settings: closed

►Press "set" button, the display shows the parameter values "–" shows
►Press "set" button, open and close this function
►Press the "+" and "–" key, adjust the temperature collector anti-freeze protection, adjustable scope (0 ℃ to 10 ℃) after open factory Settings: 4 ℃
►Press "exit" button from the menu, or wait for 20 seconds automatically quit, set parameters automatically preserved

❄Collector anti-freeze protection tag displayed on the screen, this function has started work.

Note: this function is only allowed in the absence of antifreeze medium in the solar system using a very special case, it is just a few days in the year temperature will be close to the freezing temperature region, if the system anti-freezing measures must be safety, we also recommend using appropriate antifreeze.

5.4 The CIRC water circulating pump temperature control

Functional description:
Solar systems can provide water along the side water pipeline loop control function, the function of the need to increase the circulation pump after output port (P2) and a perfectly on the return water pipe temperature sensor input port (T4). When they tested the return water pipe on temperature is less than setting the start temperature start circulating pump and stop until the temperature is greater than the set temperature cycle.
Factory Settings: set temperature 40 ℃, when the temperature on the return water pipe (T4) fell to 35 ℃, start the circulation pump (P2), when the temperature on the return water pipe (T4) rose to 40 ℃, closed circulating pump (P2).
End with water circulation pump start conditions: water tank temperature (T3) higher than the set temperature water end 1 ℃, water circulating pump to start. When the system is not installed the upper water tank temperature sensor (T3), will automatically use the lower temperature sensor (T2) to control the circulating pump (P2).
Selected the CIRC water circulating pump temperature sub menu, display shows "CIRC –" factory Settings: to shut down

►If it is open, press the "set" key, the screen shows the values of the parameters "–" shows
►Press "exit" button to exit the flashing display "–– –" confirmation to close this function
►When to the closed position, press the "set" key, the display shows the parameter values "40 ℃" display
►Press the "+" and "–" key, adjust the temperature of the circulation pump water end, adjustable range (20 ℃ ~ 95 ℃), after open factory Settings: 40 ℃
►Press "exit" button from the menu, make sure to open this function automatically quit after or waiting for 20 seconds, set parameters automatically preserved
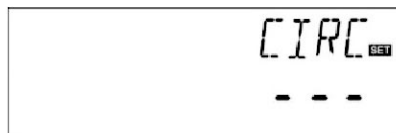
Note: if you want to install the temperature sensor, please make sure to leave water tanks minimum distance of 1.5 m, avoid temperature detection error is too large

## 5.5 BYPR high temperature by-pass function (water tank automatic temperature adjustment)

Functional description：

Tank temperature by-pass function independent of the operation of the solar system, inside the water tank can be used to control the redundant quantity of heat to transfer, in order to maintain water tank water temperature constant, will control tank excess heat transfer out, need to add a electromagnetic valve or the function Circulating pump (R1) output port.

For example:

Set temperature of 70 ℃ high temperature bypass, when the tank temperature (T3) up to 71 ℃, the high temperature by-pass function start, electromagnetic valve or circulating pump (R1), the temperature difference between circulating pump (P1) start at the same time, when the tank temperature to 67 ℃ (T3), electromagnetic valve or circulating pump (R1), the temperature difference between circulating pump (P1) closed at the same time.

Application Example

Figure 1　　　　Figure 2
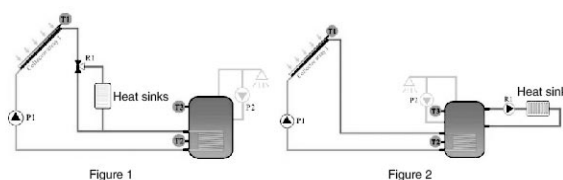
Selected BYPR heat by-pass submenu, display shows "BYPR –"

►Press "set" button, the display shows the values of the parameters, according to the "–" flash factory Settings: "OFF"

►Press "set" button, the open this function, the screen shows "BYPR 70 ℃" (" 70 ℃ "flashing)

►Press the "+" and "–" key, adjust parameters, adjustable range (35 ℃ ~ 95 ℃)

►Press "exit" button from the menu to confirm opening/closing, or wait for 20 seconds automatically quit, set parameters automatically preserved. —(R1)-|||— Icon appeared on the screen, said this function has been started, R1 R1 symbols for the flashing display start work.
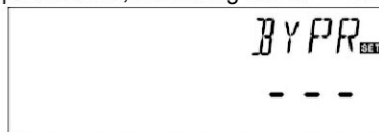
5.6 DVWG sterilization function

Tank temperature by-pass function independent of the operation of the solar system, inside the water tank can be used to control the excess heat transfer outward, in order to prevent water tank water temperature is low for a long time, resulting in bacteria, can affect the health of the user, control instrument in seven days for a cycle, automatic detection of water temperature in the oven; If in this period did not reached 70 ℃, then the system factory Settings: auxiliary heating 01:00 began to start on Sunday, heated to 70 ℃; Then stop heating, sterilization.

Selected DVWG submenu sterilization function, display shows "DVWG OFF", the factory Settings: "OFF"

►Press "set" button, the display shows the parameter values according to "OFF"

►Press the "+" and "–" key, the screen shows "DVWG ON" open this function

►Press "exit" button from the menu to confirm opening /closing, or wait for 20 seconds automatically quit, set parameters automatically preserved.
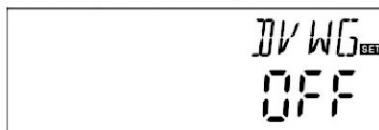
5.7 Conversion of C_F degrees Celsius and Fahrenheit

Selected C_F conversion (degrees Celsius and Fahrenheit) submenu, display shows C_F

►Press the set key, the display shows the parameter values of the flashing display

►Press the + key, can choose degrees Celsius and Fahrenheit, factory Settings:℃

►Press "exit" button from the menu, or waiting for automatically quit after 20 seconds, automatically save the set parameters.

Note: the factory default to degrees Celsius, the user does not need to set up

5.8 Restore the factory Settings

If the user set the disorderly operation must first reply after the factory after setting parameter, According to their own requirements for special Settings ,Long press the set key factory default parameters Operation press set key, hear "di" a cry, let it go

5.9 Open/key operations

►⏻ button for 3 seconds, Control instrument enter the shutdown state, Display all out.
►Press ⏻ , Controller back into the boot state。

5.10 Water circulating pump manual control

Manual control:
Boot state, press the key ⏻ immediately start the water circulating pump, circulating pump water end P2 flashing instructions. Run automatically stop after 3 minutes, no longer restart; On water circulation pump has been running state, then press ⏻ , immediately shut off the water circulating pump

5.11 Manual heating

Functional description:
Solar energy system can increase the auxiliary electrical heating or oil, steam boiler heating equipment, control instrument for automatic temperature control, when the system detects that the upper tank temperature (T3) is less than the set temperature will start the heating, when the upper water tank temperature (T3) reach the set temperature, stop heating.
Open/close this function
►According to the "hot" button, display "60 ℃" flashing shows temperature zone
►Press the "+" and "−" key, adjust the heating temperature, the adjustable range of 10 ℃ ~ 80 ℃ Factory Settings: 60 ℃ 12 seconds after the opening function, display shows manual ⟨ᐟᵐ⟩ icon, heating ⟨ᴴ⟩ flashing icon
►Press "manually" heating, shut off the heating manually
Note: the manual only heat water tank, when manually start the heating function, radiator heating temperature reaches set temperature and heating closed manually, manual heating function automatically cancelled.

5.12 Holiday function

Functional description:
This function allows tank back into the hot water collector cooling at night, because in order to prevent the water tank entirely caused by heating the overheating of the solar system. At 10 p.m. to 6 a.m. the next day, when the collector temperature is lower than the lower part of the tank temperature 8℃, circulation pump start−up; When the collector temperature 2℃ temperature below the tank bottom, the circulation pump shut down.
In the following cases start this functionality
Going to leave home for a long time such as a holiday.
There was no hot water for a long time to consume.
Open/close this function
►Long press "holiday" for 3 seconds, the display screen flashing display icon, this feature is open
►According to "holiday" button, display shows icon to put out, shut down this function
Note: when the tank bottom temperature below 35 ℃ (T2), circulating pump shut down.

Only use this feature when you are not at home for a long time, after the return must be shut down this function.

Long holiday function according to the "holiday" open/close button

5.13 Economic model function

functional description

In the economic mode, timing heating function is invalid, heating mode only by heating to start manually. Open/close this function

Long press the "heat", economic mode, the display shows 🏝 icon, this feature is open

Long press "heat", the economic model display shows 🏝 icon, this feature is closed

5.14 Query function

In standby mode

►Press the "+" and "−" key, check (T1 – T4) temperature, respectively.

When check temperature, screen display (T1 – T4) respectively corresponding to the temperature sensor, press "exit" button, the normal main screen display shows the time and temperature of the water tank (T2)

6.Protection function

6.1 Power off memory protection and factory default parameters

When power is back on electric controller to keep off the memory model.

6.2 The screen saver

After 3 minutes into the screen saver is not operating buttons, LED backlight lights right now, in the screen saver state press any key light LED backlight when power outages, afresh again before power electric controller memory mode.

7.The fault

7.1 Fault protection

When the temperature sensor wire break, short circuit, no connection is good, the controller to shut down the corresponding function and stop the corresponding output signal, according to 🔔 fault indicator on the screen at the same time, if the temperature controller didn't work properly, please test the following situation：

►Press the "+" "−" button, to see the error indicator (LCD screen flashing warning symbol 🔔)

The LCD display an error message	On behalf of the meaning	cause	Corrective measures
🔔 T1 _ _ _	T1 Sensor fault	Short circuit or open circuit	Inspect or replace
🔔 T2 _ _ _	T2 Sensor fault	Short circuit or open circuit	Inspect or replace
T3 _ _ _	T3No display sensor symbol	Short circuit or open circuit	Inspect or replace
T4 _ _ _	T4 sensors will show normal——●, T4 function is invalid without the symbol	At the end of the T4 sensors connected	Connect T4 on or off this function (CIRC)

7.2 failure checking

The controller is a high–performance products, to ensure years of trouble–free operation. If there is a problem, most come from the peripheral components associated with it and not the controller itself. The following detailed description about some common faults control instrument: Can make initial installation and user can effectively avoid the problem of production, to ensure that the system quickly recover to the running state, avoid unnecessary time consuming. Here is not, of course, may be completely all the failure problem of will, but the most common issues users control instrument can be found in the list. When you confirm the similar troubleshooting methods cannot be found in the following list, please send the product back to the dealer for processing.

Now like	The second phenomenon	Possible reasons for	The process
Control instrument does not display	Data without any icon on the screen, the screen without light	There is no plug in System error	Check the source control instrument power on again
Although open conditions are met, but the pump still doesn't work	The water pump icon on the screen flashing	The pump not plug in	Check the pump power
Pump does not work	Pump icon on the screen does not flicker ☀ Light up or ⓘ flashing	The highest temperature tank (SMX) Has reached the	No problem, is normal.
	ⓘ T1 – error message to appear on the screen	The temperature sensor fault, open circuit Or short circuit.	The current value view controller all connection of sensors. • replace all broken sensor and connection.
Pumps work, but open condition is not satisfied	The water pump icon on the screen flashing	Holiday functions into play, anti–freezing function work	No problem, is normal, if necessary, close related functions

⚠ warning！

Open the controller before, must first from the equipment on the power supply will be completely broken! PT1000 numerical temperature sensor using a resistance meter can effectively measure the sensor whether there is some problem, but doing so is the premise of the sensor must be between the system and disconnect all! The following list is the matching relationship between resistance and temperature, of course, around 1% of floating numerical range, is negligible.

PT1000 value table

℃	0	10	20	30	40	50	60	70	80	90	100
Ω	1000	1039	1077	1116	1155	1194	1232	1270	1309	1347	1385

TC 10 k B = 3950 value table

℃	0	10	20	30	40	50	60	70	80	90	100
Ω	33620	20174	12535	8037	5301	3588	2486	1759	1270	933	697

8.Quality assurance

Manufacturers will provide the following quality assurance to end users responsibility: the commitment to product quality guarantee period, manufacturer , Vendors would exclude failure due to production and material selection to the user use disorders. The correct installation will not lead to failure, when the user due to incorrect handling, incorrect entrusted installation operating mode, inappropriate or rough handling, the error of system building and incorrect way of operation, quality assurance liability as genuine.
General users can enjoy the quality assurance period for 12 months.

9.Product technical reference data

| Name	Technical reference number
Monitor overall dimensions	120mm*120mm*18mm
Control instrument appearance size	205mm*140mm*43mm
Use the power supply	AC200~240V 50Hz
Power consumption	＜ 3W
Temperature measurement accuracy	± 2℃
The collector temperature measurement range	0 ~ 220℃
Water tank or pipe temperature measurement range	0 ~ 130℃
Controlled circulating pump	3个, ≤ 600W
Controlled electric heating	1个, ≤ 2000W
The input signal	Collector (1)：PT1000 Thermal head ≤500℃(The silicone line ≤280℃) Water tank or pipe line 2：NTC10K, B=3950Thermal head≤135℃ (PVCline ≤105℃)
The output signal	Three control circulating pump (or the 3–way magnet valve (pos) An auxiliary electrical heating control
Using the environment temperature	−10 ~ 50℃
Waterproof level	IP40

10.Packing list

listing	Number
display	1 only
Control instrument	1 only
The user manual	1 this
PT1000The sensor(specifications: Φ 6*50mm,Line length is 1.5 meters)	1–
NTC10K(specifications： Φ 6*50mm,Line 1.5 meters long)	2 –
Plastic tube expanding	4 only
Flat head screw	4 only
Pressure bars	1 bag
The power cord	1 the root

11. Accessories
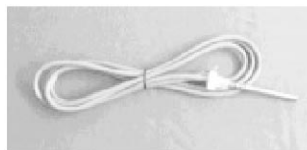
Collector with high precision PT1000 platinum sensor (A01)
Parameter：PT1000，Φ 6*50mm
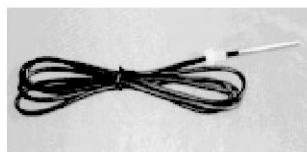
The tank with NTC10K temperature sensor with high precision (A02)
Parameter：NTC10K，B=3950，Φ 6*50mm

Stainless steel blind pipe sensor (A05)
Parameter：1/2″ Outside the imperial silk，Φ 8*200mm