

# **inVest**<sup>®</sup>

## **OPERATION INSTRUCTIONS**

### **InVest solar station**

**IN-SK**



**Read the operation instruction carefully before use.  
Ensure good storage of the operation instruction for late consultation.**

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## Safety information (read it before use)

### Symbol indications:

 <b>Be prohibited</b>	<b>Actions must be prohibited.</b>
 <b>Notice</b>	<b>Items must be noticed.</b>
 <b>Cautions</b>	<b>Actions must be implemented.</b>

#### **Notice**

- The matching controlled auxiliary electric heating power of Solar power station shall not be higher than 2,600W/230V .

#### **Be prohibited**

- It is prohibited to insert or pull out power plug with wet hands for the potential risk of electric shock.
- Avoid direct shower on the solar station. If it is showered by accidental, it must be inspected by professional personnel before use.
- Do not use worn power wire and sockets. Clean plug and socket and remove the dust on the plug and socket timely, or electric shock, short circuit, fire, etc. may occur.
- Disassemble, repair, maintain and reconstruct solar station by layman is prohibited.
- Children should be supervised to ensure that they do not play with the appliance.

#### **Cautions**

- No other than 230V/50Hz separate socket can be used (multiple-use socket is prohibited for use).
- Reliable earthing must be ensured. It is prohibited to use solar station without reliable earthing.
- If unusual indications or scorched smell is found in the solar station, turn off the power immediately and contact aftersale sector.
- Before use, ensure that all the connection components of the pipes are sealed without leakage.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

## Installation cautions



### Notice

The solar station doesn't provide water pressure protective devices, heating element and heating element overheating protective devices (thermal cut-out). Those shall be inside the water storage tank. Their safety and installation shall be in conformity to local safety standards. The heating element overheating protective devices (thermal cut-out) shall provide all-pole disconnection. After purchasing solar station, please contact local after-sale sectors, then the qualified technician will visit you for installation. Installation by yourself is prohibited.



### Be prohibited

- When solar station is connected for sealing, excessive strength must be avoided, or components may be damaged.
- During installation, solar station can not be invertedly placed and rotation axle of internal water pump can not be vertical to the ground.
- Solar station can not be installed in the shower scope of the shower nozzle.
- Internal water pump and copper hose coupling of the solar station must not be installed or disassembled by yourself, or it may lead to liquid leakage risk.
- Do not put other items on the solar station.



### Cautions

- Solar station, priming valve and expansion tank must be installed on the circulation outlet pipe of the water storage tank.
- In pipe insulation work special insulation materials must be used.
- Solar station must be away from strong disturbing resource (voltage equipments, communication equipments, etc.).
- After adding enough antifreeze, close inlet and outlet of the priming valve and tighten the nut.
- The antifreeze used in the Circulation Pipe must be in conformity to local safety and environmental protection standards or laws.
- The antifreeze must be primed by the qualified technician.
- The disposal of the antifreeze must be in conformity to local safety and environmental protection laws.
- The antifreeze may evaporable, flammable and toxic. If find leakage of it, contact the local after-sale sectors immediately. If drink or suck it by accident, contact the medical institution and see the doctor immediately. If the skin contacts the antifreeze accidentally, wash it away and contact the medical institution and see the doctor immediately.

# Installation introduction

## Installation of the solar station

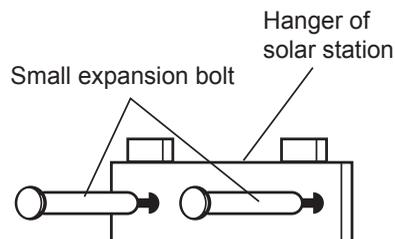
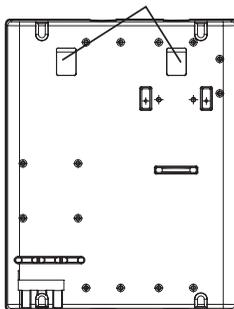
- 1** Before installation, determine the specific installation position according to the requirements of user.
- 2** According to the positions and distance of the hanger holes on the back of solar station, drill two holes in the wall with percussion drill. The hole is 70mm in depth and 9mm in diameter. Then fix the hanger on the wall with two expansion bolts.
- 3** Align the hanger holes on the back of solar station to the hook on the hanger and hang the solar station on the hanger.
- 4** Screw off bolts on the bottom shell of solar station, open its front shell and connect it to the heat circulation system (all the inlet and outlet vents of solar station are G1/2" female standard thread).



### Notice

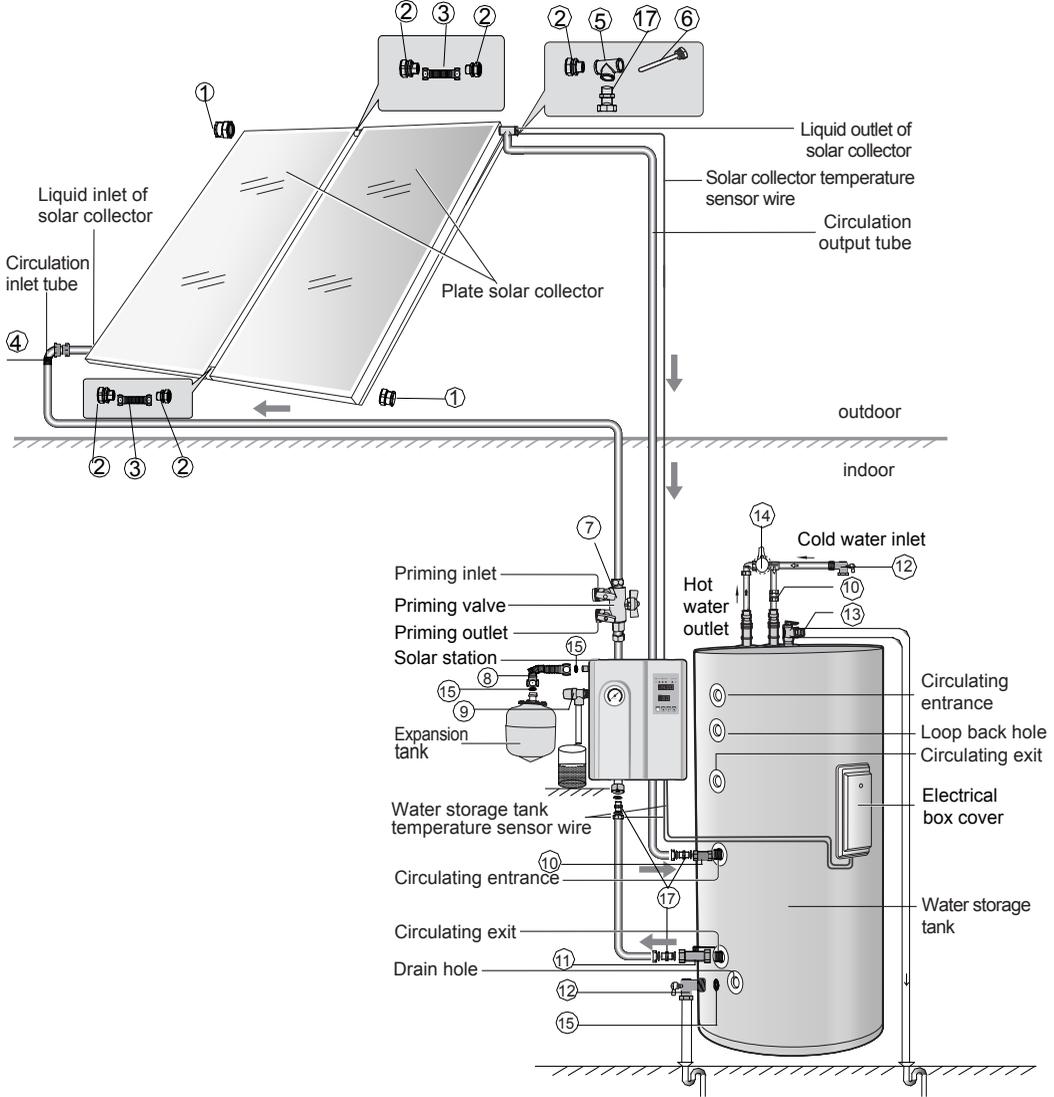
Installation position on the wall of installation hanger of solar station must be fixed properly and wall supporting load must be two times of weights of solar station.

The hanger holes on the back of solar station



# Installation introduction

## ■ Schematic diagram of solar hot water supply system



Number	Name	Number	Name	Number	Name	Number	Name
①	Stopper	⑥	Three way valve	⑨	Safety valve	⑬	T/P valve
②	Connector	⑦	Blind measuring	⑩	Check valve	⑭	Mixing
③	To connector	⑧	Injection valve	⑪	Ball valve	⑮	3/4 fiber gasket
④	Inlet cold water	⑨	Bellows pipe	⑫	Ball valve	⑰	Nipple
⑬	Nipple S1/2F-3/4M.						



**Notice**

The vertical height between solar station and collector should not be greater than 10m.

# Installation introduction

## Circuit connection

Screw off bolts on the bottom shell of solar station, open its front shell and connect the circuit as shown in the diagram.

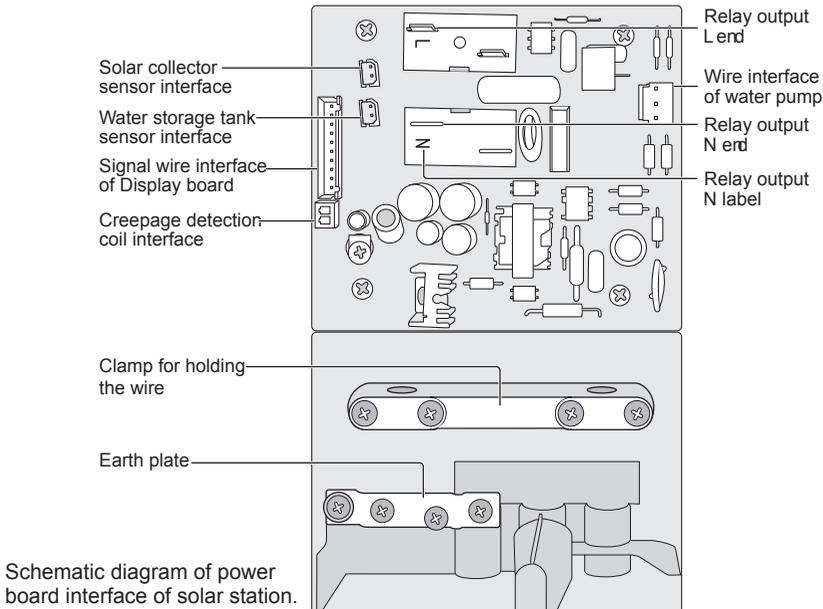
### ■ Circuit connection of water storage tank



#### Notice

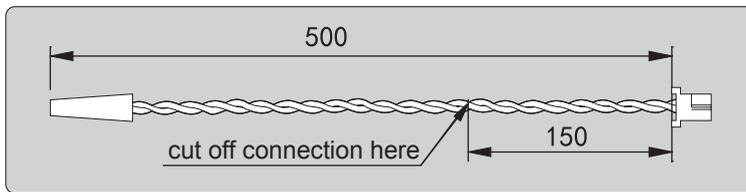
- The nominal cross-sectional area of the wires shall not less than 1.5mm<sup>2</sup>. Conductors identified by the colour combination green/yellow shall only be used for grounding conductors
- The wires shall provide non-detachable lining or non-detachable bushing.
- The wires shall be protected so that they do not come into contact with burrs, cooling fins or similar edges which may cause damage to their insulation.
- The wires shall be protected so that they do not come into contact with hot surface, wet, or significant amounts of ultraviolet radiation except the wires are suitable for the conditions.

- 1** Connect respectively L end (brown) and N end (blue) of wire of water storage tank with L end and N end of relay. ( N label of relay represents the N electrode of power)
- 2** Open the water storage tank's electrical box cover, put the temperature sensor from the power board into the upper blind pipe , then put the temperature sensor from the display board into the lower blind pipe inside the electrical box cover , and then fasten the electrical box cover.
- 3** Fix the grounding wire of water storage tank on the grounding plate of solar station with grounding bolts.
- 4** Disassemble wire clamp and fix and press wire connection of water storage tank.



### ■ Connection of solar collector temperature sensor

- 1** Find solar collector temperature sensor on the corresponding interface on the power board.
- 2** Cut it at the position where is 150mm away from the terminal and strip the wire. (connect another lead according to the actual installation distance between solar collector and solar station. And the lead dimensions shall be: 2XAWG24 (2X0.2mm<sup>2</sup>) and it must be resistant to the temperature above 80°C.) Stick the connection with the insulating tape.
- 3** Place the sensor probe into the blind pipe at the outlet vent of solar collector and insert it to the bottom to ensure reliable contact with the measured point. Band the sensor wire along the pipe. And disconnected points of lead must be avoided to be in outdoor environment to prevent corrosion and oxidation due to rain.



Schematic diagram of wiring position of solar collector temperature sensor (unit: mm)

### ■ Installation of expansion tank and priming valve

- 1** Install priming valve ( not provided with the equipments ) at the proper position of the upper end of water pump connection tube of solar station. The valve has no directionality. But the installation space must be convenient for late priming.
- 2** Install one tee at the outlet of the priming valve. One end of tee is connected with circulation liquid output tube and another end is connected with expansion tank.
- 3** After determination of its position, drill two holes in the wall with percussion drill. The hole is 70mm in depth and 9mm in diameter. Then fix expansion tank on the wall with two expansion bolts and corresponding fixing strap.



#### Notice

Priming valve and expansion tank are both installed on the corresponding tubes at the liquid outlet of water storage tank.

## Installation introduction

### Priming antifreeze

- 1** Screw off the priming vent cap of priming valve, close the bigger check valve in the middle of priming valve ( when two blades on the valve handle is vertical to axle of valve, it is closed) and open another two smaller check valves.
- 2** Connect the output of priming equipment with one priming inlet and ensure the flowing direction is the same with installation direction of check valve. Then Connect another priming output with returning inlet of priming equipment. Start the priming equipment for priming.
- 3** Observe the returned antifreeze until uniform returned flow and no bubble is realized. At first close the check valve connected to returning inlet of priming equipment, then the check valve connected to outlet of priming equipment, and open the bigger check valve in the middle of priming valve. Disassemble the priming equipment.



#### Notice

After priming, put 3/4 fibre gasket in the priming inlet cap and tighten it to prevent the leakage of antifreeze.

- The antifreeze used in the Circulation Pipe must be in conformity to local safety and environmental protection standards or laws.
- The antifreeze must be primed by the qualified technician.
- The disposal of the antifreeze must be in conformity to local safety and environmental protection laws.
- The antifreeze may evaporable, flammable and toxic. If find leakage of it, contact the installers immediately. If drink or suck it by accident, contact the medical institution and see the doctor immediately. If the skin contacts the antifreeze accidentally, wash it away and contact the medical institution and see the doctor immediately.

### Pipeline connection

- 1** Measure the distance from the solar collector inlet to the expansion tank and the distance from the solar collector outlet to the storage water tank circular outlet.
- 2** Prepare corresponding pipe material according to the measured dimension, and equipped with the insulating layer.
- 3** Connect the solar collector inlet and the expansion tank tee joint as well as the solar collector outlet and storage water tank inlet by the prepared pipe material.
- 4** The check valve is installed at the circular discharge pipe of the outdoor solar collector, and the direction of the check valve shall be consistent with the flow direction of the liquid.

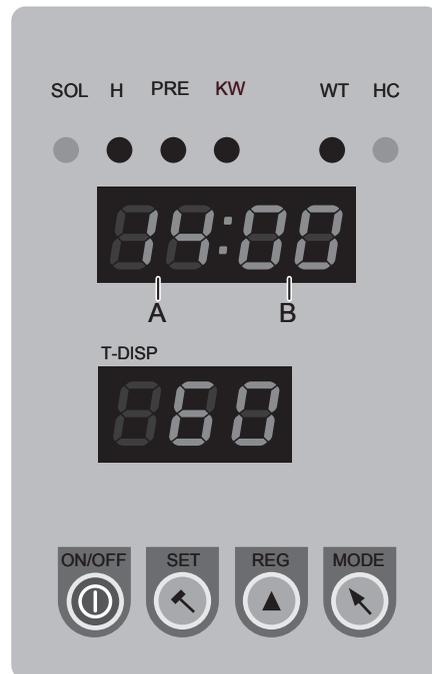
## Directions for use

- After the installation of all the tubes and wiring, ensure that water storage tank is full of water and that solar collector circulation system is full of circulation media without leakage, then connect the power of solar station.
- After connecting the power, solar station will start for auto inspection, then display plate and indication lights are lighted up for 2 seconds, restore to normal display. The default working mode is solar heating mode.

### Directions for buttons and indication lamps

#### ■ :ON/OFF :SET :REG :MODE

- Press the button for starting and another press on the button for closing. When fault codes occur, press the button for restoration display.
- When pressing the button on mode, the system will be switched between the four modes: solar heating (SOL), instant heating (H), presetted heating (PRE) and keeping warm heating (KW). At the same time, indication light of corresponding mode is lighted up. 2-second pause automatically then enter the mode.
- ☒ Press the button , and press the button to adjust the corresponding parameters in 6 seconds.
- Press the button for more than one second, the digits on the clock or preset timer will increase by 3 jump per second. The digits on the temperature setting will increase by 5 jump per second.
- ☒ After the setting, press the button for confirmation or do not press any buttons for 6 seconds, the system will automatically confirm it.
- After pressing the button to turn off the solar station, temperature indication lights of water storage tank and solar collector and temperature indicator are still in normal operation; other display plates and indication light will be turned off. And solar collection function is still in operation and electric heating will be closed.



## Directions for use

### ■ Solar energy indication light (green)

While it is lighted up, it is indicated that water heater is in solar energy heating working mode.

### ■ Instant heating indication light (green/red)

While the green light is on, it is indicated that water heater is in instant heating working mode. While the red light is on, it is indicated that water heater starts electric heating working mode. (when the temperature is heated to the set value, working mode will be automatically switched to solar heating mode from instant heating mode. At the same time heating indication light is off and solar indication light is on.)

### ■ Presetted heating indication light (green/red)

While the green light is on, it is indicated that water heater is in presetted heating working mode. While the red light is on, it is indicated that water heater starts electric heating working mode. (when the temperature is heated to the set value, indication light turns green.)

### ■ Keeping warm heating indication light (green/red)

While the green light is on, it is indicated that water heater is in keeping warm heating working mode. While the red light is on, it is indicated that water heater starts electric heating working mode. (when the temperature is heated to the set value, indication light turns green.)

### ■ Temperature indication light of water storage tank (yellow)

While it is lighted up, it is indicated that temperature displayed in temperature displaying zone is current temperature of water storage tank.

### ■ Temperature indication light of solar collector (red)

While it is lighted up, it is indicated that temperature displayed in temperature displaying zone is current output water temperature of solar collector.

### ■ Clock time display/ parameter setting display (green) ( A and B)

In normal state it display current time set by the user, and the clock can be reset only under the solar energy heating mode ( green indication light of solar energy is on). Different Mode Settings will display Corresponding parameters.

### ■ Temperature indicator (green)

Display current temperature of water storage tank and solar collector in turn.

## Operation methods

Under various working mode, the operations are as follows:

### ■ The solar heating mode is as follows (SOL):

- 1** Press the button , then A twinkles, press the button  to set the current time, "hour".
- 2** Press the button , then B twinkles, press the button  to set the current time, "minute".
- 3** Press the button  again, then A displays "L" and B twinkles; press the button  to set temperature difference value of circulation pump. The setting range is from 8°C to 30°C with the default value 10°C.

### ■ Directions

- In solar energy heating mode, temperature difference between solar collector output vent and the lower of water storage tank is used to control operation of circulation pump through which hot liquid in the solar collector flows into water storage tank and cold liquid in the bottom of water storage tank flows into solar collector for circulation. If temperature at the output vent of solar collector is lower than 120°C and temperature of the upper of water storage tank is no more than 85°C and the temperature difference is higher than the set temperature difference of circulation pump, then circulation pump starts to work. When temperature difference is lower than 3°C, then circulation pump stops working.
- It is suggested that the set temperature difference of circulation pump shall be 15°C in summer and 10°C in winter.

### ■ The presetted heating mode is as follows(PRE):

- 1** Set the dated time 1 .  
Press the button , then A twinkles, press the button  to set the current time, "hour".
- 2** Press the button , then B twinkles, press the button  to set the current time, "minute".
- 3** Set the dated time 2 . The setting method is same to setting method of time 1 . Repeat the operations in **1** and **2**.
- 4** Press the button  again, then B twinkles; press the button  to set the dated temperature for electric heating. It can be set to 45°C/50°C/55°C/60°C/65°C/70°C/75°C, with the default value 65°C.

## Directions for use

### Directions

-  After setting the dated time and temperature, the system will heat water to the dated temperature before dated time. When it is the dated time, the system will maintain the temperature for 30 minutes in keeping warm heating mode, and the principles of keeping warm heating is the same as keeping warm heating mode. When the dated time is reached, intermittent heating in stages by solar energy is used. If the energy from the solar collector fails to heat the water to the set temperature, electricity will be used to supplement it. The keeping warm heating system activates several times, so it is normal for the machine to activate some time in advance of the present time.
-  If it is intended to date one time, set the two same dated time.

### ■ The instant heating mode is as follows (H):

Press the  button. B will flash. Press the  button to set the temperature for instant heating. It can be set to 45°C/50°C/55°C/60°C/65°C/70°C/75°C, with the default value as 65°C.

### ■ Directions

In the instant heating mode, the system will automatically check whether the water in the tank is at the set temperature. If it is lower than the set temperature, it will immediately start heating and the red indication light will flash. Once the water is heated to the set temperature, it will stop heating and automatically change to solar heating mode. The instant heating indication light will go out and the solar heating indication light will light up.



### Notice

In the instant heating mode, solar energy temperature difference circulation will be in normal operation.

### ■ The keeping warm heating mode is as follows (KW):

Press the  button. B will flash. Press the  button to set the temperature you wish the water to be warmed to. It can be set to 45°C/50°C/55°C/60°C/65°C/70°C/75°C, with the default value as 65°C.

#### Directions

In the keeping warm heating mode, the system will automatically check whether the water in the tank is at the set temperature. If it is lower than the set temperature, it will

Once the water is heated to the set temperature, it will stop heating and the keeping warm heating indication light will turn green. When the water temperature drops 5°C (or 10°C), heating will resume. This process will repeat so that the water temperature is maintained at the set temperature.



#### Notice

The default heating temperature setting is 55°C. If the set temperature is less than or equal to 55°C, each time the water temperature drops 5°C, heating will restart. If the set temperature is greater than 55°C, heating will restart each time the water temperature drops 10°C.

### ■ Cautions for use

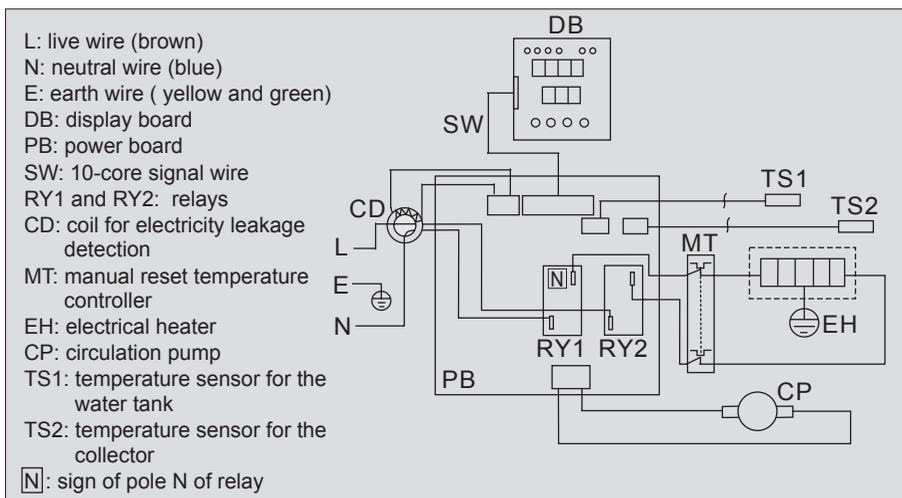
- 1** Inspect whether solar station and the system is in normal operation.
- 2** In order to ensure good operation of solar energy water heater system and full heat storage in solar collector, do not turn off the power of solar station.
- 3** If the system continuously operates for more than 2 months, it is advisable for you to calibrate the clock to ensure normal operation of presetted heating.
- 4** The solar station controller has the power failure memory function. During accidental power failure, the system can restore the set parameters before power failure.

### ■ Cleaning and maintenance

Switch off the power supply before cleaning the solar station. Wipe it by the wet cloth with some neutral detergent, and then wipe to dry it by the dry cloth, to maintain the drying of the solar station case.

# Electric principle diagram, technical data and packing sheet

## Electric principle diagram



## Technical data

Type of solar station	HR-SC
Outline dimensions (HxWxD)	370x292x145(mm)
Water proof level	IPX1
Net weight	6Kg
Maximum pipe pressure	6bar
Maximum media temperature	100°C
Maximum electric heating power	2600W
Rated voltage	AC 220V ~ 230V
Frequency	50Hz

Circulation pump type	UPS 15 - 60 J2 130
Circulation pump power (adjustable)	45W. 75W. 110W
Rated voltage of circulation pump	AC 230V
Temperature sensor of water storage tank	NTC, -40°C ~ 150°C R(37°C)=29.37KΩ ±2.5% β (0/100)=3970K±2%
Temperature sensor of solar collector	NTC, -40°C ~ 250°C R(25°C)=100KΩ ±3% β (0/100)=4036K ±2%

## Packing sheet

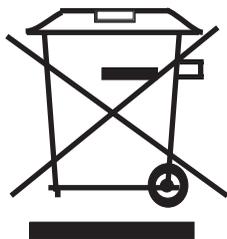
No.	Parts name	Quantity
1	Solar station	1 set
2	Solar station hanger	1
3	Temperature- measuring blind tube of solar collector	1

## FAQ

It is Prohibited to disassemble, repair, maintain and reform the water heater by the non-professional personnel. The improper method may cause serious injury or property damage. If any failure takes place, contact the installers.

Phenomenon	The events to be confirmed	Solution
Fail to start the equipment	socket is not switched on or the control panel is damaged.	Contact the installers.
Display the failure code E1	The line is failed and there is the leakage for the system.	
Display the failure code E3	The temperature sensor of the solar collector is damaged.	
Display the failure code E4	The temperature sensor from the power board into the upper blind pipe inside the electrical box cover is damaged.	
Display the failure code E6	The temperature sensor from the display board into the lower blind pipe inside the electrical box cover is damaged.	

## Note



Correct Disposal of this product:

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased, they can take this product for environmental safe recycling.

***inVest***<sup>®</sup>

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