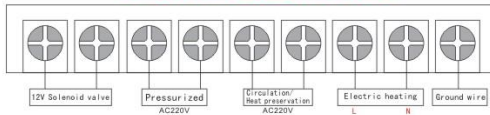


### Installation of intelligent controller

1. Link the probe cable's socket of the water temperature & level sensor with the plug in accordance with the red color code; fasten the plugging and place the socket & plug in the groove to fix them.
2. Hang the controller on the bracket. Referring to the connection schematic diagram, connect the connecting lines of solenoid valve, to corresponding connecting posts. Guard against any wrong connections, for accidents like burnout in the electric device etc. Can be resulted in. Pl choose heat preservation on or pump.
3. The connecting lines shall be exposed through at the back. Restore the junction box's lid. After all installations are finished and checked, conduct a power on self-test.

### Connection schematic diagram

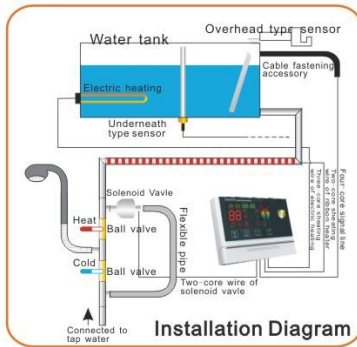


### Installation of Solenoid Valve

1. With installing directions, pay close attention to the ensuring the water inlet and outlet terminal and the arrow at the bottom indicates the water flow direction.
2. The Champion solenoid valve furnished in the fully intelligent controller has been equipped a check valve, so needn't install one way check valve.
3. The pipe linking with the water inlet terminal is preferred to be a flexible pipe or other pipes that can be removed with little difficulty, facilitating the cleaning of obstructions on the filter screen.

### Installation of water temperature & level sensor

1. Firstly, screw the cable fastening accessory on the overflow pipe; next, insert the sensor via the overflow pipe; then pull the lead wire with slight force to make it attach to the inlet; lastly, extend the cable inward by 1 centimeter before tightening it with a clamping bar.
2. Match the socket of cable terminal with the sign of sensor's plug before plugging firmly. Fix the accessory with bandage and the pipe-protecting orifice facing downward.
3. During installation, the socket should never be showed or soaked. With installation of underneath sensor, it should be mounted at the water tank's sbottom; screw up the fixing but to eliminating water seeping



### Major Technical Indications

1. Power supply: 220V Power consumption: <5W
2. Accuracy of temperature measuring:  $\pm 2^{\circ}\text{C}$
3. Range of temperature measuring:  $0^{\circ}\text{C}-99^{\circ}\text{C}$
4. Accuracy of controllable temperature:  $\pm 2^{\circ}\text{C}$
5. Water level classification: Five classes display
6. Power of controlled water pump or ribbon heater: <500W
7. Power of controllable electric heating: <1500W Optional: 3000W
8. Action current of electric leakage:  $\leq 10\text{mA}/0.1\text{s}$
9. Parameter of solenoid valve: DC12V, with pressure valve or non-pressure valve optionally equipped.
10. Operating pressure of pressure valve:  $0.02\text{Mpa}-0.8\text{Mpa}$ , apply to direct supply water.
11. Operating pressure of non-pressure valve:  $0.0\text{Mpa}$ , apply to water-tank supply or low water-pressure supply.

### Key Functions

1. Time display: Display the time.
2. Water level preset: 50, 80, 100% Water loading level can be preset.
3. Water temperature preset:  $30^{\circ}\text{C}-80^{\circ}\text{C}$  Heating temperature scope can be preset.
4. Water temperature indication: Water temperature actual inside the solar water heater is shown.
5. Water level indication: Water quantity inside the solar water heater is shown.
6. Water shortage alarming: On water level declining and water shortage incurred, the beeper alarms.
7. Watering in shortage: On water level declining and water shortage incurred, water will be refilled automatically to reach the preset water level after 5 minutes elapse.
8. Manual Control: Manual start watering, heating, heat preservation/circulation. First preset level, temperature or time, using the up and down key to adjust the parameter, after auto-quit (or quit by pressing Watering key), then start watering, heating, heat preservation/circulation and close them by pressing corresponding keys manually. If the level below 50% when start heating, it should start watering first and then start heating. If the level is  $\geq$  the preset level when start manual watering, it should add a level classification. If the temperature is  $\geq$  the preset one when manual heating, it won't start heating.
9. Optional mode: Intelligent, Timing, Temp-control
10. Timing mode: Have 3 times timing watering, 3 times timing heating, one time by default: watering at 9:00 in the morning and heating at 16:00 in the afternoon. The user can set the time parameter again.
11. Temp-control mode: When the tank is not full and the temperature is above the preset Temp-control temperature (The factory default is  $65^{\circ}\text{C}$ ) it will auto watering to the right one which 10% below the preset one, this function can prevent appearing unreasonable phenomena like low level and high temperature. When using water and the level changed, it will start watering after 60 min. delay. Temp-control function time is at 8:00-17:00, under this mode it won't auto start electric heating, the user can choose manual heating.
12. Intelligent mode: At 03:00 start watering to 50% water level, at 04:00 heating to 50%, to guarantee the user to use water in the morning. At 09:00 it will fill water to 100% level. If using water during watering and the level below 80%, the controller will fill water to 80% at 16:00. If the temperature is  $\leq 50^{\circ}\text{C}$  at 17:00, the controller will start heating to  $50^{\circ}\text{C}$ , to guarantee the user to use in the evening. The intelligent mode is the factory default, so we suggest the user to use this mode as much as possible.
13. Auto leakage protection: Watering will be stopped in case of overflow caused by ruptured vacuum tube or failed water level sensor etc.
14. Power off memory: The keys will be dead locked auto when the power cut to avoid wrong operation. When power on it will work under the mode set before.
15. Constant-temp heating: When the tank temperature is  $\leq$  the constant-temp heating temperature for  $5^{\circ}\text{C}$ , heating process will be started to increase it to the constant temperature specified, ensuring the temperature inside the tank is constant. When the level is under 50%, the watering will be auto started and then promptly start heating to avoid dry-burning. So the water level can't below 50%. Constant press "Heating" key into constant-temp heating function (factory set is  $55^{\circ}\text{C}$ ), otherwise will cancel it. (During heating, press heating key again to close it, it will start again after 15 min. delay)
16. Constant water level: When the tank's level below the preset one, it will start watering to the full level after 30 min. If the tank's level  $\geq$  the preset one, if manual stop watering, it will pause constant water level function for an hour.
17. Compulsory watering: Should the water level sensor suffer any fault, pressing the Watering key can accomplish compulsory watering, with a buzz of every minute as notification. Pay attention to whether the water overflows. The watering will be auto stopped after 8 minutes.
18. Watering under low pressure: During watering, if there is excessively low pressure or water supply stops, the controller will auto turn into the low pressure mode, and it will try to start watering in every 30-minute interval; if the machine fails to lift the level to a higher class within 30 minutes, it will restart watering after 30-minute delay. The procedure will be repeated as in a cycle.
19. Automatic pressurization: When the pressure of water supply is relatively low, the function of auto pressurizing pump may be restored to. During watering, the controller opens the solenoid valve while starting up the water pump for pressurizing water supply; as the watering is finished, the two functions will be turned off at the same time.
20. Pipe heat preservation: In the winter when the outdoor temperature is relatively low, the ribbon heater can be started by pressing Heat Preservation key; and the water pipe is protected against low temperature, and press Heat Preservation key again, the ribbon heater will be turned off.
21. Ribbon heater on fire protection: After starting pipe heat preservation function, the controller will auto shut down ribbon heater after it heating pipeline temperature balance (power on about 10 min.), and when the pipeline's temperature drops, it will start ribbon heater again at the delayed time which preset by the user (factory set 10 min., if set 0 minute, the ribbon heater will power on all the time), the process will auto repeat running to avoid the ribbon heater power on all the time.
22. Sensitivity setting: Cause using for a long time or using pure water (poor conductance) the sensor's detection sensitivity will become poor, it doesn't show 100% when full of water, then can go to the setting mode, the digiton display "LL", now can press the "Heat preservation" key or "Heating" key to change to "HH", this can raise the sensitivity.



CHAMPION

## SOLAR WATER HEATER CONTROLLER

### Key Functions

- Time display
- Water shortage alarming
- Memory on power failure
- Manual control
- Optional mode
- Safety self-test
- Intelligent heating
- Power leakage protection
- Intelligent watering
- Empy-insulate protection
- Pipe heat preservation
- Pipe explosion protection
- Pipeline pressurizing
- Constant water level
- Temp-control function
- Low water pressure protection
- Constant-T function
- Auto leakage protection
- Ribbon heater on-fire protection
- Pipeline cycle
- Power-down when water outlet
- 3 times timing heating
- 3 times timing watering
- Intelligent heating protection

### Instructions on Usage

There are four bright keys and one dark key. Four bright keys: Set, Heating/Constant-temp (up), Heat preservation/Circulation (down), Watering/Constant water level. The Heating, Heat preservation and Watering are 1 second keys; Constant-temp, Circulation and Constant water level are 3 seconds keys. One dark key: Parameter Reset key.

### The button layout:

Short pressing Set key into the setting state, using up and down keys to choose the set items. (Then wait it auto quit or pressing the Watering key to quit). Pressing Set key, first to set the time (hour and minute) and second to set sensitivity, last to choose three modes (Intelligent, Timing, Temp-control), then to set other items.

### 1. Under Intelligent mode

Pressing the Set key for 1 second to set the hour, and press 1 second again to set minutes and so on, then to the mode setting (Attention: Timing watering, Timing heating, Temp-control don't work now)---high and low sensitivity setting---quit setting.

### 2. Under Timing mode

Press Set key for 1 second to set hour and another 1 second to set min. and so on then to : mode setting (Attention: Temp-control doesn't work now)---3 times timing heating and timing watering setting---quit setting. When set Timing Heating, first set the time and then set heating temperature.

### 3. Under Temp-control mode

Press Set for 1 second to set hour and another 1 second to set min. and so on then to : mode setting (Attention: Timing doesn't work now)---Temp-control temperature setting---quit setting.

### Shortcut button:

Press Heating key for 1 second, first preset heating temperature, it will start heating after auto quit (Or quit by pressing Watering key), and press it for 1 second again to close heating. Press Heating key for 3 seconds, first into constant temperature set, and it will save the setting then start constant-temp heating after auto quit (Or quit by pressing Watering key), and press Constant-temp key again for 3 seconds to close the function.

Press Watering button for 1 second, first preset the level, when auto quit it will watering immediately (Or quit by pressing Watering key), and press Watering for 1 second again to close watering. Press Watering for 3 seconds, first into Constant water level set, after auto quit (Or quit by pressing Watering key), it will save the setting and start the function, and press Constant water level key again for 3 seconds to close this function.

Press Heat preservation key for 1 second, first preset heat preserve interval time, when auto quit it will save the setting and start heat preservation. (Or quit by pressing Watering key). When heat preservation started, press Heat preservation for 1 second again to close it. Press Heat preservation for 3 seconds, first to set circulation time, after auto quit (Or quit by pressing Watering button), it will save the setting and start circulation, and press Heat preservation key for 3 seconds to close circulation.

Attention: Boost and heat preservation/circulation use direct-cut operation, so between heat preservation and circulation just can choose one. RESET is the parameter reset key, after pressing it all the parameter will restore factory defaults.

### Precautions

1. Do not flush directly the controller with water. Check if all connecting lines have sound connection.
2. To protect the solar water heater and water temperature & level sensor, the water tank should not lack of water for a long time.
3. To prevent long overflow caused by accidental problems, such as error operation, anomalous power supply and malfunction etc., the solenoid valve and the solar water heater should be installed in a room without water leakage or in a place free of accidents due to sprays. With a return pipe and take qualified lightning protection measures against thunderstroke. While the power should be disconnected to stop the use of solar water heater for the safety of life.

### Common Faults and Troubleshooting

Symptom	Cause	Solution
Not self-test on power on; no display or anomalous display	Too short plug's pins or unsound connection	Plug off the power and check the voltage; reconnect the power
The water level--C, 20% is displayed but the indicator or for water level 100% lights and blinks	Unsound connection of the plug, received plugging; broken line or line damaged due to thunder stroke	Perform secure plugging according to the red color-code; or replace it with a new one; replace the principal machine
The beeper can't alarm	The beeper alarm is broken	Repair or exchange the beeper alarm