

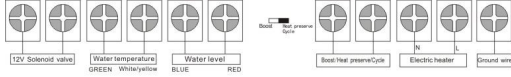
## Common Faults and Troubleshooting

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—℃, 20% is displayed but the indicator 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
Unusually slow water loading or no water loading at all	Low water pressure of water supply; or filter screen of the solenoid valve blocked up by foreign matters; water supply halted due to broken line (insufficient valve's connection; or rupture of vacuum tube)	Pressurize when refilling water or raise the filter screen of the solenoid valve; check the connecting lines; wait for water supply continued; replace the Vacuum tube

### Installation of intelligent controller

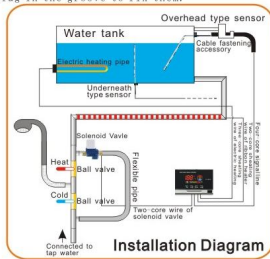
Hang the controller on the wall by using the fitting seat at the back of the controller, Use screws to fix it.

### Connection schematic diagram



### Installation of water temperature & level sensor

- The installation of solenoid valve:** The M-8NEW controller contains a water temperature&level sensor with four-core lines and a pressure solenoid valve with DC 12V. Now open the junction box cover at the bottom of the controller, to link the two-core wire of solenoid valve to the corresponding fitting seat and then fasten the plugging.
- The installation of sensor:** you can choose one of the following ways to install the water temperature&level sensor. Firstly, Please 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.



### Major Technical Indications

- Power supply: 220V AC Power consumption: ≤5W
- Accuracy of temperature measuring: ±2℃
- Range of temperature measuring: 0℃-110℃
- Power of controllable solenoid valve: AC12V, ≤3A
- Power of controllable booster pump or ribbon heater or circulation pump: AC220V, ≤ 500W
- Power of controlled electric heater: AC220V ≤1500W

### Key Functions

- Power on self-test:** A beep at start-up indicates the machine stays in a sound condition
- Water-level upper-limited preset:** 50%, 80%, 100% (It will close water loading when the level at the preset one)
- Water-level bottom-limited preset:** 20%, 50%, 80%, 100%, (It will start watering when water level below the preset one)
- Heating upper & lower limited** can be preset: 30-80℃
- Temp-controlled water loading temperature upper&lower temperature** can be preset: 30-80℃
- Water level sensitivity** can be set: High sensitivity (HH) or low sensitivity (LL)
- Water level temperature display:** The real water temperature&level inside the solar water heater are shown.
- Water shortage alarm:** On water level declining and water shortage incurred. The beeper alarms for 8 times and the indicator of 20% water position flashes at the same time.
- Full water alarm:** During the water loading, When the water position reached 100% level, the beeper will alarm for 4 times and then water feeding is closed
- Constant level water loading:** When water level changes from high to low and lower than the lower-limited level, it will delay 15 minutes to start water loading to the upper-limited level automatically.
- Manual water loading:** when the level is lower than upper-limited level, then press "Watering" key to realize manual watering to the upper-limited level; if the level has reached to the upper-limited, please add one level again on the basis of original level; if the level has reached to 100%, then it can't open water loading. Press "Watering" key to stop water refilling in this process.
- Temp-controlled water loading:** when water tank is not full and the temperature is higher than the preset Temp-controlled upper-limited one, it will watering until the temperature declines to the Temp-controlled lower-limited temperature and shutting off automatically. (If the Temp-controlled upper-limited is lower than Temp-controlled lower-limited, it means the function of "Temp-controlled" closed)
- Compulsory watering:** Should the water level sensor or the water temperature indicator suffer any fault (The water level 20% and 100% on the controller are bright at the same time), pressing the "Watering" notification. Pay attention to whether the water overflows. The water loading will be stopped automatically after 8 minutes.
- Timing water loading:** It can set 3 times to start timing water loading, the first timing water loading time is at 09:30(factory default), the second and third time both are at 24:00. If set it to be 24:00 means the timing function is shut off. When at the timing time; if the water level below the water upper-limited level, it will start water loading to the upper-limited one and then shut off automatically; if the water level has reached to the upper-limited one, it will not start water loading.
- Low-pressure water loading, auto leakage protection:** During water loading, if there is excessively low water pressure or water supply stops, the controller will auto turn into the low water pressure mode, and it will try to start watering in every 30-minute interval; if the machine fails to lift the water level to a higher class within 30 minutes, it will restart water loading after 30-minute delay. The procedure will be repeated for 2 or 3 times and shut off the solenoid valve automatically to avoid the serious outcomes due to low water pressure or water supply failure.
- Delayed to close water loading:** Manual close water loading or Temp-controlled watering reach to suitable temperature will not be delayed, and other ways to close water loading will be 8 seconds delay.
- High-temperature explosion protection:** When the tank's temperature ≥95℃ and the water level below 20%, all watering functions except manual loading will be closed for the moment. And it will recover automatically when the temperature below 90℃. It can avoid the vacuum tube fracture when the cold water come in.
- Delayed to water loading when using:** When the water level declines for a water classification, if the water level is not below the lower limit one, the Temp-controlled water loading function will be delayed for 90 minutes, and other loading ways (means water loading now) will be 30 minutes delayed; if the level below the lower limit one, the Temp-controlled watering function will be delayed for 90 minutes, and water shortage loading will be delayed for 15 minutes, and other loading ways (means water loading now) will be 30 minutes delay.
- Automatic watering pressurization:** Toggle the power switch to the pressurization direction, the controller opens the solenoid valve while starting up the water pump for pressurizing water supply, and the voltage at the "Boost/Heat preservation" port is AC220V, the user can connect the booster pump to this port to realize automatic water loading pressurization function.



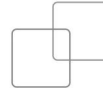
M-8NEW

# SOLAR WATER HEATER CONTROLLER

### Key Functions

- |                             |                                     |                                     |
|-----------------------------|-------------------------------------|-------------------------------------|
| Power on self-test          | Power off memory                    | Double-pipe                         |
| Water level sensitivity set | Constant-temp heating               | Heating protection 1                |
| Water shortage alarm        | Constant level water loading        | Delayed to close water              |
| Full water alarm            | Heating protection 2                | Temp-controlled watering            |
| Manual water loading        | Intelligent mode                    | Electric leakage protection         |
| Timing watering             | Electric leakage protection         | Water level& temperature display    |
| Compulsive watering         | Water level& temperature display    | Pipe explosion protection           |
| Timing heating              | Heat preservation delayed manually  | Delayed to water loading when using |
| Manual heating              | Delayed to water loading when using |                                     |

- |                                   |                                       |
|-----------------------------------|---------------------------------------|
| Automatic watering pressurization | Heating upper or lower limited preset |
| Watering on lower pressure and    | Alarm for water overflow              |



- Heat preservation delayed manually:** Can preset it closed automatically after the heat preservation works for 1-24 hours. If you set 00 then means the function is opened all the time and will stop 10 minutes every 15 minutes. It will cycle as this situation.
- Timing heating:** It can set 3 times to start timing heating, the first timing heating time is 17:00(factory default), the second and third time both are at 24:00. If set it to be 24:00 means the timing function is shut off. When at the timing time; if the water temperature below the heating upper-limited one, it will start heating to the upper-limited one and then shut off automatically; if the temperature has reached to the upper-limited one, it will not start heating function.
- Manual heating:** If the temperature is lower than heating upper-limited, after starting heating manually, it will stop automatically until heat to the heating upper-limited temperature. If the temperature is higher than upper-limited temperature, it is not allow starting heating.
- Constant heating:** When the temperature declines to the heating lower-limited, it will start heating automatically and shut-off automatically until the temperature rise to the heating upper-limited.
- Heating protection 1:** When open the heating function, if the level is lower than 50%, it will shield heating will be shield too.
- Heating protection 2:** If continuously heating for 2 hours and the temperature doesn't rise to 3℃ it will close the heating function automatically. (It doesn't work when the constant-temp heating function opened.)
- Double pipe:** After starting this function, delayed to water loading when using water will be shield, heating will be shield too.
- Intelligent mode:** The controller will turn into intelligent mode after this function is opened. The controller will start water loading to 50% level at 09:00 and will heating to 55℃ at 01:00 to guarantee the user can use the heat water when they get up. Then it will also start water loading to 100% at 09:00. If the user use water during this time and the water level below 80%, the controller will supply water to 80% at 16:00. If the water temperature is below 55℃, the controller will start to heating to 55℃ to guarantee the user can use. The intelligent mode is the factory default mode and we suggest users to use this mode because it can meet the user's needs and also can save electric energy. (All the setting parameters will be shield except Time display and the water loading sensitivity.)
- Electric leakage protection:** The controller will show "LD" booster pump, ribbon heater or circulation pump have electric leakage, and the controller will shut off the output functions. Pressing the button to clean up the "LD" sign and the output functions will be regain.
- Power-off memory:** All the setting parameters will be memory and could keep 10 years after power

### Instructions on Usage

Press "Set" key into parameter setting state.

- The 1st screen:** The hour blinks, minute bright, then press "▲▼" keys to set the time (00-23). (After finishing it, then press "Reset" key to the 2nd screen.)
- The 2nd screen:** The minute blinks, hour bright, then press "▲▼" keys to set the time (00-59). (After finishing it, then press "Reset" key to the 3rd screen.)
- The 3rd screen:** Water temperature blinks, "Heating" "Upper-limited" bright, then press "▲▼" key to set heating upper-limited temperature (30℃-90℃) (After finishing it, then press "Reset" key to the 4th screen.)
- The 4th screen:** Water temperature blinks, "Heating" "Lower-limited" bright, then press "▲▼" key to set heating lower-limited temperature (0℃-80℃) (After finishing it, then press "Reset" key to the 5th screen.)
- The 5th screen:** The hour blinks, "Timing heating 1" bright, now press then press "▲▼" key to set the time of timing heating 1 (00-24). (After finishing it, then press "Reset" key to the 6th screen.)
- The 6th screen:** The hour blinks, "Timing heating 2" bright, now press then press "▲▼" key to set the time of timing heating 2 (00-24). (After finishing it, then press "Reset" key to the 7th screen.)
- The 7th screen:** The hour blinks, "Timing heating 3" bright, now press then press "▲▼" key to set the time of timing heating 3 (00-24). (After finishing it, then press "Reset" key to the 8th screen.)
- The 8th screen:** Water level blinks, "Upper-limited" bright, then press "▲▼" key to set water level upper-limited (20%, 50%, 80%, 100% three levels). (After finishing it, then press "Reset" key to the 9th screen.)
- The 9th screen:** Water level blinks, "Lower-limited" bright, then press "▲▼" key to set water level lower-limited (20%, 50%, 80%, 100% four levels). (After finishing it, then press "Reset" key to the 10th screen.)
- The 10th screen:** Water temperature blinks, "Watering" "Upper-limited" bright, then press "▲▼" key to set temp-controlled water loading temperature (30℃-80℃). (After finishing it, then press "Reset" key to the 11th screen.)
- The 11th screen:** Water temperature blinks, "Watering" "Lower-limited" bright, then press "▲▼" key to set temp-controlled water loading temperature (30℃-80℃). (After finishing it, then press "Reset" key to the 12th screen.)
- The 12nd screen:** Water level blinks, sensitivity bright, then press "▲▼" key to set water level sensitivity (LL: lower sensitivity, HH: higher sensitivity, usually using LL is enough and the HH is used as pure water area). (After finishing it, then press "Reset" key to exit the parameter setting.)