SOLAR ONE

System Controller for Solar Water heating

Main Functions:

1. Cycle function

1.1 When the temperature of the manifold is higher than the set value (2-15 degrees C) of the cylinder, the pump will start and hot water will be pumped from the manifold to the cylinder

1.2 When the temperature of the manifold is lower than the set value (0 – 10 degrees C) of the cylinder, then the pump will stop.

2. Electric Heating

2.1 Over a period of 24 hours, the element can be programmed to switch on and off to bring the cylinder to a set temperature. This can be programmed to occur up to three times over the 24 hour period.

3. Protection

3.1 **Power surge:** In case of power surge the unit will turn off automatically.

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3.2 **Power Cut**: Controller retains set parameters if there is a power cut.

3.3 **Overheating:** When the temperature of the manifold is higher than 99 degrees C, the pump will stop and the controller LCD will display " E4"

3.4 **Frost Protection:** When the temperature at the manifold is lower than 5 degrees C, the pump and the electric element will start and the controller LCD display will show "E7". When the temperature at the manifold reaches 6 degrees C, the pump will switch off and the LCD display will show "E6". When the temperature at the manifold reaches 20 degrees C the electric element will switch off and the controller will exit the frost protection function.

4. Malfunction Display.

4.1 **Pump Malfunction:** When the pump wattage reaches 800w the LCD display will show "E3"

4.2 **Sensor Malfunction:** When the temperature sensor at the manifold malfunctions, the LCD display will show "E1"

4.3 When the temperature sensor at the cylinder malfunctions, the LCD display will show "E2"

5. Clock.

5.1 24hr digital clock

Operating instructions:

1. **ON/OFF Button:** When the controller is turned on, the LCD displays the temperature of the cylinder at the point where the sensor is located. If turned off, the controller will store the time only.
2. **Clock:** To set the time, press the “Scheduled time” buttons either up or down, until the desired time is achieved.
3. **Heat Time:** To set the time when the electric element turns on, press the “Time heat” button and the LCD time will flash. Use the scheduled time, up & down buttons to adjust the time to you want the element to turn on. To set the time when the element turns off, press the Time Heat button again and use the scheduled time, up and down buttons to adjust the time the element turns off. This process can be programmed to occur up to three times over a twenty four hour period.

4. **Obliged Heat:** press this button when you want to override the programmed element function and turn the element on manually.
5. **Temperature of cylinder:** To set the desired temperature of the cylinder, press the “Temperature of Water Tank” button either up or down. The controller will store the set value automatically.
6. **Setting the Start Cycle Pump Temperature:** To set the temperature differential between the manifold and the cylinder, which will start the pump, press the “Setting Start cycling Temp” button. The settings are from 2 - 15 degrees C and each time you press the button, the set temperature will increase by 1 degree C. Once you have reached the desired temperature differential press the “Affirm/Cancel” button to store the setting. After six seconds the display will revert back to displaying the temperature at the cylinder sensor.
7. **Setting the Stop Cycle Pump Temperature:** To set the temperature differential between the cylinder and the manifold which will stop the pump, press the “Setting Stop Cycling Pump” button. The settings are between 0 -

10 degrees C. and each time the button is pressed , the temperature increases by 1 degree C. Once the desired temperature differential is reached, press the “Affirm /Cancel button to store the settings. After a period of 6 seconds the controller will revert back to displaying the temperature of the cylinder.

8. **Manual Control of pump:** To override the programmed settings, push the Obliged Cycle button and the pump will start. To stop the pump, push the button again.
9. **To Display the Temperature of the Manifold:** Push the “Display switchover” button and the display will show the temperature at the manifold sensor. After 5 seconds it will revert back to the temperature at the cylinder.
10. **Affirm/Cancel:** This button is used to confirm or cancel the settings of the start and stop cycle pump functions.
11. **Reset button:** Press this button when there appears to be abnormal functions of the controller. The settings will revert to the default settings set at the factory.