1. Product Introduction

This controller is an intelligent and multifunctional solar charge controller. These serial products adopt customized LCD display screens, which make operations on the interface rather convenient. All of the controlling parameters can be reset to satisfy user needs. This controller has the following features:

- Visual LCD graphic symbol
- Brief key operation
- Grade auto-switch of system voltage
- Intelligent PWM Charging Mode
- Auto temperature compensation
- Adjustable charging & discharging parameter
- Settable working modes of loads
- Accumulative function of charging & discharging AH
- Protection for battery back discharging
- Protection for battery low voltage
- Overloading & short-circuit protection
- Battery reversed protection
- Delayed auto restart after overloading protection

2. Installation Explanation

Prepare the related tools and cables. Renogy suggests you choose the appropriate cables to ensure the current density < 4 A/mm², which is good for reducing cable voltage drop. Recommendation: 30A using AWG 8 cable, or 50A using AWG 6 cable.

1. Check whether the place of installation accords with the relative safety rules. Please avoid installing and using the controller under the following conditions: wet places, dusty places, or places with flammable and explosive gases.

2. Install the controller at the vertical plane. Please refer to chapter 5 for more detailed information about the required spacing between installing holes. In order for the controller to have good thermal dissipation, please spare 10cm above and below the controller.
3. As shown in the figure to the right, connect the loads, battery, and solar panels with the controller in proper order. Pay close attention when connecting the loads, battery, and solar panels, to ensure the job is done correctly.

4. Plug the external thermal sensor into the interface of the thermal sensor on the left side of the controller.

Disassemble: To avoid a dangerous accident, please dismantle the solar panels, battery, and loads from the controller in the proper order.

Attention: Connecting the battery in a reversed manner will not damage the controller, but will create a safety risk on your loads.

3. Operation
Explanation of LCD Graphic Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>⏳</td>
<td>Stop supplying power for loads</td>
</tr>
<tr>
<td>⬆️ ⬇️</td>
<td>Supplying power for loads, no current in load loop</td>
</tr>
<tr>
<td>⬆️ ⬇️</td>
<td>Current in load loop</td>
</tr>
<tr>
<td>⬆️</td>
<td>Load icon</td>
</tr>
<tr>
<td>🌞</td>
<td>Solar panels icon</td>
</tr>
</tbody>
</table>
TABLE 3.1 LCD graphic symbols description

### Explanation of Buttons

- **Interfaces circular toggling button:** Use of this button can realize (show/create) the toggling circularly among the interfaces. The circular order is properly shown in figure 1.

- **Parameter adjusting’+’ button.** Besides, under parameter review condition, press this button for over 5 seconds, and all the parameters will recover to the ex-work setting state.

- **Parameter adjusting’-‘button.** Besides, at the main interface, this button can turn on or turn off the load.
Parameter Review and Setting

After the controller properly electrifies, it will enter the battery voltage onto the displaying interface. This interface is the main interface of the controller. Press button [ ] to go through the interfaces of the following parameters. If the interface can be reset, press button [ ] for at least 5 seconds (>5 seconds, and the number on the interface starts to flicker), then it will enter into the setting interface of this parameter. After finishing the setting, press button [ ] for over 5 seconds to exit the setting interface, and the number will cease flickering.

3.1 Battery Voltage Review

As shown in the figure to the right, the displayed number is the present battery voltage. This interface is the main interface, and it shows the charging and discharging state, battery capacity, and battery voltage.

3.2 Load ON/OFF Controlling

At the battery voltage review interface, you can press button [ ] to turn the load on or off; however, this button does not have the same function at other interfaces.

3.3 Environmental Temperature Review

This review should be used for the temperature compensation when the battery ceases charging. As shown in the figure to the right, the displayed number on the interface is the surrounding environmental temperature of the controller.

3.4 Review Generating Current of Solar Panels

As shown in the figure to the right, the displayed number is the input current from the solar panels.

3.5 The Load Current Review
As shown in the figure to the right, the displayed number is the load current.

3.6 Reviewing and Clearing Accumulative, Generated Ah of Solar Panels

As shown in the figure to the right, the displayed number is that of the accumulative, generating AH of the solar panels. At this interface, press for over 5 seconds (>5 seconds), and it will clear the accumulative, generating AH.

3.7 Reviewing and Clearing Load Accumulative, Discharging AH

As shown in the figure to the right, the displayed number is that of the accumulative, discharging AH of the loads. At this interface, press for over 5 seconds (>5 seconds), and it will clear the accumulative, discharging AH.

3.8 Reviewing and Setting Low Voltage Protection Function

As shown in the figure to the right, the displayed number is the protection voltage. If the battery voltage is lower than the protection voltage, the controller will disconnect the load loop to prevent the battery from over-discharging. At this interface, press for over 5 seconds (>5 seconds). The number will start to flicker, which means the controller enters into the interface of setting the protection voltage. Use buttons and to adjust this parameter. After finishing this set-up, press for over 5 seconds (>5 seconds) to exit the interface and the controller can store this setting number.
3.9 Reviewing and Setting Recovering Voltage for Voltage Condition

As shown in the figure to the right, the displayed number is the recovery number. After the controller enters into a low voltage protection state, and when the battery voltage recovers to be higher than the recovering voltage, the controller will reconnect the load loop automatically. At this interface, press \[\text{button}\] for over 5 seconds (>5 seconds). The number will start to flicker, which means the controller enters into the interface of setting the recovery voltage. Use buttons \[\downarrow\uparrow\] and \[\text{button}\] to adjust this parameter. After finishing this set-up, press \[\text{button}\] for over 5 seconds (>5 seconds) to exit this interface and the controller can store this setting number.

3.10 Reviewing and Setting the Voltage Where Controller Ceases Charging

As shown in the figure to the right, the displayed number is the voltage where the charger will cease charging. When the battery voltage reaches this voltage, the controller will disconnect the charging loop to prevent the battery from overcharging. After the battery voltage drops, the controller will reconnect the charging loop. At this interface, press \[\text{button}\] for greater than 5 seconds (>5 seconds). The number will start to flicker, which means the controller enters into the interface to set the voltage where the controller ceases charging. Use buttons \[\downarrow\uparrow\] and \[\text{button}\] to adjust this parameter. After finishing this set-up, press \[\text{button}\] for greater than 5 seconds (>5 seconds) to exit this interface and the controller can store this setting number.

3.10 Reviewing and Setting the Load Mode

Shown in the figure to the right is the reviewing surface of the load mode.

- **24h** – Indicates normal mode. Loads are under the condition of supplying power without breakdown.
- **1h-23h** – Indicates delayed mode of light control. Load starts to supply power after dark and sun down after working for the delayed setting hours.
- **0h** – Indicates Light Control. Load starts to supply power after dark and stops after dawn.
At this interface, press ▼ for greater than 5 seconds (>5 seconds). The number will start to flicker, which means the controller enters into the interface to set the load modes. Use buttons ▼ and ▲ to adjust this parameter. After finishing this set-up, press ▼ for greater than 5 seconds (>5 seconds) to exit this interface and the controller can store this setting number.

**Breakdown And Disposal**

**Low Voltage Protection and Disposal**

If the screen displays the information as shown in the figure to the right, it means the battery voltage is lower than the protection voltage. The controller enters into the low voltage protection state and the load loop disconnects. Use the solar panels or alternate charger to charge the battery. When battery voltage recovers to the protection voltage, the controller will recover to supply power for load, and enter into the working state.

**Overloading Protection and Disposal**

If the screen displays the image shown in the figure to the right, and the light flickers, it mean the current of the load loop is 1.2 times that of the rated current within 3 seconds, and the controller is at an overloading state. After removing some loads, the controller will supply power to the loads automatically within seconds, or you can press ▼ to recover the power supply compulsively.

**Short-Circuit Protection and Disposal**

If the screen displays the image shown in the figure to the right, and the light flickers, it means there is a short-circuit in the load loop, and the controller is in a short-circuit protection state. Please check whether the loads are damaged and whether the connecting cables are short-circuited. After eliminating the breakdown, press
to recover the power supply for the loads.

**Breakdown and Disposal of Solar Panels**

Sign 🌞 fend flickering means the controller does not detect the existence of solar panels. Please check whether the connection with the solar panels is in good condition, and check whether the cables connecting the solar panels and the controller are in open-circuit condition.

**Load Impulsion Breakdown**

If 📈 fickers when you turn on the load, it means the starting impulsion current is more than twice that of the rated working current. Please restart the controller four times. **Other exceptional conditions**: Please contact the distributor or manufacturer.

**Charge Controller Specifications**

**Electrical Characteristics**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>PWM30CC-LCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Working Voltage</td>
<td>12V/24V</td>
</tr>
<tr>
<td>Rated Working Current</td>
<td>30A</td>
</tr>
<tr>
<td>Solar Input Voltage</td>
<td>≤48V</td>
</tr>
<tr>
<td>Float Charging Voltage (adjustable)</td>
<td>13.8V/27.6V</td>
</tr>
<tr>
<td>Low Voltage Protection (adjustable)</td>
<td>10.7V/21.4V</td>
</tr>
<tr>
<td>Low Voltage Recovery (adjustable)</td>
<td>12.5V/25.0V</td>
</tr>
<tr>
<td>No Load Loss</td>
<td>≤30mA</td>
</tr>
<tr>
<td>Loop Voltage Drop</td>
<td>≤170mV</td>
</tr>
<tr>
<td>Temperature Compensation</td>
<td>-4mV/Cell/°C</td>
</tr>
</tbody>
</table>

**Technical Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>PWM30CC-LCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Wire Size</td>
<td>AWG #7 (16mm²)</td>
</tr>
<tr>
<td>Working Temperature</td>
<td>-10°C to 60°C (14°F to 140°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-30°C to 70°C (-22°F to 158°F)</td>
</tr>
<tr>
<td>Temperature Compensation</td>
<td>≤90%, No Condensation</td>
</tr>
<tr>
<td>Dimensions</td>
<td>90x188x48 mm (3.54x7.40x1.89 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>360g (12.7 oz.)</td>
</tr>
</tbody>
</table>