30 AMP PWM CHARGE CONTROLLER MANUAL

Charge Controller Specifications

Technical Information (12/24V Auto Mode)		
	12V	**24V**
• Rated Solar Input	30A	30A
• Related Load	30A	30A
• 25% Current Overload	1 minute	1 minute
• Load Disconnect	11.1V	22.2V
• Load Reconnect	12.6V	25.2V
• Equalization Voltage (30 minutes)	14.6V	29.2V
• Boost Voltage (30 minutes)	14.4V	28.8V
• Float Voltage	13.6V	27.2V
• Temperature Compensation (mV/C)	-30mV/C	-60mV/C
• Terminals	For wire sizes up to 6mm^2	
• Temperature	-35°C to + 55°C	
• Battery type	Lead Acid batteries, including AGM and Flooded	

Table 1. Charge controller technical information

Quick Start Instructions

This section provides a brief overview of how to begin using your solar charge controller. It is recommended that each user review the entire manual to ensure the best possible performance as well as maximize years of worry-free service. It is highly recommended that the connections be made in the following steps provided:

1. Mount the charge controller onto a clean, vertical flat surface. It is very important to allow enough space both above and below the charge controller to ensure maximum air flow.

2. After proper mounting is established, connect the battery to the charge controller terminals. Be careful not to switch the polarities of the battery and do not allow the bare wires to touch the metal casing of the charge controller.

3. Connect the solar (PV array) with the MC4 adapter kit cables. The green LED indicator will light up if there is enough sunlight.

4. Optional: Connect the load if you have a 12VDC application. If the red LED indicator light turns on, the battery capacity is low and needs to be charged before completing the system installation.

5. After all connections are made, power ON the charge controller by pressing the SET button.

6. To test the system for proper connections, press the SET button on the charge controller until you see the number **17** (see description below).

7. Make sure the solar module(s) voltage and current do not exceed the ratings of the charge controller.

Lighting Control Options

1. Press the SET button for about 5 seconds and select the desired lighting control option. The LED will come on, which will indicate that you have selected an option.

2. The controller requires about 10 minutes of continuous transition values before it starts working properly. These constraints avoid false transitions due to lighting or shading.

3. A brief description of the work mode:

Number	LCD Display	Description of Work Mode
0	00	Dusk-to-Dawn, light id on all night
1	01	Light turns on 1 hour after sundown
2	02	Light turns on 2 hour after sundown
3	03	Light turns on 3 hour after sundown
4	04	Light turns on 4 hour after sundown
5	05	Light turns on 5 hour after sundown
6	06	Light turns on 6 hour after sundown
7	07	Light turns on 7 hour after sundown
8	08	Light turns on 8 hour after sundown
9	09	Light turns on 9 hour after sundown
10	10	Light turns on 10 hour after sundown
11	11	Light turns on 11 hour after sundown
12	12	Light turns on 12 hour after sundown
13	13	Light turns on 13 hour after sundown
14	14	Light turns on 14 hour after sundown
15	15	Light turns on 15 hour after sundown
16	16	Turn on/off light mode
17	17	Test mode; lights turns on after no sunlight detected or lights turn off after sunlight detected.

Table 2. Lighting control options

Led Indicator

Icon	LED Description
Solar Panel 	• Green ON: Solar power is charging the battery • Green BLIKING: The system is over voltage
Battery 	• Green ON: Battery level is in the right range • Green SLOWLY FLASHING: Battery level is full • Yellow ON: Battery level is low • Red ON: Load cut-off
DC Load 	• Red ON: The output is on • Red SLOWLY FLASHING: Overload (The load amps is 1.25 times of the rated current for 60 seconds or the load amps is 1.5 times the rated current for 5 seconds) • Red BLINKING: Load is short-circuit

Table 3. LED indicators

Note: The output will shut off once there is an overload or short circuit. Disconnect all of the equipment and then wait a few seconds before reconnecting everything. Press the SET button and the controller will resume working after approximately 10 seconds, or in some instances, it may take a few moments longer.

Troubleshooting
What do I do when…

1. *Charging LED indicator turns off during the daytime*

    a. The green LED should be ON during the daytime.
    b. Check to make sure the correct battery is being used.
    c. Check all wiring connections to make sure they are in their designated locations and make sure that there are no loose connections.
    d. Measure the PV array open-circuit voltage and confirm it is within its normal limits.
    e. Measure the PV voltage and the battery voltage at the controller terminals. If the voltage at the terminals is within proper specifications, the PV array is charging the battery properly. If the PV voltage is within specifications to the open circuit voltage rating of the panels, but the battery voltage is low, the charge controller may not be charging the battery and it may be damaged.

2. *Charging LED indicator is blinking*

    a. Check the operating conditions to confirm that the voltage is higher than the specifications. Consider the temperature compensation of the charge controller's PWM set point. For example, at 0°C the charge controller will regulate at about 15 volts.
    b. Check all wire connections in the system to ensure they are in the correct location. Check for loose wires.

3. *Red load LED indicator is blinking or flashing (load not operating properly)*

    a. Check the load to make sure it is on and make sure the fuses are not blown.
    b. Check connections to the load, other controllers, and battery. Make sure the voltage drops in the system wires are not exceeded.
    c. If the LED indicator is blinking and there is no output, check the load for short-circuit. In case of short-circuit, disconnect the load and press the SET button, and wait for approximately 30 seconds for the charge controller to resume working again.
    d. If the LED indicator is still flashing and there is no output, check the load to make sure the load is not over the rated power. Reduce the load and press the SET button. Then wait for approximately 30 seconds for the charge controller to resume working again.

Inspection and Maintenance

It is highly recommended that each user inspect the charge controller at least once per year to ensure longevity and optimal performance. Please follow this procedure:

1. Confirm that the correct battery type has been used.
2. Confirm that the current levels of the solar array and load do not exceed the controller ratings.
3. Inspect for loose, broken, or burnt wire connections and replace them if needed. Make sure all terminals are tightened.
4. Press the SET button until number 16 is displayed to verify the lights are working properly.
5. Inspect for dirt, insects, and corrosion on the charge controller.
6. Check to make sure there is still enough space around the charge controller for maximum airflow.
7. Check to make sure the charge controller functions and LED indicators are working properly.
8. Make sure the PV array is clean and remove any debris.
9. Make sure all of the railings and PV bolts are tightened.