

# SUNFORCE 7 AMP SOLAR CHARGE CONTROLLER

This guide covers the major features of this product - it does not cover all of the available functions. This guide is not intended to replace the original equipment manual. Please refer to the manual for more detailed operating instructions and safety information.

## EQUIPMENT DESCRIPTION

The Sunforce 7A Charge Controller [1] regulates the charge of the battery bank to which it is connected. Over charging a battery can seriously damage a battery bank.

When the voltage of the connected battery bank reaches 14.2V (the Cut-Out Voltage), the charge controller disconnects the solar panels from the battery to ensure that no more charge is added to the battery bank. When the battery bank voltage drops below 13 V (the Cut-In Voltage), the charge controller will cut-in and start charging the battery again.

This charge controller is solely for use with 12 V solar panels and 12V battery banks. Wind turbines require special charge controllers, as simply disconnecting a wind turbine from the battery bank would leave it to spin freely with no load. This could result in the wind turbine reaching excessive speeds and causing damage.

The charge controller has a maximum rating of 7 Amps, meaning that it is capable of allowing 7 Amps of current to flow from the solar panel to the battery bank. Since the Cut-Out voltage of the charge controller is rated at 14.2V, we can thus calculate the maximum power rating of the solar panels that can be connected to the charge controller.

$$\text{Power (Watts)} = \text{Voltage (Volts)} \times \text{Current (Amps)}$$

$$\text{Power} = 14.2\text{V} \times 7\text{A} = 99 \text{ Watts}$$

Do not connect a solar array in excess of 99 Watts to this charge controller, as it will damage the unit.



Figure 1: Sunforce 7A Charge Controller

## INSTALLATION

1. Connect the positive and negative battery cords [2] from the charge controller to the positive and negative terminals of the battery [3]. Ensure that a connection is made between the positive wire and the positive battery terminal before making the negative connection. Connecting in a different order may cause sparking or explosion.



Figure 2: Battery Cords from Charge Controller



**Figure 3: Battery cords connected to positive and negative battery terminals. Notice negative terminal is black with (-) sign, and positive terminal is red with (+) sign.**

2. Connect the positive and negative terminals solar panel array cords [4] from the charge controller to the positive and negative wires [5] leaving the solar panel using a twist on wire connector [6]



**Figure 4: Solar Panel Array wires from Charge Controller**

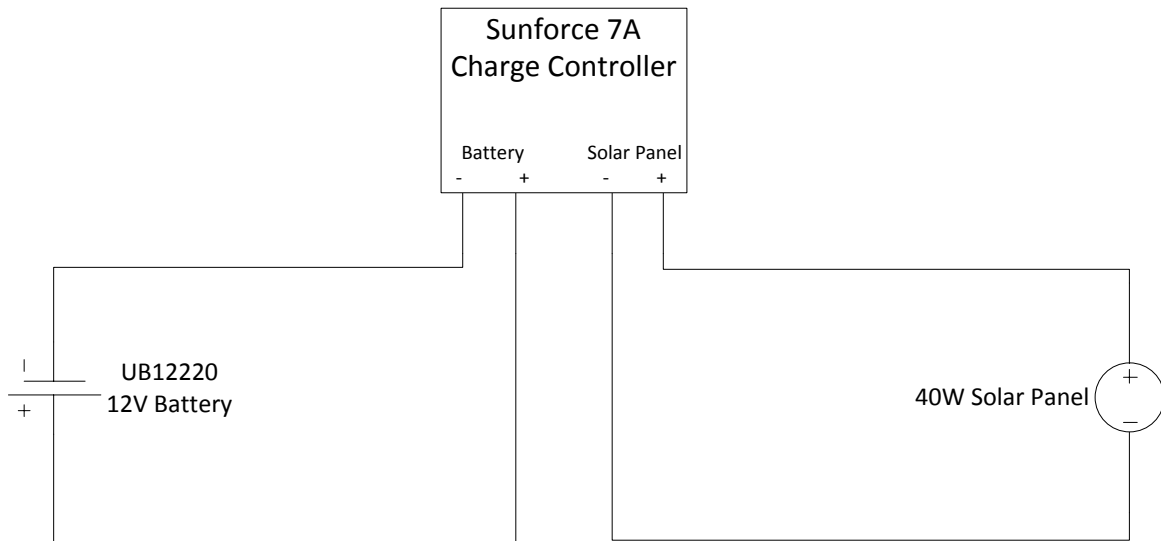


**Figure 5: Positive and Negative wires from Solar Panel Array**



**Figure 6: Connected Solar Panel and Charge Controller Wires**

3. The circuit diagram should resemble Figure [7].



**Figure 7: Circuit Diagram**

- The wire used should be of the appropriate gauge for the current being handled and the distance being travelled. Please use Table 1 for guidance in selecting an appropriate wire gauge. This table is intended only for solar panels connected to the Sunforce 7A charge controller. Do not use this table for other circuits.

Wire length between PV Panel and Battery (m)	Wire AWG
1	16
2	16
3	14
4	14
5	14
6	12
7	12
8	10
9	10
10	10

**Table 1: Appropriate wire gauge for any additional wire used between the solar panel, charge controller and battery bank**

## OPERATION

- The green "Charged" light [8] indicates a fully-charged battery.

2. The yellow "Charging" light [8] indicates a battery that is being charged.



Figure 8: Charged/Charging Lights

## NOTES

1. The charge controller should be placed within 5 feet of the battery in a dry, well-ventilated area.
2. It is normal for the lights to flicker on and off during normal operation.
3. Always connect charge controller to battery first and remove last
4. Do not connect a solar panel array in excess of 100W to the charge controller.
5. This charge controller is intended only for use with solar photovoltaic arrays.