

Solar Charge Controller Parts Kit Application Notes

Construction Notes:

Recommendation 1: Provide access to R2 and R3 by drilling two small holes in your chassis and mounting R2 and R3 using adhesive onto the chassis wall (the adjustment screw exposed and free of adhesive). I used a hot glue gun for this.

Recommendation 2: Change the terminal block from a 3 screw version to a 5 screw version. Wire U1 pin 6 and U1 pin 2 to these additional terminals. This is to access the Turn On and Turn Off reference voltages.

Once you have done these two changes, testing and adjustment of the solar charge controller will be much easier.

Testing Notes:

When adjusting the charge controller, the variable power supply is connected to the battery side of the charge controller, NOT the PV side.

Choose a reference voltage for the variable power supply when adjusting the Turn-On and Turn-Off voltages. I used 12.75 VDC when setting the reference voltages since this is the standard full charge voltage of a lead acid battery. This permitted more accurate settings since the set points will vary according to the battery voltage.

There appears to be an error in the Turn-On and Turn-Off voltage calculations. I believe the following version is correct:

$$\text{Turn-On: } VR2 = \frac{V1 * V2 * 0.5}{Voff} \quad \text{Should be } \frac{V1 * V2 * 0.5}{Von}$$

$$\text{Turn Off: } VR3 = \frac{V1 * V2}{Von} \quad \text{Should be } \frac{V1 * V2}{Voff}$$

Even using the corrected versions, I saw errors by as much as 0.3VDC in testing the set points after adjustment.

Thanks and have fun with Free Solar Energy!!!!

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