

SunGuard Controller Test

The purpose of this test is to measure the voltage at the battery and array leads. The following steps must be completed in this order for the test.



Notes:

- This testing procedure was developed for use in field conditions where no external power sources are available.
- Due to the construction of the SunGuard controllers, it is possible only to determine whether the unit is functioning properly. It is not always apparent what component has failed or the cause for the failure. It is left up to the technician to determine the cause of the controller failure based on evidence present at the site (i.e. burned leads, excessive loads, evidence of short circuits on system wiring, over PV current rating, etc.)
- The procedures outlined below assume a basic knowledge of electrical circuits and the necessary safety precautions to be used when working with live circuits present in solar energy systems.
- You will need a Digital multi-meter (frequency and duty cycle measurements are helpful) for this procedure.

Testing Procedure:

1. Disconnect Solar and Battery (+) and (-) from the SunGuard.
 - i Continuity Solar (+) and Solar (-) = **Fail**
 - ii Continuity Battery (+) and Battery (-) = **Fail**
 - iii Continuity Battery (-) and Solar (-) = **Pass**
2. Connect Battery (+) and Battery (-) to the SunGuard.
 - i Measure voltage at the battery leads.
 - ii Measure voltage at Solar (+) and Solar (-).
 - 1 **Pass** = Less than 1.5 VDC
 - a Negative due to the diode drop across the input FET's.
 - 2 **Fail** = Battery voltage is measured.
 - a FET's are damaged and unit will not regulate the battery voltage correctly.
3. Connect Solar and Battery (+) and (-).
 - a) Charging Battery
 - i Solar (+) and Solar (-) = Battery (+) and Battery (-) = **Pass**
 - b) Charged Battery
 - i Solar (+) and Solar (-) < Battery (+) and Battery (-) = **Pass**
 - c) Frequency
 - i Battery (+) and Solar (+) = 260-340 Hz AC Signal = **Pass**
 - 1 Duty Cycle Low = Charged Battery
 - 2 Duty Cycle High = Charging Battery
4. Disconnect Solar (+) and Solar (-)
 - a) After one minute Solar (+) and Solar (-) should be significantly lower than Battery (+) and Battery (-) = **Pass.**
5. Final System Checks
 - a) If Ensure that all connections are secure and weather-protected and that the controller is housed from the elements.
 - b) Check the condition of any fuses that might be in the power path.
 - c) Verify the system wiring is correct and intact.
 - d) Check all connections and terminals for good electrical contact.

Date	Name	Rev	Description of Changes
1/12/2017	Stephanie Miller	A	New Document for CA 6560