PL Battery Voltage Reading Check

Introduction

The regulator makes charging decisions based on the battery voltage that it measures via the wires connected to it's BAT+ and BAT- terminals. If for any reason the regulator is not able to measure the correct battery voltage it will make incorrect decisions about charging the battery. The main fault that can affect the regulators ability to measure correct battery voltage is voltage drop in either of the wires connected to the regulators BAT+ or BAT- terminals. This can occur if the wire used is too small for the required currents, or if there are damaged/corroded connections somewhere in the system.

Test Conditions

The following 3 tests should be repeated several times during a typical day where you will have different charge and load current conditions (see 'Condition Details' below).

Voltage Check Process

a) Use a good quality multimeter to check the voltage at the **physical battery terminals.**

b) This should be very close to the voltage measured with the same multimeter at the **regulator terminals.**

c) This should be very close to the BATV reading on the **screen** of the regulator.

Interpretation of Results

If (a), (b), and (c) are within about 5%, then the regulator, connections, and wiring are ok.

If (b) and (c) are the same but do not match (a) then you probably have a connection or cable fault somewhere between your regulator and your batteries.

If (a) and (b) are the same, but are different to (c) then the regulator voltage calibration could be corrupted and the regulator will need to be sent in to us for repair/recalibration.

NOTE:
Try removing the battery temperature sensor (if fitted) and repeating one of the test conditions above, since a faulty or incorrectly wired temperature sensor can cause similar symptoms (wire with stripe goes to T-).

Condition Details

To fully test the system for correct voltage readings, the above voltage check process should be done under two opposite conditions.

1. **Maximum charge and Minimum load:**
   This can be achieved by allowing the battery voltage to get a little low then forcing the PL regulator into BOOST on a sunny day (from BATV screen, long push as many times as it takes to show BOST on the screen). You will also need to turn OFF all loads on the system.

2. **Minimum charge and Maximum load:**
   This can be achieved by switching OFF the solar array breaker (or removing the solar negative wire that connects to the SOL- terminal), and turning ON all possible loads.