Technical Note – Checking the Power Optimizer Safety Voltage

Version History

- Version 1.0 May 2023 – Original document formatted and edited for upload to the Knowledge Center

Contents

Overview

This technical note describes the procedure for testing a Power Optimizer that is not producing power or is not recognized by the inverter.

Required Tools

- Multimeter
- Current Clamp

Test Procedure

Pairing

If the Inverter does not recognize the Power Optimizer, initiate the pairing process. When pairing completes, wait 15 minutes for the inverter to identify all the Power Optimizers. If the P_OK number matches the number of Power Optimizers in the installation, all Power Optimizers are working correctly.

If the P_OK number does not match the number of Power Optimizers installed, identify the serial number of the Power Optimizer that appears to be faulty. You can do this in one of the following ways, depending on the inverter model:

- From the Layout tab in the Monitoring portal.

- In the MySolarEdge App.

- From the inverter's menu (LCD model).

- In the SetApp Power Optimizer list.

If you are still unable to find the SN of the faulty Power Optimizer, you can identify it by using a current clamp on the input cables,. Check each Power Optimizer until you find the faulty one. If the Power Optimizer is functioning correctly, you can measure the value of the current (in the range of the panel's IMPP). If the Power Optimizer is faulty, you will see that the current measured is zero (0A). Record your measurement, and proceed with testing the Power Optimizer.

Testing the Power Optimizer

1. On the inverter, set the P/I/O switch to OFF and wait until the DC voltage drops below 50V.
2. Disconnect the Power Optimizer from the string **but not from the panel**.
3. Measure the output voltage and record the measurement (Vout).
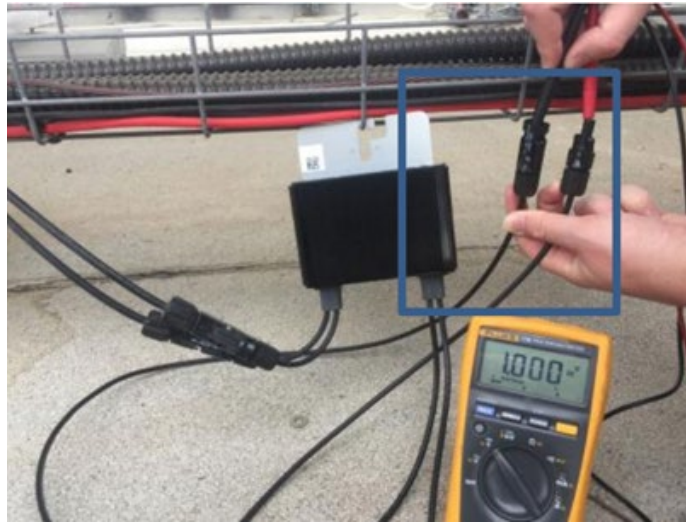
If Vout < 0.6V, replace the Power Optimizer.
If Vout > 1.4V, replace the Power Optimizer.

If Vout is in range 0.6 ≤ Vout ≤ 1.4, disconnect the Power Optimizer from the string and the panel and perform a diode test on the panel.

Testing the PV Panel

1. Set the voltmeter to "Diode".
2. Connect the voltmeter probes to the panel's output.
3. Check for an overload indication.

If you don't get an overload indication, there is a diode fault and the PV panel must be replaced.

If there is no diode fault, measure the Voc of the panel and compare the results to the panel datasheet. If the measurement differs from that specified in the datasheet, there is an issue with the panel and the panel must be checked and might need to be replaced.
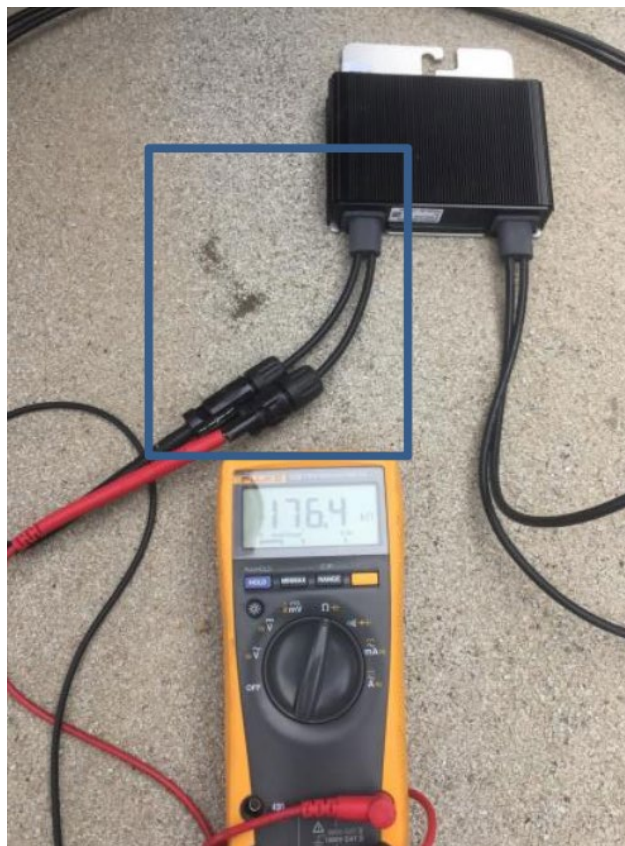
Measuring the Input and Output Resistance Values

Set the multimeter to measure resistance (Ω).

Measuring the Input Resistance

Connect the (+) probe of the Multimeter to the Power Optimizer (+) input connector and (–) probe of the Multimeter to the Power Optimizer (–) input connector and record the value. If the resistance is >100Ω, proceed with measuring the Output resistance. If the resistance is <100Ω, replace the Power Optimizer.

Measuring the Output Resistance

Connect the (+) probe of the Multimeter to the Power Optimizer (+) output connector and (–) probe of the Multimeter to the Power Optimizer (–) output connector and record the value. If the resistance is >100Ω and the problem persists, open a case in the Support portal. If the resistance is <100Ω, replace the Power Optimizer.

Replacing the Power Optimizer

If either the imput or the output resistance of the Power Optimizer is less than 100Ω, replace the Power Optimizer.

After installing and connecting the new Power Optimizer, proceed with the Pairing procedure to ensure that the inverter detects the new Power Optimizer.