Non-Producing Power Optimizer Troubleshooting

Version History

- Version 1.0 (May 2019) - First Release

Introduction

This guide is intended to ensure proper and efficient handling of a non-producing power optimizer in a SolarEdge system. The below procedure should be used **ONLY** in cases of **one single optimizer non-producing** and the values are valid only for power optimizers with a standard safeDC™ voltage of $1V_{dc}$.

In any other case, please contact the SolarEdge Support team.

Step 1: Remote Troubleshooting using the Monitoring Platform

Before issuing a site visit, perform remote troubleshooting. This can fix the problem and may save the truck roll.

1. Check the **Last Measurement** of the non-producing optimizer and write down the date and time.

→ Is the optimizer actually not working or just in a deep shadow in the first half of the day? Are all optimizers not reporting, so the root cause could be the inverter's communication? Also use the optimizer telemetries in the Monitoring tab 'Charts' to further investigate the optimizer.
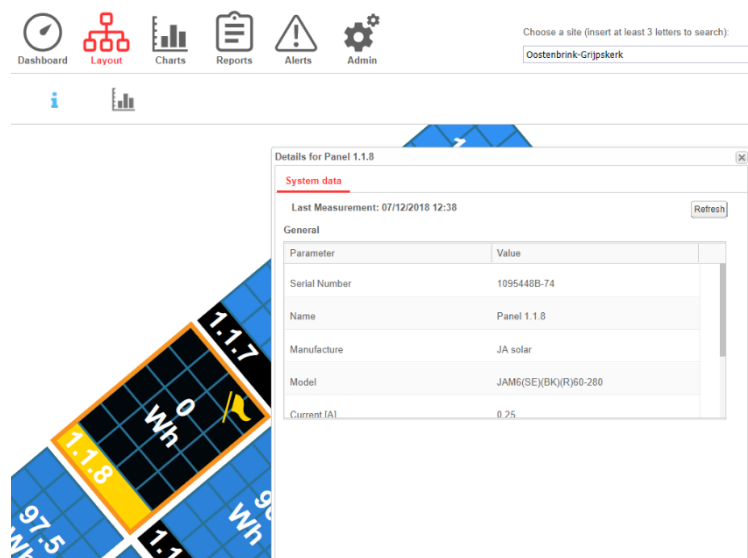
Note: Right-click using your mouse, then select 'Info'.

2. If the optimizer is actually not producing, perform **remote pairing** to the inverter and wait at least 30 minutes.

> **NOTE**
> Perform this step only when all the modules are exposed to sunlight (≥15W/m²).

a. The optimizer is producing, now?
   → The issue is fixed.

b. The optimizer is still not producing?

   a. **Last Measurement** (from Step 1) **< 3 days** from today?
      → Contact SolarEdge Support

   b. **Last Measurement** (from Step 1) **> 3 days** from today or is not present at all?
      → Continue with On-Site Troubleshooting

Step 2: On-Site Troubleshooting

⚠️ **Safety WARNING!**

This guide is intended to aid in troubleshooting of a SolarEdge installation. Persons using this guide should be completely familiar with SolarEdge systems, their concept of operation, safety features, and all applicable safety procedures and requirements. Do not attempt any troubleshooting without adequate safety equipment and a thorough understanding of all procedures.

💬 **NOTE**

In case an optimizer replacement might be necessary, **carrying a spare optimizer** that is compatible to the non-producing optimizer **is recommended**. Verify compatibility to the suspected optimizer in
https://www.solaredge.com/sites/default/files/application_note_intercompatibility_se_power_optimizers.pdf

Required Tools:

- Digital Voltmeter with an accuracy on min. 0,1V
- MC4 disconnect tool (good practice)

Troubleshooting steps:

1. Turn OFF the inverter ON/OFF switch, and wait until you see an indication that the DC voltage is safe (<50V) or wait five minutes before continuing to the next step.
2. Check that the optimizer is not connected in **reverse polarity** or has a **loose connector**. If there is reverse polarity or a loose connection, fix the connection and try pairing again.
3. Disconnect the optimizer from the string and measure the **output voltage** (V_{out}) of the optimizer:

   a. Vout ≤ 0,6Vdc
      → Continue with testing the module

   b. Vout ≥ 3Vdc
      → Replace the optimizer

   c. Vout is between 0,6Vdc and 1,4Vdc
      → Continue with a Diode test, see 'Appendix A'
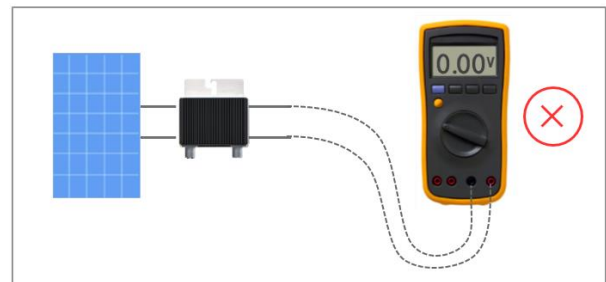
4. Disconnect the optimizer from the module and measure the open **circuit voltage** (Voc) of the module.

   a. Voc < 8 Vdc
      → Module is defective, contact the module manufacturer

   b. Voc ≥ 8 Vdc
      → Replace the optimizer
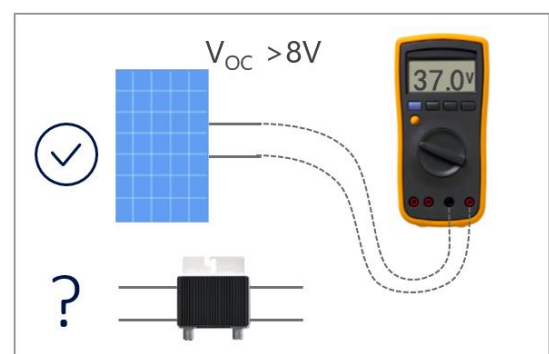
5. After replacing the suspected component, measure **output voltage** (V_{out}) of the optimizer again to verify proper operation.
   → V_{out} must be within 0,6V_{dc} and 3V_{dc} range!

6. Perform **pairing** to the inverter to detect the new optimizer.

Step 3: Documentation of Measurement Results

The proper documentation of all measurements is key for all upcoming steps. It will ensure a highly efficient and very fast case and RMA handling with the SolarEdge Support team. Please also add all relevant photos to the Support case at https://www.solaredge.com/service/support.

Case Number in Support Platform	
Site Name in Monitoring Platform	

Optimizer Serial Number old	
Optimizer Serial Number new	

Optimizer old V_{out}	
Module V_{oc}	
Input / Output resistance Ω	

Technician:	Date, Time:

Appendix A

Resistance Test

Needed Tools:

- Digital Voltmeter with a resistance (diode) test mode

Troubleshooting steps:

7. Measure the resistance between the Plus (+) and Minus (-) connector at the optimizer input cables (the short cables)

8. Measure the resistance between the Plus (+) and Minus (-) connector at the optimizer output cables (the long cables)

    c.   Any of those two measurements show a result of < 100 ohms?
           → Replace the optimizer