



In-Field Soiling Measurement for Operational and Site Assessments

Common Measurements

- PV module soiling
- Soiling rate
- Short circuit current
- Open circuit voltage
- Irradiance
- Back of module temperature
- Air Temperature
- Relative humidity
- Precipitation
- Wind speed
- Surface wetness
- Solar Position

Overview

In response to the increased amount of attention paid to operational assessment of PV power plants, Campbell Scientific has redesigned the popular SMP100 Solar Module Performance system. The SMP100, originally designed for maximum power point measurements of non-inverter tied PV modules, now offers the instrumentation and methodology required for accurate measurement of PV module soiling, defined as the decrease in production as a result of the accumulation of contaminants on the surface of the PV module.

Literature review of the effects of soiling on module performance indicates that empirical soiling losses on the order of 5 to 30% are common on solar utilities throughout the United States, particularly in the Southwestern US. The SMP100 provides O&M decision makers with the information needed to evaluate the financial impact of

soiling on their PV modules. The SMP100 is available as a stand-alone measurement peripheral that can be added to any Campbell-based meteorological station or as a complete system that also includes irradiance and other pertinent measurement devices.

The SMP100 joins our extensive line of high quality, customizable, turn-key measurement solutions for solar and other renewable energy applications. Campbell Scientific renewable energy measurement systems are designed with the understanding of the importance of total measurement system uncertainty and the implications on long term operations and maintenance. Our measurement solutions provide PV performance engineers with the data needed to both validate performance models and determine real world energy yield.



Customizations

The SMP100 is available as a stand-alone measurement platform or can be easily integrated into any Campbell Scientific-based solar MET station. Below are a few solar MET stations that Campbell Scientific offers:

SOLAR1000

CAISO, SCE-Compliant MET Station for PV-system energy tests, capacity testing, and power performance



SOLAR800

Solar Resource Assessment Met Station with Risk Mitigation Performance



RSR100

Solar Resource Measurement Station with Rotating Shadowband Radiometer



SOLAR200

Simple Solar MET Station for commercial and industrial applications

