

Soiling & Irradiance Measurement Kit

Dual RC18 PV Reference Cells

Overview

- Multipurpose dual RC18 PV reference cell kit – a simple and compact solution for measuring both soiling and irradiance
- Your on-site personnel manually wash the labeled “clean” cell on a regular schedule
- Use the clean cell for accurate irradiance measurement and compare the dirty cell to the clean one to calculate soiling ratio

Advantages

- Small, light, low-power, and easy to install
- Easily adapt to fixed-tilt or tracker installations
- Single connection cable for digital option
- No on-site calibration needed and no calibration data to manage – internally calibrated to W/m^2

Soiling Ratio Calculation

- Program your data logger to ratio the daily average dirty cell irradiance to the clean one
- Sample datalogger code available

Reference Cells

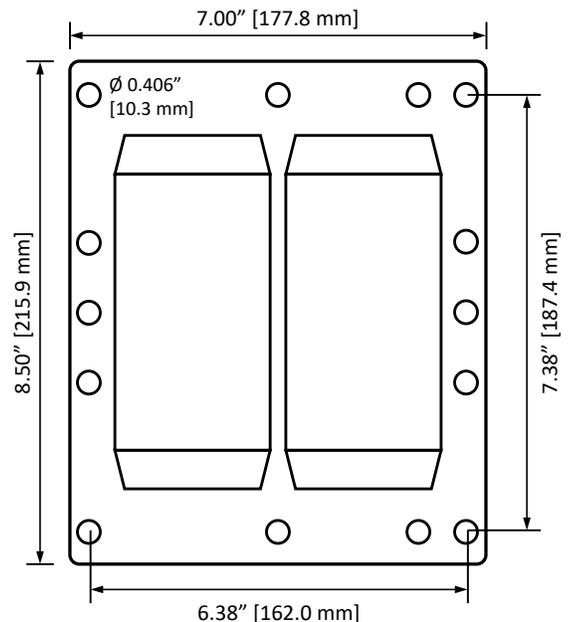
- Uses Atonometrics RC18 Series PV Reference Cells: crystalline silicon PV cells with internal precision shunt resistor and RTD, temperature correction, temperature output, and digital control
- Digital (Modbus RS485) and analog (0-1.5 V, 0-10 V, 4-20 mA) output options
- See RC18 datasheet and user manual

Cables

- Included cable hub box allows powering and communicating using a single cable when using the Modbus RS485 option. For analog options, use two cables, one for each reference cell.
- Various cable length options available

Mechanical

- IP67-rated cast aluminum enclosures
- Aluminum mounting plate



Specifications

Main Data	Product	Soiling & Irradiance Kit – Dual RC18 Reference Cells	
	Irradiance measurement range	0 to 1500 W/m ²	
	Irradiance resolution	0.1 W/m ²	
	Soiling ratio measurement range	0.00 – 1.00	
	Soiling ratio precision	1%	
	Operating temperature	-35 to 80 °C	
	Input power	8-28 VDC (12-28 VDC for 0-10V analog output)	
	PV cell	Crystalline Si, 20 mm x 20 mm	
	PV cell windows	Low-iron solar glass	
	Cell temperature measurement	-40 to 100 °C, RTD	
	Calibration data	Internally calibrated; no calibration data to manage	
	Setup	Optional configuration kit allows PC-based setup	
	Digital	Communication protocol	Modbus over RS485, user-settable Modbus addresses
		Baud rate	Up to 57.6k
Current consumption		Both cells together, typ. 16-30 mA	
Analog	Analog output options	0-1.5V, 0-10V, or 4-20mA	
	Analog output signals (each cell)	Choose 2: Irradiance, Cell temperature, Short-Circuit Current	
	Current consumption	0-1.5V or 0-10V mode: both cells together, typ. 16-30 mA 4-20mA mode, both cells together: 30-110 mA	
	Output impedance	0-1.5V or 0-10V mode: 2 kohm	
	Internal voltage drop	4-20mA mode: Allow 3.5 V minimum	
Enclosures	Material	Powder-coated cast aluminum housing	
	Outdoor rating	IP67	
Dimensions	Dimensions	Mounting plate: 7.00 in. x 8.50 in. / 177.8 mm x 215.9 mm	
	Weight	2.0 lb / 0.9 kg	
	Mounting	Mounting holes dia. 0.406 in. / 10.3 mm, see diagram	
Cable	Type	Shielded, weather resistant, UV-rated, 24 awg / 0.2 mm ²	
	Cable length options	4 m, 10 m, 25 m, 50 m, 100 m, custom	
	Connector	M12 circular connector, IP67	
	Pinout (each cell)	Power, Ground (3x), Analog 1 & 2, RS485 A & B, Shield	
	Single cable option	Included cable hub box for digital options, use a single cable for both cells	
Measurement Specifications	Response time	0.15 s	
	Electronics non-linearity	± 0.03% of range	
	Repeatability	± 0.02% of range	
	Temperature drift, -35 °C to 80 °C	± 0.4% at 1000 W/m ²	
	Cell temperature measurement	± 1 °C	
	Irradiance calibration	± 1.2%, calibrated to NREL-traceable reference standard	
	Overall irradiance uncertainty	± 2.0% @ 1500 W/m ² , ± 2.9% @ 100 W/m ²	
	Stability	0.5% / year	
Standards	IEC 61724-1 Class A, IEC 60904-2, IEC 60904-3, IEC 60904-10 CE		

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