powerwise SOLAR

Dual Reference Cell Soiling Measurement Kit

Measure Soiling by Comparing Clean and Dirty Cells

Kit Part Number

- 810262-22

How It Works

- The kit contains two RC22 PV Reference Cells and labels to designate one as "Clean" and the other as "Dirty."
- Power the reference cells and connect them to your data logger or SCADA system via RS485.
- Read irradiance from each cell by Modbus RTU protocol.
- Use your data logger, SCADA system, or monitoring platform to calculate the sum of "Dirty" irradiance and "Clean" irradiance each day.
- Calculate the Soiling Ratio
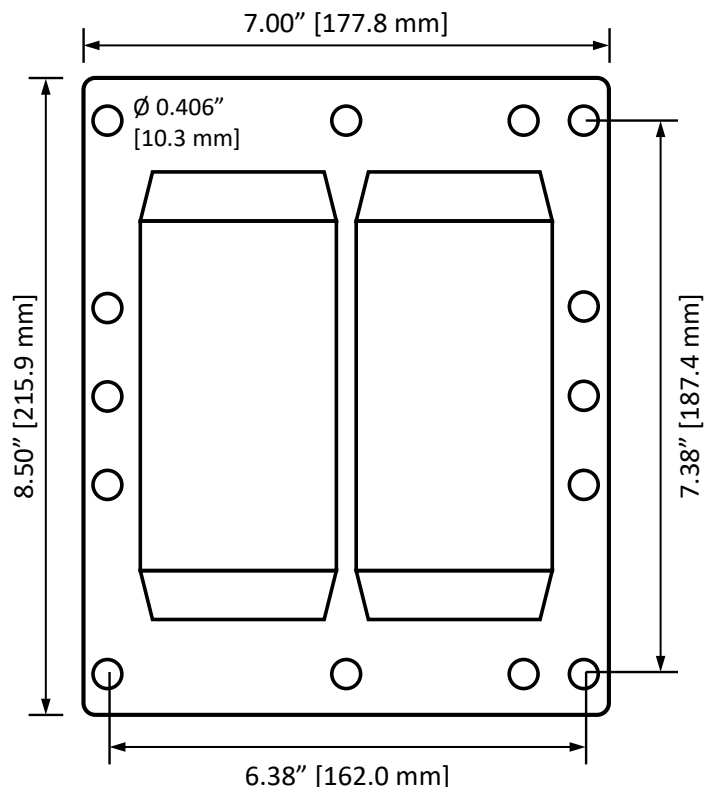
$$SR = C \cdot \sum Dirty / \sum Clean$$

- Set the calibration factor C to get SR = 1.00 when everything is clean upon initial setup.
- Clean the "Clean" cell regularly. We recommend cleaning daily or 2-3 times per week.

Kit Contents

- Two (2) RC22 Reference Cells (810290-01)
- Two (2) RC22 adapter plates
- Mounting Plate
- Y Cable for RC22 connection (830314)
- Bridge Cable (830284-0.50)
- Labels and alcohol wipes for label installation
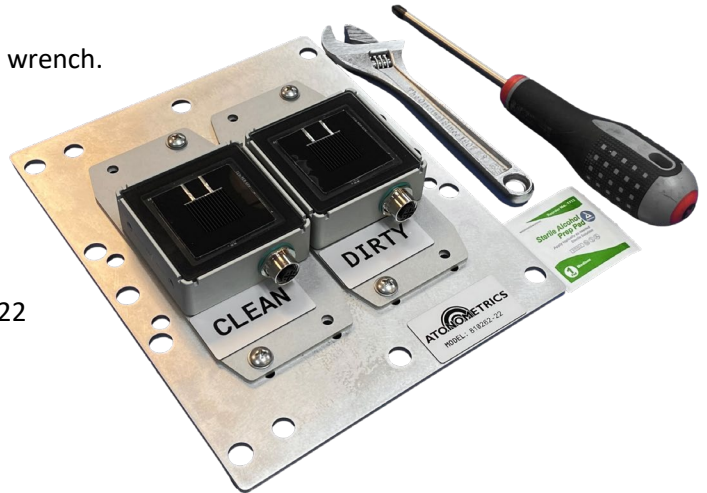
Power and Communication

- 10-30 VDC
- Current consumption 20-30 mA
- Modbus RTU over RS485
- Baud 9600, 19200, 38400, or 57600
- Note: Power & communication cable (830303-xx) ordered separately.

Quick Start Guide

Mount RC22 Reference Cells to Plate

- Tools required: Phillips #2 screwdriver, adjustable crescent wrench.
- Unpack the RC22's from their shipping boxes.
- Remove the pre-attached standard mounting plate from each RC22 and keep the countersunk screws.
- Install the kit adapter plate to both RC22s with the same countersunk screws.
- Use included hardware to mount the adapter plate and RC22 system to the dual cell mounting plate.
- Save RC22 Calibration Certificates for your local files.

Install Labels

- Clean surfaces with the alcohol wipes.
- Install the clean, dirty, and PN labels, as shown.

Configure RC22s

- Use RC22 Configuration Manager Software (500099), available from support.atonometrics.com.
- Refer to RC22 User Guide (880095), also available from support.atonometrics.com.
- Use optional Configuration Kit 810276 (or equivalent) to provide power and communicate to a laptop or PC.
- Configure each RC22 one at a time.
- Set unique Modbus RTU addresses for both RC22s.
- Set RC22s to the same baud rate and data format.

Connect Cables to RC22s

- Connect the 830314 Y cable to the Clean RC22. Use the 830284-0.50 cable to connect the Y cable to the Dirty RC22.
- Check communication: Connect the configuration kit cable to the other end of the Y cable. Use RC22 Configuration Manager to test each RC22 at its own address. (Note: The "Find" button cannot be used with both cells connected. Use "Connect Manually" and enter each cell's address.)
- Connect an 830303-xx cable from the 830314 Y Cable to your data logger or SCADA system. 830303-xx cables are purchased separately and are available in several lengths. Refer to the RC22 User Guide (880095) for more information on cable options.
- Refer to the RC22 User Guide (880095) for wiring the 830303-xx cable.

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