

35W SOILING MEASUREMENT KIT

TECHNICAL PRODUCT SHEET



Overview

NRG's Soiling Measurement Kit provides users with the information needed to quantify the site-specific impacts of soiling caused by dust, snow, and other particles on prospective as well as operating PV projects.

Specifications

Sensor Type	Soiling Measurement Kit 35 W, consisting of: <ul style="list-style-type: none">• Matched pair of 35 W monocrystalline PV modules• (2) NRG PVT1 PV Temperature Sensors
Measurement Range	<ul style="list-style-type: none">• Soiling interface module Isc: 0 A to 15 A• PV temperature: -40 C to +105 C
Output Signal Type	<ul style="list-style-type: none">• Isc: Analog voltage• PV temperature: 10 kΩ NTC thermistor
Accuracy	<ul style="list-style-type: none">• Isc: ± 0.05 A from -40 °C to +85 °C• PV temperature: ± 0.2 °C from 0 °C to 70 °C
Supply Voltage	Soiling interface module: 5 VDC to 28 VDC
Supply Current	Soiling interface module: 2.5 mA maximum
Operating Temp Range	<ul style="list-style-type: none">• Soiling Interface Module: -40 °C to +85 °C• PV temperature sensor: -40 °C to +105 °C

Tools Required

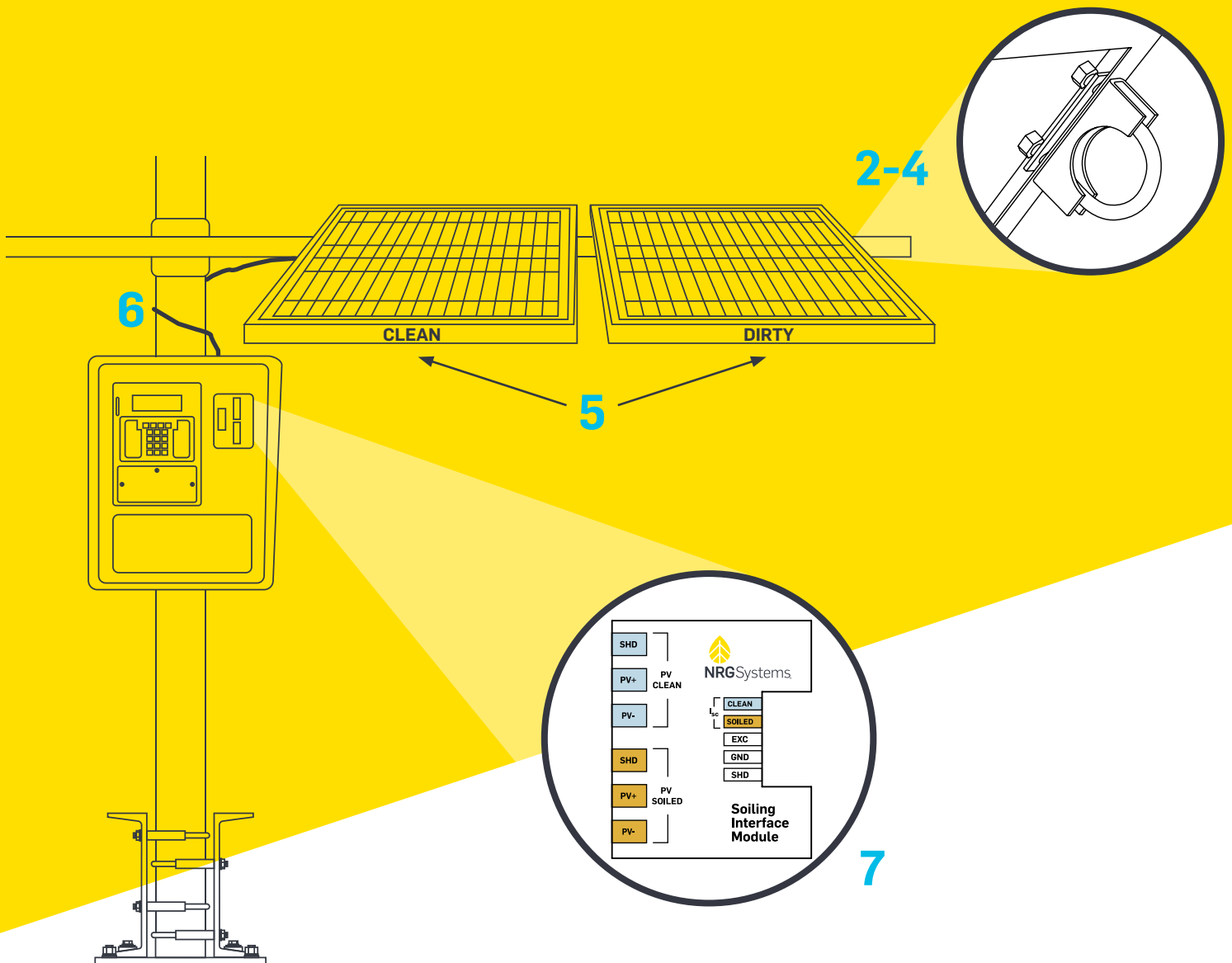
- Ratchet with ½" and 9/16" sockets
- ½" and 9/16" Wrench
- Adjustable Wrench
- Tape Measure, Angle Finder and Level



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35W Soiling Measurement Kit Installation Process

1. Install the Solar Pipe Boom by following the Solar Pipe Boom Instructions.
2. Determine the orientation of the two 35W panels and install the U-bolt mounting hardware.
NOTE: The two panels should be installed in the same orientation. Landscape is preferred but may not be possible depending on the configuration of the tower.
3. Slide the panels onto the Solar Pipe Boom and arrange them side by side. Tighten the U-bolts loosely so the panels stay in place but can be moved.
4. Use an angle finder to set the panels at the desired angle and tighten the U-bolts securely (13 ft-lbs / 17.6 Nm)
5. Install the "Clean" and "Dirty" labels to the edge of the 35W PV panels.
6. Run the PV wires and PVT1 PV Temperature Sensor wires to the logger shelter box.
7. Install the Soiling Interface Module into the shelter box and wire the PV wires into the Clean and Soiled (dirty) terminals. Wire the 4C cable from the interface module to the logger wiring panel.
8. Wire the PVT1 PV Temperature Sensors into the logger wiring panel.
9. Program the SymphoniePRO Data Logger: **See next page**





9 SymphoniePRO Logger Programming

Use the SymphoniePRO Desktop Application to program the sensor settings into the data logger:

Description: Isc Clean
Serial Number:
Height: 1.65 Meters
Boom Bearing: 180 Degrees
Sensor Transfer Function
Scale Factor: 3.125 Amps per V
Offset: 0 Amps
Units: Amps

ISC MEASUREMENT (example on channel 18)

1. Enable Channel
2. Enter "Isc Clean" in the Description
3. Enter the height of the module
4. Enter Scale Factor: 3.125
5. Offset: 0
6. Units: Amps
7. If installed on Ch. 16-19, set Excitation settings:
 - Mode: Constant On
 - Voltage: 12 V
8. If installed on Ch. 20-26, use P-SCM #9132
9. Repeat this process on channel 19, but with a description of "Isc Dirty"

Description: PV Temp Clean
Serial Number:
Height: 1.65 Meters
Boom Bearing: 180 Degrees
Sensor Transfer Function
Scale Factor: 1
Offset: -273.15
Units: C

BACK OF MODULE TEMPERATURE (example on channel 20)

1. Choose "NRG PVT1 PV Temperature Sensor" from the Defaults drop down menu
2. Edit the Description to "PV Temp Clean"
3. Enter the PVT1 sensor serial number
4. Enter the height of the sensor
5. Repeat this process on channel 21, but with a description of "BoM PV Temp Dirty"

Description: Soiling Ratio
Units: Ratio
Calculation Sources
Numerator Source: Channel: 19 - Isc Dirty
Denominator Source: Channel: 18 - Isc Clean

SOILING RATIO (example on channel 100)

1. Choose Calculation Type "Ratio"
2. Edit the Description to "Soiling Ratio"
3. Enter the Units as "Ratio"
4. Numerator Source: choose the "Isc Dirty" channel
5. Denominator Source: choose the "Isc Clean" channel

For more information: