

DustVue™20

Solar-Module Soiling Sensor
with a Full-Size PV Module



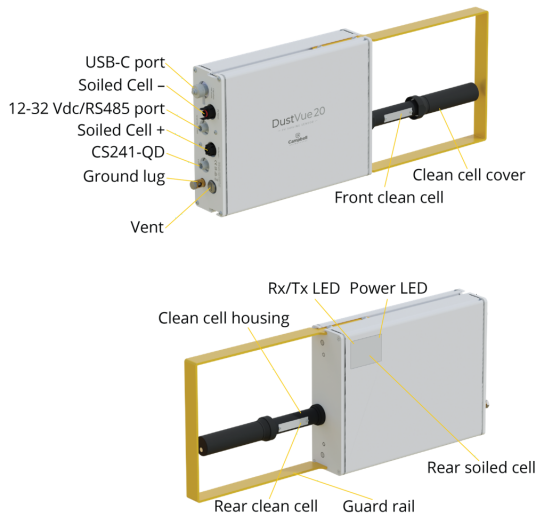
Revision Date: 10/2026

IMPORTANT NOTE: This Quick Deploy Guide is meant to be a general reference to give the installer an overview of the steps required to make this system operational. The product manual is the definitive source for detailed installation instructions and information.

Scan for info:



DustVue 20 components



Power LED

LED state	Description
Off	No power
1 flash every 10 seconds	Fully powered system, sensor configured
3 flashes every 10 seconds	Powered using USB, sensor configured
Always on	Powered but sensor not configured
Flashing red and blue	Firmware issue; contact Campbell Scientific

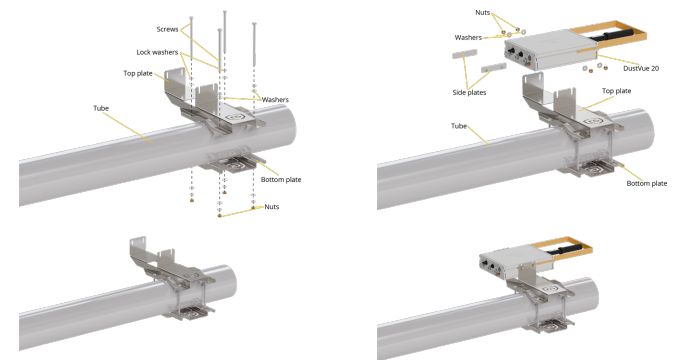
Installation

Attach the CS241-QD sensor, connect it to the DustVue 20, and install it on a PV module. For details, see the [CS241 manual](#).

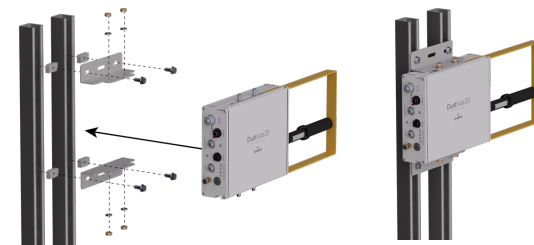


There are three optional mounting options: a torque tube mount, Unistrut mount, and crossarm mount. For details, see the [DustVue 20 manual](#). For a video demonstration of mounting the DustVue 20 on a torque tube, see: [Installing the DustVue 10](#).

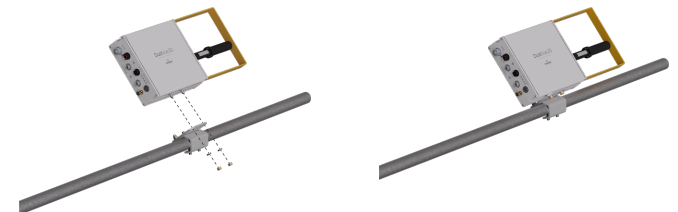
Torque tube mount



Unistrut mount



Crossarm mount



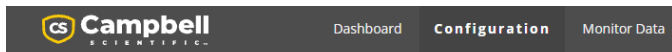
Wiring

Pin	Wire function	Data logger connection ¹	Power supply connection
1	Power in 12 to 32 VDC	NC	+
2	RS-485 (B+)	C Even	
3	RS-485 ground	G	
4	Power ground	NC	-
5	RS-485 (A-)	C Odd	

¹ Assumes the sensor directly connects to the data logger.

QuickStart

1. **Connect** the DustVue 20 to a computer using a USB-C cable (not included). Charging-only USB cables cannot be used for communication with the device.
2. **Open a web browser** and in the address bar type www.dustvue.linktodevice.com (or 192.168.96.1) to access the web user interface (Web UI) of the sensor for easy configuration.



Configuration



3. **Configuration:** On first use, navigate to the **Configuration** tab.
 - a. Enter the device **parameters. Name, Latitude, Longitude, Altitude**, and **UTC Offset**. These are necessary for correct solar noon calculation and proper device operation.

Parameters

Name 

Latitude 

Longitude 

Altitude (m) 

UTC Offset (hrs) 

- b. Click the **Measurements** tab to configure the **Soiling Measurement Settings** and **Solar Panel Settings**. Click on the info icon to display information on these settings.

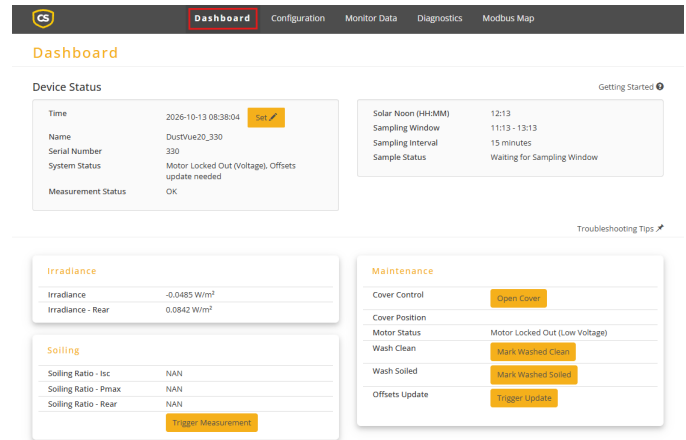
The screenshot shows the Measurements tab in the Configuration page. It contains two main sections: Soiling Measurement Settings and PV Module Settings. The Soiling Measurement Settings section includes fields for Sampling Window (hrs), Sampling Interval (min), and Irradiance Threshold (W/m²). The PV Module Settings section includes fields for Short Circuit Current (Isc) STC (A), Nominal Max Power (Pmax) STC (W), Temperature Coefficient (Isc) (%/°C), Temperature Coefficient (Pmax) (%/°C), Bifacial, and Power Bifactoriality (Pmax_year / Pmax_front) (%). There are also warning messages for bifacial modules.

- c. Click the **Communications** tab. Make sure the settings of the sensor for the serial port are correct, and that the Modbus ID matches the Modbus address expected by the Modbus client.
- d. Click **Apply** after entering the values. The sensor will initialize after confirming your choices in the pop-up window.

Configuration



4. **Dashboard:** Navigate to the dashboard to see live sensor status, solar noon, sampling window, sampling interval, irradiance, and the most recent soiling ratio sample. The irradiance will update once per minute. Status messages indicate when next sample will be attempted. The soiling ratio will be NAN until a sample is taken.



- a. **Time:** Set the time by clicking **Set**. Set it to local standard time. The clock can be synchronized with the computer clock or entered manually. The device time can also be set using Modbus registers 40103 to 40113. We recommend programming a periodic clock set in your data acquisition or SCADA system. *NOTE: Setting the device clock to the correct local time inputting the corresponding UTC offset is necessary for correct solar noon calculation and proper device operation.*
- b. If desired, click **Trigger Measurement** under **Soiling** to force a soiling ratio measurement. The measurement will happen at the top of the minute.

NOTE:

- **Sampling Interval:** Samples cannot occur more frequently than every 15 minutes. If triggered sooner, the system waits for the minimum interval to elapse.
- **Power:** The cover will not open if the device is powered only by USB.
- **Accuracy:** The soiling ratio will not be accurate until after an Offsets Update has been performed (See next step).

- c. **Offsets Update/Correction:** The Offsets Update calibrates the soiled module against the clean reference cell. To get accurate measurements, this update must be performed on site, after proper mounting and cleaning, when the sky is clear, and within ± 1 hr of solar noon. This self-calibration procedure should be performed throughout the year. It is needed at least four times per year.
 - i. Click **Open Cover** to expose the reference cells.
 - ii. Clean the front and rear reference cells.
 - iii. Click the **Cover** button again to close the cover. The cover will automatically close after 5 minutes if the button is not pressed.
 - iv. Click **Wash Clean>Mark Washed**. This will log the cleaning date and time in a Modbus register.
 - v. Clean the front and rear soiled cells
 - vi. Click **Wash Soiled>Mark Washed**.
 - vii. Click **Trigger Update** to trigger an **Offsets Update**. The **Dashboard** will indicate the Offsets Update status. If the Offsets Update is triggered outside ± 1 hour of solar noon, the sensor will wait until the next ± 1 hour period. If the irradiance threshold condition is met, the calibration will begin at the top of the minute. The cover will open and stay open for about 1.5 minutes while the update completes. If the sensor detects instability, the cover will close and the update will be attempted again at the next minute.

5. The **Modbus Map** tab on the **web UI** displays the current Modbus map of the sensor.

