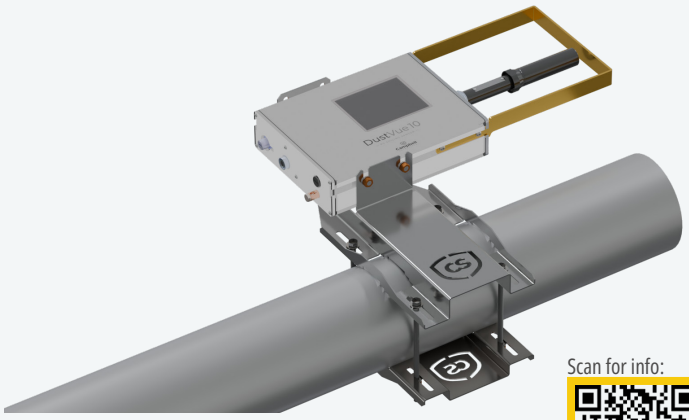
Campbell SCIENTIFIC | QUICK DEPLOY GUIDE

DustVue™10

Solar-Module Soiling Sensor with Collocated PV Cells



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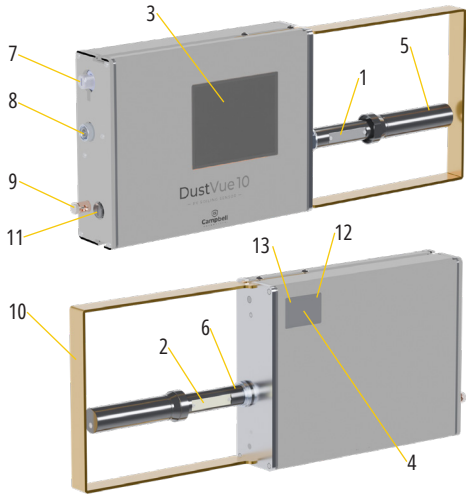
IMPORTANT NOTE: This Quick Deploy Guide is meant to be a general reference to give the installer an overview of the steps required to make this system operational. The product manual is the definitive source for detailed installation instructions and information.

DustVue 10 Components

1. Front clean cell
2. Rear clean cell
3. Front soiled cell
4. Rear soiled cell
5. Clean cell cover
6. Clean cell housing
7. USB-C port
8. M12 5-pin port
9. Ground lug
10. Guard rail
11. Vent
12. Power LED
13. Tx/Rx LED



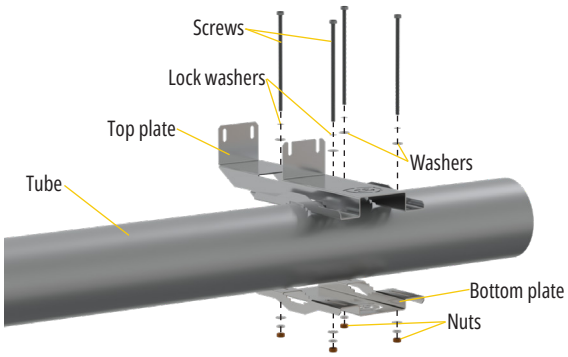
Power LED

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

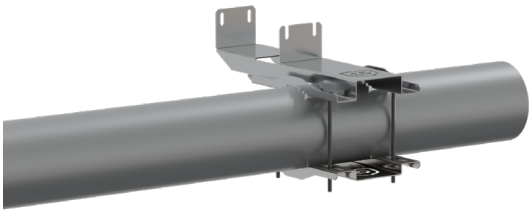
Installation

The DustVue 10 is used for solar resource assessment as well as operational performance monitoring. For solar resource assessment applications, the DustVue 10 should be installed in an appropriate plane of array or horizontal position. The mounting bracket built into the top and bottom plates allows the DustVue 10 to be mounted on both round and square torque tubing.

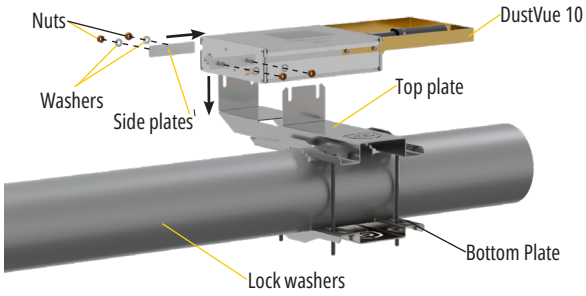
1. Attach the top and bottom plates to the tracker torque tube by using the four screws, four nuts, eight washers, and eight lock washers.



2. Verify the top plate is installed in an appropriate plane of array or horizontally, as required.



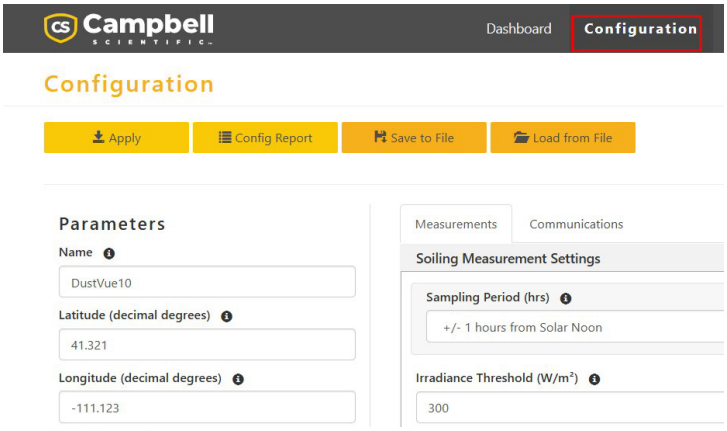
3. Slide a slide plate into the groove on either side of the DustVue 10 with the bolts facing out.



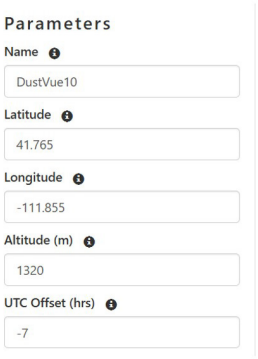
4. Insert the bolts on one slide plate into the outer bracket of the top plate. Rest the bolts on the opposite slide plate in the open slots of the inner bracket on the top plate.
5. Loosely fasten the two side plates to the top plate with four washers and four nuts. Position the DustVue 10 so the rear sensor is not blocked by the top bracket. Secure the DustVue 10 in place by tightening the four nuts on the side plates.

Quick Start

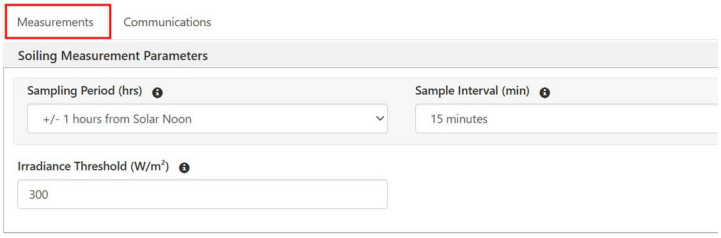
1. Connect the DustVue 10 to a computer using the USB-C cable (included). ***NOTE:*** *A Campbell Scientific data logger and DustVue 10 should not be connected to the computer at the same time.*
2. Open a web browser and in the address bar type www.linktodevice.com (or 192.168.66.1) to access the web user interface (Web UI) of the sensor for easy 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.



   b. Click the **Measurements** tab and configure the **Soiling Measurement Parameters**: **Sampling Period (hrs)**, **Sample Interval (min)**, and **Irradiance Threshold (W/m²)**. Click on the info icon to display information on these settings.



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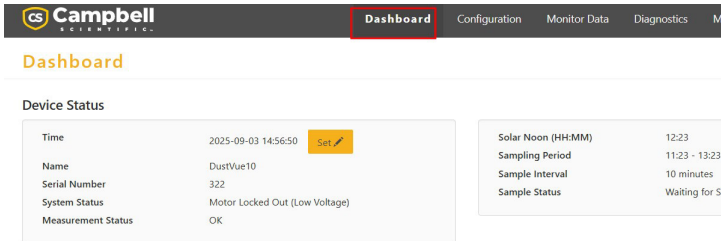
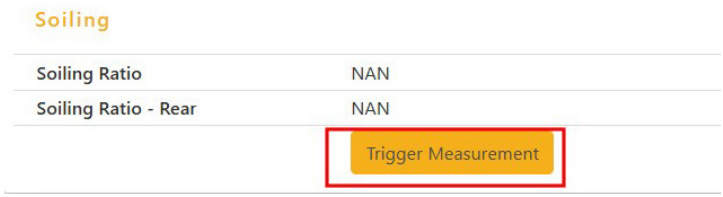
   c. Click the **Communication** tab. Make sure the settings of the sensor for the serial port are correct, and that the Modbus ID matches the Modbus address expected by the Modbus client.
   d. Click **Apply** after entering the values. The sensor will initialize, after confirming your choice in the popup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

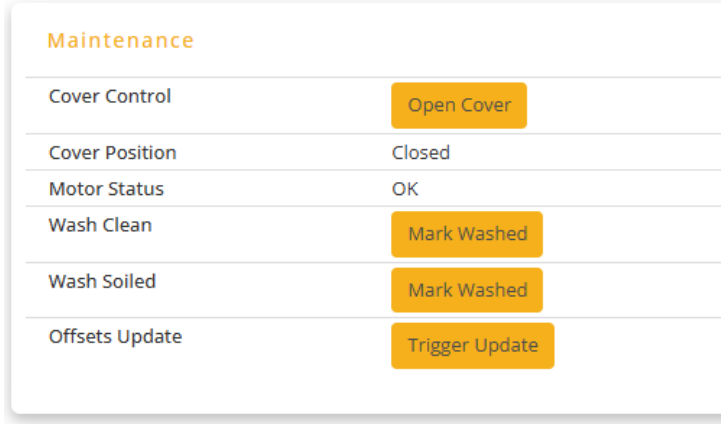
4. **Dashboard**: Navigate to the dashboard to see live sensor status, solar noon, sampling period, sample interval, and live irradiance values. The irradiance will update once per minute.



   a. **Time**: Set the time to local standard time by clicking **Set**. The clock can be synchronized with the computer clock or entered manually. (The device time can also be set using Modbus registers.) *Note: setting the device clock to the correct local time is necessary for correct solar noon calculation and proper device operation.*
   b. Click **Trigger Measurement** under **Soiling** to force a soiling ratio measurement to verify the sensor operation, if desired. The measurement will happen at the top of the minute. Note that the cover will not open if the device is powered only by USB. The soiling ratio will not be accurate until after an offset update has been performed. (See next step.)



   c. **Offset Update/Correction**: Perform this calibration when the sky is clear, within +/-1 hr of solar noon, and after the DustVue 10 has been properly mounted.



      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 **Offset Update**. The offset update will calibrate the soiled cells against the clean reference cell. The messages on the dashboard will indicate the offset update status. The calibration will begin at the top of the minute, within ±1 hour of solar noon, if the irradiance threshold condition is met. If the offset update is triggered outside this time period, the sensor will wait until the next ±1 hour period and try again. This self-calibration procedure is needed no more than four times a year.

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