CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

Solar1000
Solar Monitoring System

High Accuracy
Operational MET Station for Solar Energy Producing Utilities

Common Measurements

- Global Horizontal Irradiance (GHI)
- Plane of Array Irradiance (POA)
- Back of Solar Panel Temperature
- Air Temperature
- Relative Humidity
- Barometric Pressure
- Wind Speed
- Wind Direction
- Precipitation
- Solar Position

Overview

The Solar1000 is a turn-key solar measurement data acquisition system specifically designed to meet CAISO standards for solar monitoring applications, including resource assessment and power performance monitoring.

Though offered as a turn-key package, the Solar1000 retains the powerful, modular nature of the Campbell Scientific product line. Nearly every aspect of the system is **customizable**, including sensors, communications, mounting, and power supply.

Benefits and Features

- ❭ Contains a Campbell Scientific CR1000 Measurement and Control Datalogger
- ❭ Approved California ISO Remote Intelligent Gateway (RIG) for secure encrypted information transmission to CAISO
- ❭ Provides a modular, programmable, and customizable system
- ❭ Designed to meet CAISO required meteorological data points
- ❭ Factory fabrication, programming, and testing minimizes field wiring errors and reduces deployment time
- ❭ Provides a battery back system that allows data collection during power outages and network failure

- ❭ Acts as single point data gateway for environmental, inverter, and meter data
- ❭ Supports nearly all communication technologies such as RS-485, fiber, TCP/IP, cellular, satellite, or radio
- ❭ Complies with Modbus, PakBus, and DNP3 protocols
- ❭ Supports TCP/IP functionality, including: HTTP protocol and web server, FTP server & client, TelNet server, PING, Micro serial server, DHCP client, email send and receive
- ❭ Supports Web Service API graphical interface
- ❭ Supports individual module and/or string level power measurements

Default Components

1 CR1000 Measurement and Control Datalogger

2 NL120 Ethernet Interface

3 CMP11-L ISO Secondary Standard Pyranometer (2)

4 Solar Panel

5 034B-L Wind Speed and Wind Direction Set

6 CS100 Barometric Pressure Sensor

7 CS215-L Temperature and Relative Humidity Sensor

8 PWENC16/18 Prewired Enclosure, 16 by 18 inches

9 CH200 Smart Charge Controller

10 BP12 12 Ahr Battery Pack

11 UT10 10-ft Tower

12 CM204 4-ft Crossarm with Bracket

13 TE525 Tipping Bucket Rain Gage
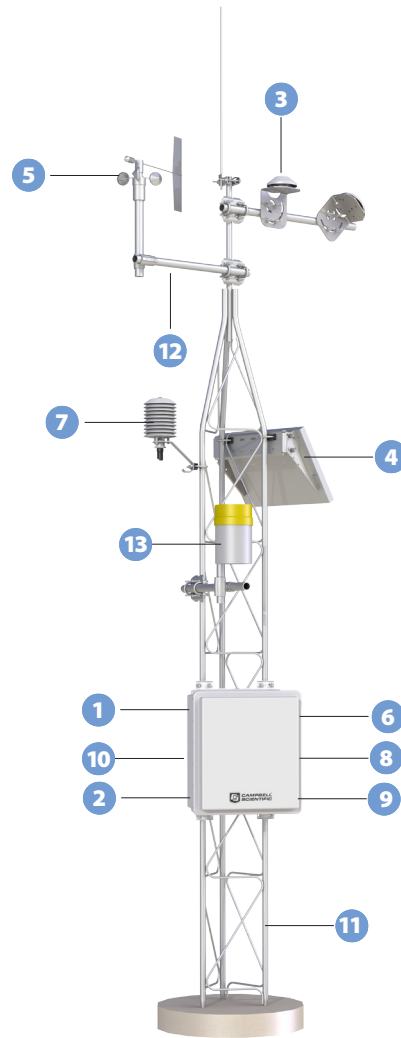
Customizations

The Solar1000 is completely customizable, allowing you to configure the station to your project's specifications, while retaining turn-key functionality. The following outlines a few of the changes that can be made and other components that are available:

Sensors

Sensors can be removed, added, or swapped out with models that meet your project's requirements.

❯ CMP11, SR20, MS-802, or PSP Secondary Standard Pyranometers

❯ CMP3 or LP02 Second Class Pyranometer

❯ CMP6, SR12, or 8-48 First Class Pyranometer

❯ CVF3 or VEN Ventilation Unit

❯ CS220-L Back of Module Thermocouple

❯ TE525-L Rain Gage

Communications

Communication options include Ethernet, cellular, fiber, radio, RS-485, satellite, and telephone.

❯ RavenXT Cellular Modem

❯ NL201 Network Link Interface (for CAISO Remote Intelligent Gateway applications)

Power

The station can be powered by AC and/or DC power sources such as 24 VDC from an inverter. Solar panels can provide a charging source. Batteries are sized according to demand and location.

❯ SP20 20 W Solar Panel

❯ 26963 AC/DC 24 VDC Power Adapter

❯ UL508A Option

Mounting

We offer a variety of tower sizes and instrument tripods for permanent or quick-deploy applications. Several sensor mounting options are available to change the default mounting configuration.

❯ UT10/20/30 10/20/30 ft Instrumentation Towers For Permanent Installations

❯ CM110 10-ft Stainless-Steel Instrument Tripod

❯ CM106 7-to-10 ft Galvanized-Steel-Tubing Tripod

Measurements

Several parameters are easily integrated.

❯ DC Current and Voltage (string and/or module)

❯ Visibility, Present Weather

❯ Electric Field

❯ Cloud Height

❯ Short Circuit Current

❯ Module Soiling

❯ Surface Moisture