



Mesonet Weather Stations

Configure a station that meets your application's exact needs



Flexible Configurations

Unmatched reliability

Measurements

- Temperature (air, water, soil)
- Solar radiation
- Relative humidity
- Precipitation
- Snow depth
- Wind direction
- Wind speed
- Barometric pressure
- Soil moisture
- Fuel moisture

Overview

Campbell Scientific weather stations have become the world-wide standard for meteorological and climatological monitoring. In use on every continent and virtually every country, our weather stations are known for their precision measurement capability, rugged construction, wide operating temperature range, and low power consumption. Campbell Scientific weather stations offer the flexibility to easily

change sensor configurations, data processing, and data storage and retrieval options.

The flexibility of our products allows you to select only the components you need, in the quantity you need to customize your own weather station.

Sensors

Campbell Scientific offers high quality sensors for measuring the parameters listed below. These sensors interface directly to our dataloggers. If measurement needs are specialized, our dataloggers' analog, pulse counter, and digital inputs are compatible with sensors offered by most manufacturers.

- › **Wind Speed:** cup, propeller, or sonic anemometers.
- › **Wind Direction:** vanes containing precision potentiometers or sonic anemometers. A single sensor assembly may measure wind speed and direction.



- › **Solar Radiation:** silicon cell or thermopile pyranometers, quantum sensors, or net radiometers.
- › **Temperature (air, water, soil):** thermistors, thermocouples, or RTDs.
- › **Relative Humidity:** capacitive sensors that use integral signal conditioning. RH and air temperature sensors are typically housed in a single body.
- › **Precipitation:** tipping bucket rain gages. Also offered snowfall conversion adapters that uses antifreeze or a heater.



More info: 435.227.9120

campbellsci.com/weather-climate



Dataloggers/Campbell Distributed Modules (CDMs)

Our weather stations are based around a programmable datalogger that measures sensors and stores data, in your choice of engineering units (e.g., wind speed in mph, m s⁻¹, knots). Sensor measurements are often processed and stored as hourly and daily tables (e.g., maxi-

mums, minimums, averages). The datalogger also supports conditional outputs, such as rainfall intensity. CDMs increase the datalogger channel count, add datalogger functionality, and improve measurement quality.

MAJOR SPECIFICATIONS

CR6* | One Datalogger, Countless Applications

Powerfully versatile multi-tool for data acquisition; onboard vibrating-wire measurement



**The number of measurements listed in the Channels column assumes all of the U and/or C channels are configured for that type of measurement.*

CDM-A116 | 16-Channel, 5 V Analog Input Module

24-bit analog-to-digital converter



CR1000 | RuggedVersatility

Multipurpose Monitoring and Control



CR300/CR310 | Capable, compact, low cost, high functionality

Small applications requiring long-term, monitoring and control



Channels	Input Voltage Range	Analog Voltage Resolution	A/D Bits
12 universal (U) and 4 control (C) terminals are programmable to measure up to: 12 single-ended (SE) analog inputs 6 differential (DF) analog inputs 16 pulses 12 voltage switched excitation 12 current switched excitation 2 RS-232 2 RS-485 16 I/Os 8 SDI-12	±5000 mV	to 50 nV	24
Analog: 16 DF or 32 SE Voltage/Current Excitation: 4 Switched 5 V: 4 Switched 12 V: 4 12 V: 2	±5000 mV	to 20 nV	24
Analog: 16 SE or 8 DF Pulse: 2 Switched Excitation: 3 voltage Digital: 8 I/O or 4 RS-232	±5000 mV	to 0.33 µV	13
Analog Voltage: 6 SE or 3 DF Analog Current 4 to 20 mA: 2 Pulse: 2 Switched Excitation: 2 voltage Digital: 2 I/O	-100 to 2500 mV	to 0.23 µV	24

Data Retrieval

We offer multiple communications options for data retrieval, which can be mixed within the same network. Telecommunications options include short-haul, telephone (landline, voice-synthesized,

cellular), radio frequency, multidrop, Internet/IP, and satellite. On-site options include storage module, field display, and laptop.

MAJOR SPECIFICATIONS

RV50 | Sierra Wireless

4G LTE Cellular Gateway



NL240 | Wi-Fi Network Link

Wireless Network Link



TX321 | GOES or

Meteosat Transceiver



Transmission Distance or Area	Current Drain @ 12 Vdc	Service Requirements
Dependent on antenna used and LTE, CDMA/EV-DO, and GSM/GPRS/EDGE/WCDMA coverage	1 mA typical enable/ignition sense low 65 to 95 mA typical idle 250 to 300 mA typical active	Network coverage at the datalogger site and account at Verizon, AT&T, T-Mobile USA, Rogers, Bell, or Telus
Worldwide	79.2 mA maximum 1.3 mA sleep	Wi-Fi hotspot (access to standard 802.11b/g/n networks)
GOES: North America Meteosat: Europe	<5 mA, idle <100 mA, during GPS fix <2.6, transmit	Need formal permission (see http://noaasis.noaa.gov/DCS for GOES applications or www.eumetsat.int for Meteosat). GOES applications need to be a U.S. government agency or sponsored by such an agency.

Power Supply

The power supply consists of either a set of alkaline batteries or a sealed, rechargeable battery; the rechargeable battery can be recharged via solar panel or ac power. Campbell Scientific offers a range of batteries, solar panels, and chargers to meet the needs of your specific application. Weather stations with



high current drain peripherals (satellite, cellular phone) may require one of our larger capacity batteries.

- › **BP84 84 Ah, 12 V Rechargeable Battery:** Requires a regulated charging source such as the CH200 smart charge controller connected to the SP20 20 W solar panel
- › **CH201 Smart 12 V Charging Regulator:** Manages amperage and voltage during battery charging and measures battery parameters.
- › **SP20 20 W Solar Panel:** Allows unattended operation of systems in remote locations that are far from ac electrical sources.

Tripods and Towers

Our corrosion-resistant tripods and towers provide sturdy support for sensors, solar panels, and enclosures. We have galvanized-steel tripods with 6- or 10-foot heights, stainless-steel tripods with 10-, 15-, or 20-foot heights, and towers with 10-, 20-, or 30-foot heights. Mounts for attaching wind sets, pyranometers, temperature and relative humidity sensors are available.

- › **CM110 10 ft Stainless-Steel Tripod:** Provides a portable mount with individually adjustable legs that allow installation over uneven terrain.
- › **UT30 30 ft Tower:** Ideal for regional Mesonets, where the 9.14 m (30 ft) measurement height for wind sensors is standard.

Enclosures

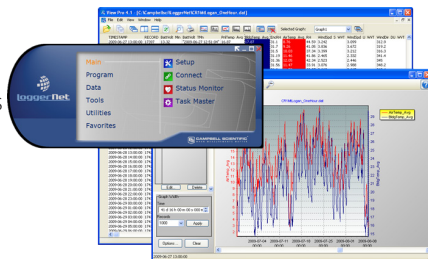
Environmental enclosures house the datalogger, power supply, data retrieval peripherals, and a barometer. The enclosures provide protection from dust, humidity, precipitation, sunlight, and environmental pollution. Our enclosures are UV-stabilized and reflect solar radiation. Enclosures can be customized for cable-entry openings or mounting brackets for our tripods or towers.

- › **ENC16/18 Weather-Resistant Enclosure:** Houses and protects a datalogger, a power supply, and at least one peripheral. Internal dimensions are 45.7 x 40.6 x 22.9 cm (18 x 16 x 9 in).



Software

PC-based software is available for datalogger programming, data retrieval, and report generation. You can modify the program at any time to accommodate different sensor configurations or data processing requirements. The datalogger has programmable execution intervals, on-board instructions for commonly used sensors,



and adequate input channels to accommodate all standard sensor configurations. Use of measurement and control peripherals can expand the datalogger's capabilities.

- › **LoggerNet Datalogger Support Software:** Includes tools for programming, communications, and data retrieval between dataloggers and a PC. LoggerNet supports connection to a single datalogger and large datalogger networks
- › **LoggerLink Mobile Field Tool for iOS and Android:** Lets you view and collect data from our datalogger reachable via IP, using your iOS or Android device. It is available free of charge from the Apple and Google Play stores.



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