CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

Earth Science

Measurement instrumentation for soil and earth applications

Campbell Scientific stand-alone data acquisition systems are versatile, rugged, and powerful—factors that make them ideal for earth science applications. Our systems can monitor tilt, temperature, pressure, convergence, displacement, geographic position (GPS receivers), strain, load, vibration, level, flow, creep, and force. The systems can also measure meteorological and hydrological parameters, thus capturing data relevant to cause-and-effect relationships.

MAJOR SYSTEMS

	Measurements	*Datalogger*	*Power*	*Communications*
ET107 | Evapotranspiration Monitoring Station For commercial agriculture, irrigation, scheduling, and meteorological applications 	Standard wind speed, wind direction, air temperature, precipitation, relative humidity, barometric pressure, solar radiation Optional soil volumetric water content, soil electrical conductivity, soil temperature	CR1000	Standard 12 Vdc, 7 Ah battery re-charged with 10 W solar panel or ac power Optional PS24 24 Ah, 12 Vdc Power Supply	Standard short haul modem, phone modem Optional cellular, spread spectrum radio, Ethernet interfaces, voice synthesized modem
TDR200-Based | Time-Domain Reflectometry Non-destructive in-situ soil measurements 	soil water content, soil electrical conductivity, rock mass deformation, cable integrity, water level detection	CR6, CR1000X, CR1000, CR3000, CR800, CR850	Typically datalogger's sealed rechargeable 12 Vdc battery recharged by a 10 W solar panel.	cellular, DNP3, email, fiber optic, field display, FTP, Modbus, NTCIP, radio, satellite, serial, TCP/IP, Wi-Fi
HS2 HydroSense II | Soil Moisture Measurement System Fast and Portable 	soil water content	NA (stand alone system)	6 Vdc, 4 AA batteries	handheld display, bluetooth
HS2P HydroSense II with Insertion Rod | Soil Moisture Measurement System Fast and Portable 	soil water content	NA (stand alone system)	6 Vdc, 4 AA batteries	display, bluetooth

Custom Systems

Most of the systems we sell are customized. Tell us what you need and we'll help you configure a system that meets your exact needs.

Dataloggers

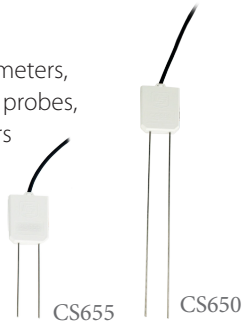
We offer a range of dataloggers, from the most basic system with just a few channels to expandable systems that measure hundreds of channels. Scan rates can be programmed from a few hours to 100,000 times per second, depending on the datalogger model. Non-volatile data storage and a battery-backed clock ensure data capture and integrity. The control functions of our dataloggers allow them to sound alarms and control devices based on time or measured conditions.

Sensors

The versatility of our systems begins with sensor compatibility—they can measure virtually every commercially available sensor—allowing them to be used in a variety of ways for a variety of measurements. Our dataloggers have many channel types and programmable inputs including analog (single-ended and differential), pulse counters, switched excitation, continuous analog output, digital I/O, and anti-aliasing filter. Our dataloggers have input resolutions to 0.16 microvolts, allowing strain measurements with a resolution of a single micro-strain.

Typical Sensors

- Time-domain reflectometers
- Carlson strain meters
- Meteorological sensors including anemometers, vanes, temperature and relative humidity probes, tipping bucket rain gages, and barometers
- Vibrating-wire strain gages
- Foil strain gauges (in quarter-, half-, or full-bridge strain configurations)
- Soil water content reflectometers
- Soil water matric potential sensors



- Crack and joint sensors
- Tilt sensors and inclinometers
- GPS receivers
- Piezoresistive, piezoelectric, borehole, and servo force balance accelerometers
- Hydrologic sensors such as current meters, specific ion probes, turbidity sensors, dissolved oxygen sensors, samplers, and a variety of submersible pressure transducers
- Wireless sensors

Applications

The open design of our systems allows them to be used in a broad range of applications:

- Agriculture and plants
- Composting
- Ecology
- Landfills
- Permafrost
- Soil science and soil moisture
- Dam monitoring—structural
- Slope stability
- Mining
- Seismic
- Pavement and roads
- Volcanology

Our loggers monitor permafrost thermal state (www.campbellsci.com/canadian-permafrost)

Seepage is monitored for a concrete/earthen dam (www.campbellsci.com/wolf-creek)

Campbell TDR system monitors slope stability (www.campbellsci.com/slope-monitor)

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