



Building Research

Monitoring and control systems for building research



Campbell Scientific data-acquisition systems are an important part of building-research projects. Our systems provide remote, unattended, portable monitoring for temperature, relative humidity, solar radiation, wind speed, wind direction, power consumption, water

consumption, vibration, load, and pressures, all at multiple locations. They are compatible with a wide variety of sensors and peripherals to fit your exact needs.

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

We manufacture many sensors ourselves and offer a wide variety made by other manufacturers. Since our dataloggers are com-

patible with most available sensors, you have the flexibility to customize a monitoring system to your site.

Communications

We offer multiple communications options for data retrieval, which can be mixed within the same network. Communications options for reporting site conditions include Wi-Fi, Ethernet, short-haul, telephone (land line, voice-synthesized, cellular), radio

frequency, and multidrop. The system can be monitored and controlled by an on-site or remote computer. You can even post your data on the Internet.

More info: 435.227.9120

campbellsci.com/building-structures



Applications



The construction of the Research and Test Facility in Fairbanks, Alaska presents many foundation and structural challenges because it is built on an area with underlying permafrost.

HVAC

HVAC systems monitor humidity, flow rates, indoor temperature, outdoor temperature, differential pressures, and equipment status. These systems can activate and control proportioning valves, boilers, heat-exchange units, pumps, blowers, air handlers, and alarms.

Example System

In a typical HVAC system, sensors monitor relative humidity, flow rates, indoor temperature, outdoor temperature, differential pressures, and equipment status. Based on the measurements and the desired outcome, the dataloggers actuate proportioning valves, boilers, heat exchange units, pumps, blowers, air handlers and other devices required to bring building(s) to the desired state. In case of equipment failure (or other measured event), the system sounds alarms or calls out on a phone, radio, cellphone, or other device. Data can be stored and/or transmitted to an on-site or central computer.

Construction

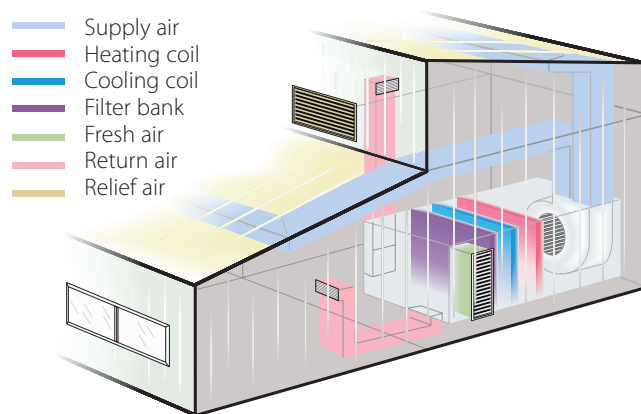
Campbell Scientific systems are an important part of construction projects. They provide remote, unattended, portable monitoring for demolition and excavation, acoustical noise limit adherence, auditing of vibration of surrounding structures, and checking equipment performance to trigger failure or misuse warnings.

Green Buildings and Green Roofs

For green buildings and green roofs applications, our systems provide remote, unattended monitoring of weather, surface temperatures, solar radiation, energy use, and other factors needed. The systems can also control fans, pumps, communication peripherals, and alarms.

Structural Health Monitoring

Our versatile systems are ideal for structural health monitoring. Applications range from simple beam fatigue analysis, to structural mechanics research, to continuous monitoring of large, complex structures. The systems make reliable structural measurements, even in harsh environments.



Case Studies



The University of Toronto used automated weather stations to monitor thirty-three 4 ft by 8 ft raised beds with different soil media, amounts of soil, vegetation types, and irrigation regimes.

Our systems have helped a variety of organizations reach their goals. The following are a few of these:

The University of Toronto (U of T) Green Roof Innovation Testing Laboratory (GRIT) Lab used Campbell Scientific dataloggers to monitor weather and conditions of different soil and plant types. This data was used to evaluate and optimize the performance of green roofs.

www.campbellsci.com/green-roofs-toronto

A new Research and Test Facility (RTF) at the University of Alaska, Fairbanks was built on an area with underlying permafrost at various depths. The RTF was instrumented with sensors under the building, in the foundations, in flooring systems, and throughout the wall and roof areas.

www.campbellsci.com/alaska-construction



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