CAMPBELL SCIENTIFIC, INC.

MEASUREMENT & CONTROL SYSTEMS

HVAC

www.campbellsci.com/hvac.html

Benefits of Our Systems

1. Advanced monitoring and control allow HVAC performance to be optimized.
2. Measure hundreds of sensors with one measurement and control unit.
3. Systems can initiate shutdowns, sound alarms, and report conditions by calling out to pagers, radios, or phones.
4. Time-stamped data is recorded for historical analysis.
5. Systems have their own power supply. They can report AC power loss and continue to measure and store data.
6. Monitoring and control can be based on time or measured parameters, or a series of events.
7. Systems support hardwire or wireless communication to a central computer.
8. Systems measure nearly every type of sensor.

CR10X

CR23X

Our HVAC control systems perform monitoring and control based on time, measured parameters, equipment status, or even on a series of events.

Campbell Scientific's measurement and control systems optimize HVAC system performance—conserving energy and cutting costs. Like typical HVAC control systems, our systems measure certain parameters and control equipment based on those measurements or based on time.

Our systems feature many capabilities that surpass those of standard systems and offer more flexibility for matching systems to exact needs. Temperatures and other parameters can be maintained at different levels in different parts of the facility at different times. HVAC functions can be reduced when buildings are unoccupied. Exchange between outside and inside air can occur when conditions require or are favorable, conserving energy. Systems can record data, initiate shutdowns, sound alarms, and notify personnel by voice-synthesized phone of conditions or problems.

Measurement and Control

Our control units are programmable and provide advanced measurement and control capabilities. They perform the functions of a PLC—and more. Each unit has multiple channel types, allowing nearly all sensor types to be measured by a single unit. For example, one control unit can measure voltage, air velocities, air temperature, relative humidity, energy use, water temperature, and steam pressure as well as external temperature, solar radiation, wind speed, and air quality. Channel types include analog (single-ended and differential), pulse, digital I/O, and switched excitation. Most sensors connect directly to the control units, eliminating external signal conditioning. Multiplexers and other peripherals can be used to increase the number of channels and channel types.

Because our control units are programmable (without ladder logic), they are capable of performing responsive measurement and control sequences. Powerful on-board instruction sets allow unattended measurement and control decisions based on time or conditional events. For example, alarms can be triggered, phone numbers dialed, or equipment shut down if a boiler's water temperature is outside the desired range. Our systems can even perform control based on multiple conditions or events, such as deciding to increase or decrease air exchange based on time of day, outside temperature, and / or inside temperature.

Communications options for reporting site conditions include: radios, telephone, cellphones, voice-synthesized phones, ethernet, coaxial cable, and the Internet. The HVAC system can be monitored and controlled by an on-site or remote computer.

Statistical and mathematical functions are built into our units, allowing data reduction at the measurement site. Measurements can be processed and stored in the desired units of measure (i.e., °F, °C, psi, in. of water, in. of mercury, etc.).

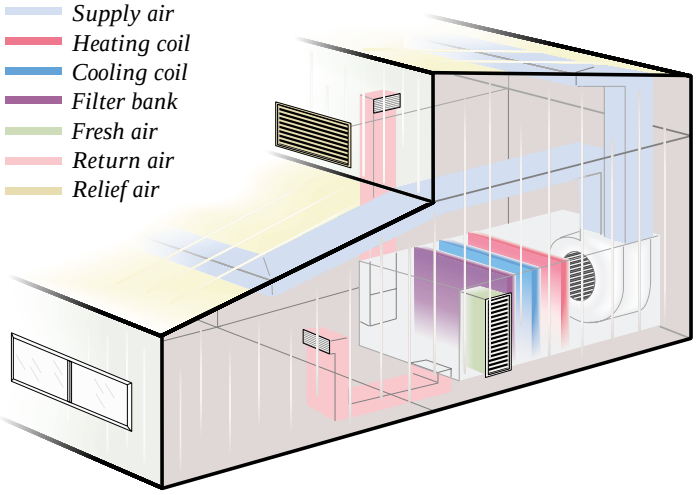
The reliability of our control units ensures collection of time-stamped data, even under adverse circumstances. Because they have their own power supply (alkaline or rechargeable batteries), the control units continue to measure and record existing conditions during power outages. Up to 2 million data points can be stored onboard, depending on the model. Time-stamped data provides valuable information for identifying and verifying past events. In HVAC operations where temperatures or other parameters must be kept within specific ranges (to ensure the quality of products or equipment), historical data can provide important information. Harsh environments don't affect the reliability of our systems.

Our systems monitor and control pumps, fans, motors and many other devices. Proportional control of dampers or valves is also possible.

Energy research on 10 homes in Florida showed that air conditioning use increased 12% for each degree the thermostat was set below 81°F.

Typical HVAC System

In a typical HVAC application, sensors monitor temperature (indoor and outdoor), relative humidity, flow rates, differential pressures, and equipment status. In smaller operations, only one control unit is needed. When a large number of sensors are used or when there are many monitoring locations, additional control units are used. Based on the measurements and the desired outcome, the control units 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.



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