Benefits of Our Systems

1. Rugged design allows systems to withstand vibration, shock, and temperature extremes.

2. Nearly every commercially available sensor can be used in our systems.

3. Systems are calibrated against NIST standards.

4. Internal preset gain ranges eliminate the need for costly external signal conditioning while allowing excellent measurement resolution.

5. Onboard statistical and mathematical capabilities provide data reduction on-site.

6. Multiple systems are available with varying channel counts, sampling rates, and physical sizes.

7. Multiplexers and other peripherals are available for expanding systems.

8. Communications options include direct wire to PC or laptop and many wireless possibilities.

9. Systems are durable—many are still in use after 15 years.

Campbell Scientific’s data acquisition systems are used by vehicle manufacturers worldwide. Our systems feature: (1) portability—take them anywhere you need measurements, (2) reliability—get accurate, consistent data, even in extreme environments, and (3) versatility—configure a system that meets your exact needs. From scorching summers to frigid winters, wind tunnels to abusive test tracks, our data acquisition systems provide accurate, timely, and reliable data.

Portability
Designed for portable and remote applications, our dataloggers do not require AC power or computers. With their self-contained power supplies, they can be used anywhere. Their compact sizes allow them to fit in small spaces, such as trunks, engines, or passenger compartments during testing. Rugged construction and wide operating temperature ranges allow them to be used for cold temperature, hot temperature, high altitude, off-highway, and cross-country performance tests. Data can be displayed real-time during testing, stored for later retrieval, or transmitted to a base station.

Reliability
Our systems have proven to be reliable, not only under normal conditions, but also under a wide range of temperature, vibration, and shock. For example, our systems have collected data during cold weather testing in Michigan and Canadian winters, summer testing in Arizona deserts, altitude testing on Pike’s Peak, cross-country endurance testing just about everywhere else, and structural analysis monitoring for an experiment on the Space Shuttle Endeavor (STS-69).
Versatility

The versatility of our data acquisition systems allows them to be customized for each application. We offer a range of dataloggers from the most basic system with just a few channels, to expandable systems that measure hundreds of channels.

Because our dataloggers are compatible with almost every commercially available sensor, our systems give you the freedom to use the sensors that best meet your application. Most sensors connect directly to our dataloggers, eliminating costly external signal conditioning. Channel types include analog (single-ended and differential), pulse count, switched excitation, continuous analog output, anti-aliasing filter, and digital I/O. Typical sensors used with our systems include: thermocouples, pressure transducers, pulse pickups, flow transducers, potentiometers, strain gages, load cells, digital switches, accelerometers, LVDTs, and tilt sensors. Our configurable model, the CR9000X, allow you to choose modules with the channel types that best fit your application. The number and type of channels on most of our dataloggers are expandable using multiplexers and other measurement peripherals.

Scan rates can be programmed from every few hours to 100,000 times per second, depending on the datalogger model. Measurement types, processing algorithms, and recording intervals are also programmable. Our systems can also store data transmitted from the vehicle’s on-board computer via Canbus, allowing time-synchronized storage of vehicle computer data with the datalogger’s independently measured data. Onboard instruction sets contain programmed algorithms that process measurements and output results in the desired units of measure. For example, data can be displayed as rainfall or level crossing histograms. These rainflow and level crossing algorithms allow processing for extended periods of time, not just a limited number of cycles. Our instruction sets also allow unattended measurement and control decisions based on time or conditional events.

Communications interfaces for retrieving, storing, and displaying data include direct connection to a PC or laptop, PC cards, storage modules, and a datalogger keyboard/display. A heads-up-display is also available for data display when driving a vehicle. Telecommunication options include short-haul, telephone (landline, voice-synthesized, and cellular), radio frequency, multidrop, and satellite.

Our systems are competitively priced, especially when considering that (1) they have long lives, (2) most sensor types can be measured on the same system, (3) external signal conditioning is usually not required, and (4) our free technical support lasts as long as you own the system.

Testing Possibilities

Our data acquisition systems have been instrumental in testing the following:

General Vehicle Testing
Chassis monitoring
Road noise
Vehicle speed
Steering
Air bag
Distance traveled
Humidity
Hot and cold soaks
Wind tunnel
Altitude
Geographic location

Fuel Systems
Line pressure
Tank pressure
Temperature
Flow

Climate Control
Ambient air temperature
Supply air temperature
Solar radiation
Fan speed
Interior temperature
Time to comfort
AC on and off
Refrigerant pressures

Suspension
Strut pressure
Spring force
Travel
Mounting point stress
Deflection

Brake Testing
Line pressure
Pedal pressure/travel
ABS
Line/pad temperature

Engine Monitoring
Oil pressure
Oil temperature
Water pressure
Water temperature
Fuel injector timing
Crank position
RPM
Noise level
Heat detection
Catalytic converter
Cooling fan speed
Manifold pressure
Manifold temperature
Exhaust gas temperature