



## Structural Health Monitoring

Products for Long-Term, Stand-Alone Structural Monitoring



Campbell Scientific data acquisition systems' versatile capabilities make them ideal for structural health monitoring. Our dataloggers applications range from simple beam fatigue analysis, to structural mechanics research, to continuous monitoring of large, complex

structures. Campbell systems provide remote, unattended, portable monitoring for highway overpasses, roads, buildings, retaining walls, bridges, and amusement park rides. They make reliable structural measurements, even in harsh environments.

### 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 dif-

ferential), 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



- Strain meters
- Foil strain gages (in quarter-, half-, or full-bridge strain configurations)
- Vibrating-wire strain gages
- Vibrating-strip sensors
- Inclinometers
- Crack and joint sensors
- Tilt sensors
- Piezoresistive accelerometers
- Piezoelectric accelerometers
- Capacitive accelerometers
- Borehole accelerometer
- Force balance accelerometers

More info: 435.227.9120

[campbellsci.com/structural-health-monitoring](http://campbellsci.com/structural-health-monitoring)



## Communications

The availability of multiple communications options for retrieving, storing, and displaying data also allows systems to be customized to meet exact needs. Onsite communication options include direct connection to a laptop, CompactFlash cards, Wi-Fi, and field displays. Telecommunication options include short-haul, telephone (land-line, voice-synthesized, and cellular), radio frequency, multidrop, and satellite.

## Software

Our Windows-based software simplifies datalogger programming, data retrieval, and report generation. The datalogger program can be modified at any time to accommodate different sensor configurations or new data processing requirements.

## Structural Case Studies

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

Campbell Scientific dataloggers were used to monitor structural cracks, soil moisture, and weather conditions in support of preserving the Castillo de San Marcos, St. Augustine, Florida.

[www.campbellsci.com/castillo-de-san-mar](http://www.campbellsci.com/castillo-de-san-mar)

Campbell gear was used to study the performance of concrete floors in large warehouses and distribution centers. To do this, our dataloggers monitored vibrating wire strain gages that were cast into test slabs at a major Bookers site in Northampton, UK.

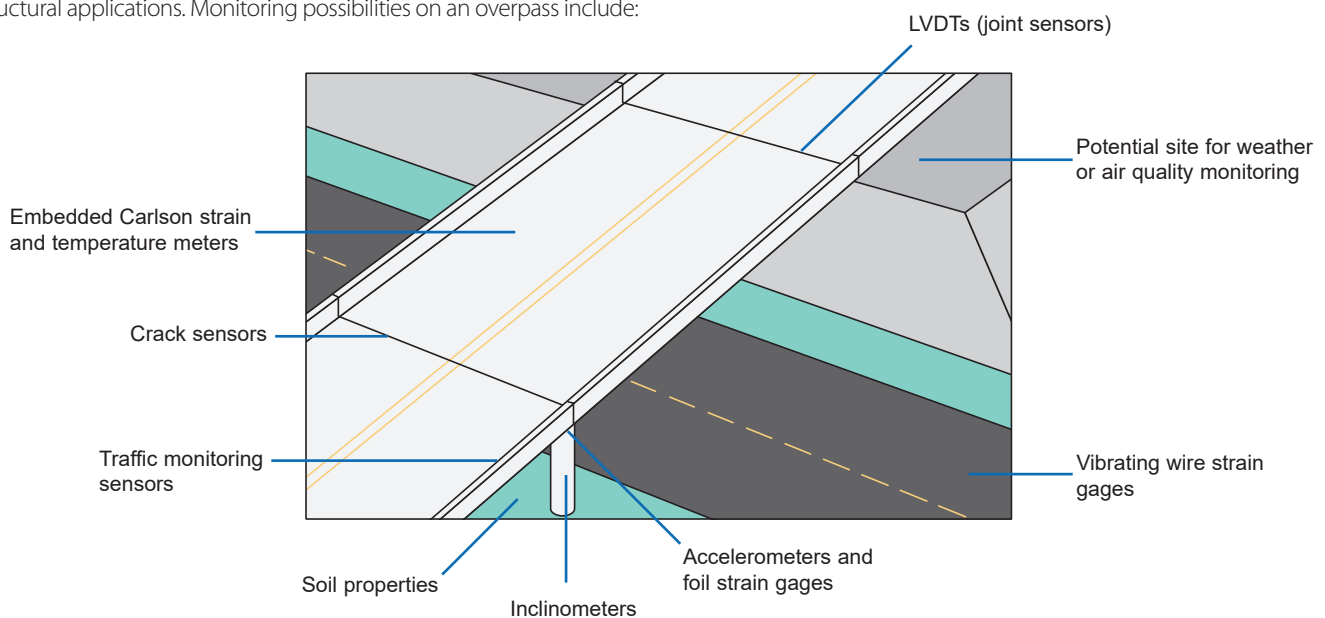
[www.campbellsci.com/concrete-performance](http://www.campbellsci.com/concrete-performance)



Campbell Scientific dataloggers can provide remote, unattended monitoring of buildings, overpasses, amusement park rides, roads, and retaining walls.

## Example Application: Structural Monitoring of an Overpass

Campbell Scientific's monitoring systems are used for a variety of structural applications. Monitoring possibilities on an overpass include:



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