Integration & Telemetry Systems

Design, Build, Install and Support

Electronic Data Solutions (Elecdata) will design, build, install and support your remote data acquisition system. We configure complete systems including sensors, dataloggers, telecommunications equipment, and the software to manage, analyze and display the collected data in a variety of applications.

Applications

Rugged, reliable dataloggers are at the center of the data acquisition systems. All are built to withstand harsh environments and wide operating temperatures. These dataloggers feature low power consumption and are compatible with many telecommunication options. A wide array of sensors can be accommodated to meet a variety of measurement and control applications in:

- Surface water
- Groundwater
- Rural water supplies
- Meteorology
- Forestry
- Irrigation canal monitoring and control
- Aquaculture

System design is critical and we can help you clearly define your objectives and select the most practical and cost effective method of reaching them. Once the system is installed, we document the system and train your personnel on how to operate and maintain it. If a system requires custom software Elecdata, with its in-house team of system programmers, can often accommodate that need as well. Elecdata can also offer routine maintenance on a contract basis.

Telecommunications

Elecdata personnel have many years of experience designing, specifying, installing and supporting systems that rely on telecommunications to provide the link between the base station and the remote sites. In addition, we have good relationships with several manufacturers of this type of equipment. Supported methods of telecommunications include: UHF and VHF radio, spread spectrum radio, satellite, and telephone (both land line and cellular).

Software Development and Integration

Elecdata maintains in house expertise to write, modify, test and document custom software for applications in natural resources, water resources, and GPS/GIS.

ELECTRONIC DATA SOLUTIONS®

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Examples of Recent Systems

A large irrigation district in Colorado retained Electronic Data Solutions to instrument 10 critical locations in their irrigation canal system and to set up a telecommunications and warning system. The system measures water level and calculates discharge (flow) every 5 minutes. Key components in the system are the Campbell Scientific CR200, Free Wave spread spectrum radios, Campbell Scientific's RF450 spread spectrum radios, the SDI-12 Enviro-Systems shaft encoder, CSI's Loggger-Net datalogger support software, and the WIN911 alarm software. Every 15 minutes the base station polls each station to retrieve the most recent data. Data are then compared to a set of user-settable alarm thresholds. If any datum exceeds a threshold, the base station PC calls a list of phone numbers to warn company personnel of the alarm condition. Power is furnished at all sites by a solar panel that charges a sealed lead acid battery. A portable base station allows the system manager to also call sites from his pickup.

A federal wildlife refuge in Arizona must monitor the amount of irrigation water used to maintain habitat for migratory birds. The U.S. Fish & Wildlife Service contracted with Electronic Data Solutions to upgrade an existing system to add a telemetry link from the refuge to the USFWS office in Albuquerque, NM. The upgraded system was installed using Campbell Scientific, Inc. CR200 dataloggers, RF450 radios, and the COM220 landline phone modem. Personnel at the Albuquerque office can now have a PC call (via telephone) a hub station at the refuge office and be automatically routed over a spread spectrum radio link to each of the three field stations and then they can check current readings and status as well as retrieve stored data.

A mining consortium has retained an international engineering and environmental firm to coordinate a long term cleanup effort at an inactive mine in central Idaho. In an effort to measure the water quality effects of a high intensity summer thunderstorm, engineers need to automatically trigger a set of samples in two large drainages when the flow in an upstream tributary increases by certain amount in a defined time period. The challenge: the measurement sites and the sampling sites are miles apart and are separated by high ridges that preclude direct radio communications. There is no cell phone coverage and direct wiring is impractical.

The engineering firm contacted Electronic Data Solutions for assistance in this application. Our solution uses spread spectrum radio communications but the signals from each measurement site are "bounced" through a repeater, each placed high on an intervening ridge. The water level is measured by an In-Situ LT500, conveyed to a Campbell Scientific, Inc. CR206 and sent to a repeater and on to CSI CR850 where it is compared to the threshold that was provided by the engineers. If the threshold is exceeded the CR850 sends a signal to a pre-programmed Isco 6712 and a 24 hour sampling regime is initiated.

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Field Data Collection

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