CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

Rural Water
Products for Rural Water Automated Monitoring and Control

RELIABLE
SINCE 1974
MONITORING

Campbell Scientific systems for rural water monitoring and control can measure water level and flow, and then control pumps and valves based on those measurements. Our systems are so versatile that they can accommodate about any sensor you need to use. With multiple communication options available (MODBUS, DNP3, TCPIP), each system can be configured for any size of network (hardwired or wireless), from simple, single-tank monitoring to large networks of hundreds of stations.

Benefits of Campbell Scientific Rural Water Systems

〉 **Reliability**: Our products have been proven in hundreds of applications worldwide; they perform equally well in cities or in the-middle-of-nowhere.

〉 **Monitor any Rural Water Parameter**: We can measure almost any sensor with an electrical output: water level, water flow, chlorine, turbidity, conductivity, pump performance, and more.

〉 **Water and Power Conservation = Money Savings:** Automated control turns pumps and other equipment on only when needed or only during low power rate periods. One city cut their power consumption in half in the first month of operation.

〉 **Smart Control:** Our systems can control pumps, valves, alarms, chemical injectors, or gates based on measured values, time, or events.

〉 **Alarms**: System alarms such as reservoir level, pump failure (or other equipment), intrusion (or other security) can trigger voice-synthesized phone calls (your system can speak to you), on-site audible alarms, or visual alarms.

〉 **Telemetry:** You can eliminate cables by using wireless communications: radio, cellphone, or satellite. Hardwire options include telephone lines, short haul, multidrop, or Internet.

〉 **Integrated System View:** Monitor all sites from one central computer running our software or a third-party package. Our software provides a graphical interface that provides the operator with a view of the status of remote sites, as well as the ability to acknowledge alarms and control the system.

Custom Rural Water Systems

We offer a variety of products that can be used to create custom Rural Water systems. Please don't hesitate to let us help you configure a full system that meets your exact needs.

Dataloggers

Our rural water systems are based around a programmable datalogger that measures the sensors, then processes, stores, and transmits the data. Our dataloggers have wide operating temperature ranges, programmable execution intervals, onboard instructions, and ample input channels for commonly used sensors. Our dataloggers interface directly to most sensors, eliminating external signal conditioning. On-board instruction sets contain processing routines that range from simple statistics to more complex routines. Data are typically output in the units of your choice. Channel capacity can be expanded using multiplexers.

Sensors

Thanks to their ability to measure multiple channel types, our dataloggers can read nearly every commercially available sensor, allowing systems to be customized for each installation. We offer sensors that measure turbidity, dissolved oxygen, pH, conductivity, pressure/water depth, wind speed and direction, solar radiation, temperature (air, water), relative humidity, precipitation, and barometric pressure. Campbell Scientific helped create the original SDI-12 standard, so you can be sure our systems are SDI-12 compatible.

Communications/SCADA

We offer multiple telecommunication options to transmit data. Our options include satellite (DCP), RF, telephone, cellphone, voice-synthesized phone, Ethernet, and Wi-Fi. Protocols supported include SCADA, DNP3, and Modbus. Communication devices can be used together, such as phone-RF combinations, or RF sites being used as repeaters for stations farther away from your base station. We can help you determine what will work best for your application.

Types of Stations in a Rural Water System

The following is a list of stations common to rural water applications. Sometimes stations are combined at a single site.

Tank/Reservoir Monitoring

At a tank or reservoir, level measurements are made and transmitted via radio (or other option) to the pump control site or to the base station. Additionally, other parameters can be monitored, including water quality (e.g., turbidity, conductivity) and intrusion (or other security parameters).

Pump Control / Well Monitoring

At the pump, the datalogger turns the pump on and off based on communication from the tank monitoring site or base station. By adding a current sensor, the datalogger can also monitor pump status and power consumption. With the addition of a pressure transducer in the well, pump drawdown can also be monitored. Other features, such as controlling backup pumps and PRV valves, can be added if needed.

Base Station

The entire water system can be monitored from the base station. If desired, a datalogger can collect the data and make control decisions for the entire system, or this process can occur at each site. A voice modem is typically present at the base station to provide information about the system around the clock through a simple phone call. System data can also be posted to the Internet.

Weather Station

A weather station consists of a set of meteorological sensors such as wind speed, wind direction, rainfall, solar radiation, temperature, and relative humidity sensors. Weather stations can automatically calculate evapotranspiration and provide real-time or historical records of hydrological conditions. Data from weather stations is often useful to many organizations.

Rural Water Case Studies

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

A SCADA system using Campbell gear allows Trenton, UT and Amalga, UT to share water during emergency situations.
www.campbellsci.com/utah-scada

Campbell Scientific dataloggers monitor turbidity in the Cedar River watershed, which provides a major portion of the culinary water to Seattle, WA, and several nearby cities.
www.campbellsci.com/cedar-river-watershed

Horseshoe Irrigation manages water resources using Campbell Scientific's LoggerNet for Linux and ExacTraq software.
www.campbellsci.com/utah-rural-irrigation

For the Cedar River watershed, an alarm system allows the city to turn off the water supply intakes when turbidity is high in the river or in a selected tributary stream.