

River Flow Monitoring With Remote Communications

Grant's Portable Universal Input SQ2010 Datalogger

CHESTERLAND OH—October 11th, 2011

CAS DataLoggers recently provided the datalogging solution for a local environmental group monitoring the level of a river against rainfall. The river rose and fell visibly throughout the year and often caused property damage in periods of heavy rain, so a monitoring project was organized to find out just how much it varied and to correlate data based on the amount of rainfall. The group needed to have a data logging solution capable of continuous year-round recording which could be accessed remotely. Owing to the project's outdoor location, this device would also need to be portable, capable of stand-alone operation, and would also have to be a completely weatherproof system that could survive exposure to conditions on the riverbank.



The environmental group installed a **Grant Squirrel SQ2010 Portable Universal Input Data Logger** in a weatherproof enclosure fitted with a solar panel to recharge an external battery. Also fitted into the enclosure was a **GSM modem kit** enabling remote communications with the SQ2010. The enclosure was then placed on the riverbank and connected to sensors measuring temperature, humidity, and pressure. Additionally, a rain gauge was placed adjacent to the enclosure and a depth sensor was installed in the center of the riverbed. The project went underway as the data logger began taking hourly readings of the air and water temperature, humidity, rainfall, river depth and barometric pressure.

The lightweight, battery powered SQ2010 datalogger featured up to 8 analog input channels capable of measuring temperature at a high accuracy of 0.1%, as well as recording humidity, current, voltage, and resistance. In addition, its 8 digital channels could automatically trigger or stop logging, while 2 alarm/relay outputs provided alarm features. The high quality device also featured a built-in 2-line x 40-character LCD display and keypad. World renowned for their compact ruggedness and reliability, Squirrel data loggers could stand up to exposure to harsh weather conditions and keep logging. All readings were recorded to the logger's 16 MB internal memory, storing up to 1.8 million readings and featuring USB connectivity to a PC for easy downloads as well as optional Ethernet or RS232 connections, the latter chosen for this project to allow connection to modems and other networking devices.

Grant Downloader software was included free and automatically contacted the Grant datalogger at a set time each day to download the data, which was then transferred to a website so that it could be accessed by the project's users via any PC connected to the Internet. Also included free of charge was

the SquirrelView universal software package enabling quick configuration and setup of the datalogger along with fast data downloads and direct export to Excel in real-time or as a CSV file for customizable data analysis. SquirrelView's user-friendly spreadsheet style setup and flexible data presentation allowed the team to quickly display and analyze real time or historical data as a line graph, bar chart or analog gauge, and the simple communication wizard took the hassle out of working with the GSM modem. Graphical alarm and event identification let users easily identify occurrences around specific analog or digital events, and downloads could be scheduled by date, time or events, saving time when working with the modem or looking for specific data.

The environmental project benefited in numerous ways following installation of the Grant SQ2010 datalogger. The affordable Squirrel device was able to log continuously throughout the project, recording the environmental data from the river with highly precise measurements. One Squirrel data logger was all it took to collect and present all the project's data in an organized, convenient format as well as provide alarm capabilities. Configuration and setup were quickly performed using the free SquirrelView software, and data collection was simplicity itself thanks to remote access provided by the enclosed GSM kit connected to the logger's RS232 port, especially ideal given the lack of available land lines in the area. Likewise, downloading and analyzing the data was easily handled using SquirrelView. Throughout the project, the weatherproofed enclosure ensured that the system remained safe for reliable logging even in face of the worst weather. The device's handheld portability was also a major plus, being about the size of a small notebook. Overall the project's members found that the SQ2010 was robust, dependable and very easy to use.

Analysis of the project's data showed that the river began to rise after approximately two hours of rainfall. A very significant amount of rain fell in July 2010--over 2.8 inches (72mm) in under nine hours--and the river rose from its normal level of 9.8 inches (250mm) to over 6ft. (2 meters). Unfortunately by this time, water was now flowing through a few houses!

Check out the Grant SQ2010 datalogger product page here:

http://dataloggerinc.com/products/SQ2010_Portable_Universal_Input_Data_Logger/16/

For further information on the Grant SQ2010 Portable Universal Input Data Logger, the entire Squirrel family of data loggers, or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Applications Specialist at (800) 956-4437 or visit the website at www.DataLoggerInc.com.

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