

DATA MONITORING SYSTEM FOR RURAL DEVELOPMENT CHARITY

DATA TAKER DT80 INTELLIGENT LOGGER MEASURES MANY PARAMETERS



dataTaker, with integration from Engineers Without Borders Australia, provided the data monitoring system for [RIDS-Nepal](#) (Rural Integrated Development Services in Nepal), a Nepali non-profit, non-government organization with the stated mission to improve the overall living conditions of the impoverished high-altitude communities in the Nepal Himalayas. RIDS was involved in holistic community development projects and field-based research projects financed by donations from individuals and charities. This newly enacted community development consisted of providing every home in the village of Tulin with a pit latrine, a smokeless metal stove, and basic indoor

lighting as well as access to clean drinking water. Some of the technologies RIDS-Nepal developed with Kathmandu University and the local Nepali industry included high altitude solar water heaters, slow sand water filters, and high-altitude greenhouses and solar driers.

Data monitoring formed an important part of RIDS' long-term humanitarian programs, which was unfortunately hardly ever done by other community development organizations due to the preferred short-term project approach preferred by most donors. Power/energy generating projects, such as solar PV village electrification systems and pico-hydro power plants, were important to monitor since these villages were gaining access to electricity for the first time in their history. RIDS-Nepal needed to know how their implemented power generating systems performed over the various seasons and years, so several of these energy generation systems and infrastructures needed to be monitored. The Tulin village project therefore required a flexible yet cost-effective data monitoring system capable of measuring a wide range of physical values including temperature, current, and voltage.

INSTALLATION

Project management installed a [dataTaker DT80 Intelligent Universal Data Logger](#) in Tulin village and connected it to a wide array of sensors measuring temperature, current, and voltage. A special protective casing was fabricated for the monitoring equipment—a precaution taken so that the ever-present mice couldn't get access to the wires! The DT80 was separately powered with two 20WP Solar PV modules and a 30Ah sealed deep-cycle battery. A program specifically written for the dataTaker device was loaded and tested, and then the sensors' cabling was connected to the data logger.

USAGE

After installation, long-term data monitoring of defined implemented projects was conducted. For example, considering just the solar PV data monitoring system installed in the village, RIDS-Nepal measured and calculated 22 different parameters with the DT80 data logger in order to understand the system's detailed performance

over the years. These fundamental parameters included ambient temperature, battery-bank temperature, PV cell temperature, solar PV array current, solar PV array voltage, battery-bank current in/out and WLED load voltage and current. Several different sensor types were used including T-type thermocouples, a SolData pyranometer, and HXS 20-NP current transducers. The solar PV array, battery-bank, and WLEDs were all connected directly to the dataTaker data monitoring system, which handled all the voltage readings.



BENEFITS

RIDS-Nepal and its Tulin village project benefited in several ways following installation of the DT80 Intelligent Universal Input Data Logger. The dataTaker device monitored all the necessary parameters including temperature, voltage and current, and connected to the pyranometer to measure irradiance. Additionally, this versatility came at a low enough price to easily fit into the project's limited budget.

In order to learn from practical field projects, RIDS-Nepal developed its own databank over the course of 2 years. All 11 monitored and recorded power/energy generating systems and several of the finished infrastructures' data were made available through the databank. In this way RIDS-Nepal hoped to share and support other, like-minded professionals and organizations involved in holistic community development projects. Using the data logger's readings as a baseline, projects became more relevant and more sustainable for the long-term benefit of the local people for whom all the effort was meant.

Research & development based on the village baseline surveys, follow-up surveys, and practical experience resulted in the development and local manufacturing of new, contextualized technologies and infrastructures, as well as educational methods & teaching materials for Non-Formal-Education (NFE) classes for women and unschooled children. This multi-faceted project took the local people's own identified needs seriously by addressing them through context-relevant projects and programs, and the readings helped show that even minimal access to improved energy services such as improved cooking, room heating, hot water and basic indoor lighting brought enormous improvements to the community.

For more information on the [dataTaker DT80 Universal Data Logger](#), a data monitoring system or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.