

Water-level Monitoring System in the Brunei River

Environmental Monitoring Brunei

Project Introduction:

Traditionally the people of Brunei live on the river, which can be both a convenience and a danger. During rainy seasons, it's important to monitor the levels of the river for the safety of the villagers. The government of Brunei wanted to build a remote monitoring system to help them keep track of these changes, and with Advantech's ADAM-4500 and ADAM-4011D modules, a simple and reliable monitoring system was established.



System Requirements:

At least 30,000 people live in small villages on the Brunei River which has been the traditional way to live in this region for many generations. During the rainy season however, there are many flooding dangers for the people who live in these villages. To monitor the water level at all times, the government decided to set up a remote monitoring system along the the Brunei River.

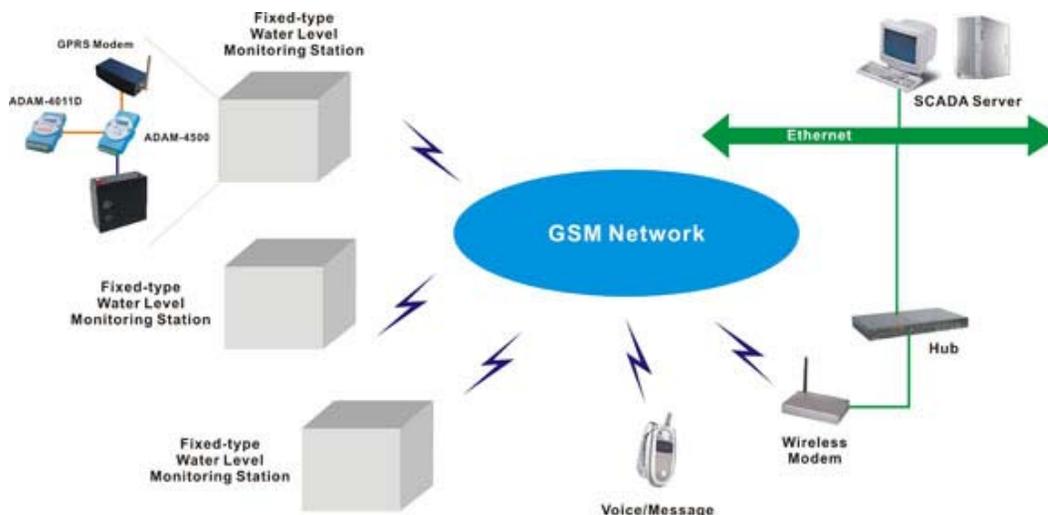
This potential life-saving system needed meet the following requirements:

- Wireless communication to cover the entire river basin
- A cost-effective way to supply power for the whole system
- A reliable and simple system to monitor and control the water level

Project Implementation:

- ADAM-4500: PC-based Communication Controller
- ADAM-4011D: Thermocouple Input Module
- 3rd party GPRS modules

System Diagram:



System Description:

The monitoring system includes the ADAM-4500, ADAM-4011D, and GPRS modules. The ADAM-4011D is connected to the sensor to get the water level of the river. When the GPRS is triggered to power the ADAM-4500, it works as a controller to retrieve water-level data from the ADAM-4011D, and passes the data to a remote server through GPRS network within a certain period of time. Initially, it will retrieve the data every 10 minutes (when water is at a “safe” level). When the water level approaches a “dangerous” level, the data will be updated much quicker, up to every 2 minutes. Through the GSM network, the system can send warning messages to mobile phones for quick reaction.

Conclusion:

To cover the entire Brunei River basin, wireless technology was the best solution for this project. With Advantech’s ADAM-4500 and ADAM-4011D modules, a simple and reliable monitoring system was achieved. All power is supplied by a lead-acid battery. ADAM-4500 worked as a controller to retrieve and transfer the data to the data center via GPRS module, and then shuts down to save power. This feature also allowed onsite visits to be reduced, saving on manpower costs. Additionally, the systems wireless capability provides boundless communications without wiring issues.