

APPLICATION BRIEF

2020

HIGH SPEED DAQ AND CONTROL SYSTEM

Brief Description:

Emerging Technologies, LLC. was called upon to generate a functional specification for and develop a high speed data acquisition and control system for a high current test lab. The specifications required the system utilize off-the-shelf technology where possible. The system was required to measure and control events drawing up to 80k amps at up to 800VAC.

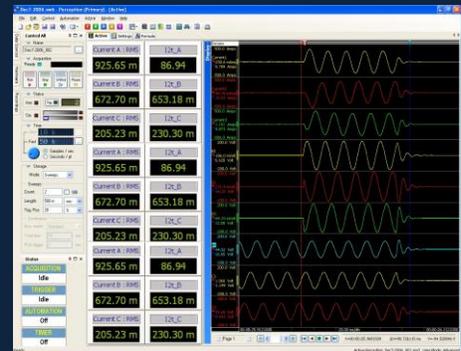
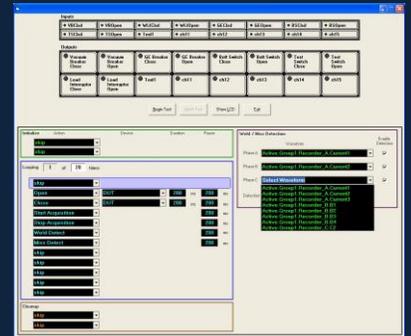
The control software allows for the control and monitoring of discrete I/O in the field (connected to existing field devices), the development of custom test sequences, and stopping and starting the acquisition of data via a SOAP interface to the DAQ software. Additionally, the system has the ability to monitor user-specified channels for sequence failure modes.

The DAQ software and hardware is capable of capturing data at 100k samples per second, which is then streamed to the PC's local disk. Incoming data is displayed in real-time, and the system is capable of performing built-in and custom calculations after data capture has completed. Additionally, custom report generation, importing and exporting of data in multiple formats, and saving and loading acquisition settings are available.

The DAQ hardware itself consists of an LDS Nicolet Genesis mainframe, 6 LDS Nicolet digitizers, voltage dividers, and 3 AEMC current sensors. The field I/O consists of Opto22 I/O. For safety, all connections between the field and the PC are optically isolated.

Customer Benefit:

The customer is able to capture data at rates of up to 100ksps and control and monitor their field IO from a single PC. By utilizing Emerging Technologies' expertise in DAQ systems, the customer was able to maximize features and minimize costs.



ET Responsibilities:

- ✓ Functional Specification Generation
- ✓ Design / Engineering
- ✓ Fabrication
- ✓ Programming – Software
- ✓ Programming – Firmware
- ✓ Circuit & PCB Design
- ✓ On-Site Commissioning
- ✓ Post Commissioning Support
- Other

Technologies:

- Embedded Computers
- Microcontrollers
- ✓ Visual Software
- ✓ Control Software
- ✓ Data Acquisition
- ✓ Computer Based Control
- ✓ Communications – SOAP, gigabit Ethernet
- ✓ System Integration
- Other

Special Features:

- ✓ High Speed DAQ and Control Software
- ✓ High-precision test sequence resolution (<3ms)
- ✓ Remote application interface via SOAP
- ✓ Auxiliary 42" Plasma Monitor for easy monitoring
- ✓ Multiple levels of physical and optical isolation
- ✓ 80,000 amps, 800VAC capability
- ✓ Gigabit Fiber Optic Ethernet