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New NI CompactDAQ System Delivers High-Speed, Distributed Sensor Measurements

NEWS RELEASE Aug. 3, 2010 National Instruments today announced the new Ethernet-based NI CompactDAQ modular data acquisition system, which combines the ease of use and low cost of a data logger with the performance and flexibility of modular instrumentation. The new NI cDAQ-9188 [1] chassis is designed to hold eight I/O modules for measuring up to 256 channels of electrical, physical, mechanical or acoustic signals in a small (25 by 9 by 9 cm), rugged form factor. With more than 50 different I/O modules to choose from, engineers and scientists can build remote or distributed, high-speed measurement systems using standard Gigabit Ethernet infrastructure. In addition, NI CompactDAQ [2] simplifies initial setup with zero configuration networking technology and a built-in, Web-based configuration and monitoring utility.

We chose NI CompactDAQ because of the flexibility offered by a diverse set of I/O modules and the scalability of Ethernet infrastructure, said Randy Recob, senior test engineer at Sub-Zero, Inc. The flexibility of Ethernet allows us to more easily standardize our test systems by eliminating many of the physical constraints required by more traditional PC interfaces. We have used National Instruments data acquisition hardware and software in our test applications for years because of the measurement accuracy, system stability, and ease of use available with their solution.

NI CompactDAQ uses patented NI Signal Streaming [3] technology to deliver high-bandwidth data over Ethernet to a host computer. NI Signal Streaming provides the

ability to maintain bidirectional analog and digital waveforms continuously over a TCP/IP connection. With NI-STC3 timing and synchronization technology, each chassis also can manage up to seven separate hardware-timed I/O tasks at different sample rates, including analog I/O, digital I/O and counter/timer operations. The chassis operate in a temperature range of -20 to 55 degrees Celsius and can withstand up to 30 g shock and 3 g vibration, making NI CompactDAQ ideal for demanding test applications on the benchtop, in the field or on the production line.

In addition to the Ethernet chassis, the NI CompactDAQ platform includes a four- and an eight-slot USB chassis and NI C Series I/O modules. NI offers more than 50 C Series modules to use interchangeably in NI CompactDAQ systems, each of which is hot-swappable and auto-detectable for simplified setup. C Series modules offer integrated signal conditioning and multiple connectivity options to create custom, mixed-measurement systems specific to the needs of an application. A single analog input module, for example, can acquire up to four channels of simultaneous 1 MS/s voltage inputs for measuring high-speed signals such as ballistic pressure or ultrasonic transducers.

NI-DAQmx driver software, which is included with NI CompactDAQ, goes beyond a basic device driver to deliver increased productivity and performance. With NI-DAQmx, engineers and scientists can log data for simple experiments or develop a complete test system in NI LabVIEW [4], NI LabWindows"/CVI [5], ANSI C/C++ or Microsoft Visual Studio .NET. Furthermore, a consistent API means that an application developed for an NI CompactDAQ USB chassis will work with an NI CompactDAQ Ethernet chassis without any changes to software.

Programming NI CompactDAQ with LabVIEW delivers the most performance for the least effort. LabVIEW graphical programming makes it possible for engineers and scientists to develop sophisticated measurement, test and control systems using intuitive graphical icons and wires that resemble a flowchart. The multiple timing engines featured on NI CompactDAQ chassis complement the multicore optimizations in LabVIEW to make programming multiple measurement tasks in parallel easy. LabVIEW also offers integration with thousands of other hardware devices and provides hundreds of built-in libraries for advanced analysis and data visualization.

For more information about the new NI CompactDAQ Ethernet data acquisition system, readers can visit www.ni.com/new_compactdaq [1].

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