Data acquisition vendors let users phone-in for increased productivity

Intro by Chris Warner

Data acquisition continues to migrate from the desktop to smaller, portable solutions. This portability, combined with advances in USB and wireless connectivity plus applications for smart phones and tablets, has made the process of gathering and analyzing data from remote locations simple and ubiquitous. And while instruments that tout portability and remote data collection are gaining widespread use, DAQ system vendors continue to address more traditional requirements such as high accuracy, high speed and a better user experience.

As smart phones become indispensible tools for work, leading vendors have responded with apps. National Instruments, for instance, announced NI LabVIEW software- and NI hardware-compatible mobile apps for iPhone, iPad and Android devices to help engineers more productively access measurement data from data acquisition and embedded monitoring systems.

“Smartphones and tablets are game-changers for the test and measurement industry,” said Ray Almgren, NI vice president of product marketing core platforms, of this announcement. “These new apps combine the portability of mobile devices with the power of LabVIEW, helping engineers increase their productivity and meet the latest application challenges.”

Agilent’s Mobile Meter allows an Android device (smart phones or tablets) to connect, control and perform up to three Agilent handheld digital multimeter measurements. This free app logs data and provide trending graphs with the company’s handheld digital multimeters. Data handling

enhancements include sending e-mail or Short Message Service (SMS) automatically, and line graph manipulation such as pan and zoom with the Android device's touch screen.

Today, one can also use a smart phone to access or publish sensor data on the cloud. With Microstrain's SensorCloud platform, any web-connected third party device, sensor or sensor network is supported thanks to the OpenData API, and a mobile web app allows users to push accelerometer, gyro, and magnetometer data from their iPhone or Android smart phone to the network. Core features include virtually unlimited data storage with triple reliability and exceptional visualization and user programmable analysis. Its MathEngine feature allows users to quickly develop and deploy data processing and aanalysis apps that live alongside their data in the cloud. SMS and email alert scripting features help users create meaningful and actionable alerts.

In addition to these smart-phone and tablet-based apps, here is a quick sample of some of the latest instruments and systems from data acquisition vendors.

USB signal conditioning instrumentation amplifier and bandpass filter touts high flexibility

Alligator Technologies' USBPBP-S1, a USB controlled single channel programmable signal conditioning instrumentation amplifier and band pass filter is configurable for use in a wide variety of applications and is available in a wide range of filter characteristics. Each USBPBP-S1 has intelligence built in to configure itself from power-up with changeable but non-volatile configuration and operate independently in both a "Turn-Key" or host computer controlled scenario. The new module is compatible with all 12, 16, or 24-bit A/D devices and is appropriate for filtering applications in sound and vibration testing, ultrasonics, acoustics, structural analysis, industrial, test, scientific and laboratory data collection and applied mechanical applications in electronics, aerospace, field research, automotive, and process control industries.

The USBPBP-S1 provides the user with the ability to mix and match filter characteristics and independently select and program each module's high pass

corner frequency, low pass corner frequency, gain steps up to x1000 in either single-ended or differential measurements. Each unit can be configured as an 8-pole Butterworth, Bessel, elliptic, or linear phase low pass filter characteristic and a 4-pole Bessel or Butterworth high pass filter.

USB device doubles throughput, keeps cost low

Measurement Computing's USB-1608FS-Plus, a high-speed, multifunction USB DAQ device with sampling rates up to 400 kS/sec (800 kS/sec burst mode). This new module offers twice the throughput of the company's current USB-1608FS at the same low price of $399. The USB-1608FS-Plus provides eight, 16-bit, simultaneously sampled analog inputs, eight digital I/O (high-current 24 mA), and one counter input. A variety of software options are included to meet any skill level or application requirement. Support includes out of the box TracerDAQ along with comprehensive drivers for Visual Studio and Visual Studio .NET, DASYLab, and NI LabVIEW. Also included is Measurement Computing's DAQFlex open-source software framework which provides programming support for Windows®, Linux®, and Mac operating systems.

Dataloggers present faster logging, larger data storage and additional functionality

Another popular series getting an upgrade is United Electronic Industries' UEILogger, which now has increased logging speeds, data storage, and functionality. The new logger supports sample rates as high as 500 kilosamples per second for 16-bit samples and 250 kilosamples per second for 18 to 24 bit A/D samples. Regardless of system configuration, the new UEILogger provides at least 320 kS/S (16-bit) or 160 kS/S (18-24 bit), according to the company . The revision also supports SD cards as large as 32 GByte and includes an 8 GByte SD card as standard. Additional features include an alarming function that allows a digital output or Sync bit to be controlled by alarm conditions of Analog inputs. The new revision also supports logging from the MIL-STD-1553 avionics bus. The latest logger also provides a built-in sample rate self-test feature that measures

system performance and sets the system maximum sample rates based on actual system configuration.

Module presents 300 MHz bandwidth (typ) with crystal controlled sampling

Data Translation's DT9862S high-speed simultaneous USB data acquisition module offers a bandwidth of 300 MHz with crystal controlled sampling for low jitter, precise applications. An external clock input enables the user to lock the under-sampling to a multiple of the signal under test. RF communication applications such as sonar and satellite surveillance are just a couple of areas where under-sampling is required for high-quality measurements. The DT9862S offers two 16-bit simultaneous analog channels, two optional analog outputs, 32 DIO lines, two counter/timers, three quadrature decoders, and ± 500V galvanic isolation.

Serial FPDP boasts fastest recording rates, deepest capacities

Recording data in R&D, ground, ship, airborne and rugged environments requires high flexibility, and the Talon family of high-speed, multi-channel Serial FPDP turnkey recording systems from Pentek -- the Model RTR 2736 rugged portable, and the Model RTR 2756 rugged rackmount recorders – promises just that. The company asserts their high flexibility is made possible through its state-of-the-art disk storage technology which also enables the systems to achieve aggregate recording rates up to 2 Gbytes per second.

As complete recording systems, the Talon recorders are appropriate for capturing any type of streaming sources including live transfers from sensors or data from other computers. The built-in Windows 7 Professional workstation with an Intel Core i7 processor gives the user total flexibility in routing data to various drives, networks, and I/O channels. It also allows the user to install post-processing and analysis tools to operate on the recorded data.

"These recorders exploit the latest storage technology to deliver the industry's fastest recording rates and deepest capacities," said Rodger Hosking, vice president of Pentek. "Our SystemFlow recording software simplifies user operation and the application programming interface (API) allows system integrators to add the recorder as a peripheral to a larger system."

Tank level and draft monitoring system provides all necessary measurement modules

Marine and offshore tank environments also demand high performance measurement solutions. The King-Gage LP3 Marine System from Marsh Bellofram Corporation is presented as a complete tank liquid level and vessel draft measurement solution, designed to ensure continuous high-accuracy monitoring of multiple service and ballast water tanks within marine and offshore environments.

Available in 8-, 16-, 24- and 32-tank configurations, the King-Gage LP3 Marine System is supplied with all necessary measurement modules, signal conditioning, data acquisition and network communications links for high-accuracy, high repeatability tank level measurement and readout capabilities. When used along with two-wire level sensors, hydrostatic pressure or D/P transmitters, supplied LP3 analog input modules provide complete 4-20 mA sensor transmitter signal loop processing, with signal scaling of specific tank geometries for the accurate calculation of a volumetric measurement. The processor references a capacity profile to correlate transmitter output with actual tank geometer, and formats directly as total weight or liquid volume. The system further serves as its own power supply and external excitation source. With level calculations made on the basis of hydrostatic liquid depth pressure, the system measures total product mass for precise material accounting.

High performance data acquisition system includes analytical software

iWorx, a developer of advanced physiology research tools, has introduced the IX-404E Data Acquisition System for OEM applications that require data recording and analysis. The high performance system features four single-ended analog inputs and a 16 bit analog-to-digital converter. The system is capable of sampling at up to 10 k/s/s per channel on each of its four channels and can be easily embedded into a variety of biomedical and analytical devices.

The system includes LabScribe2 software featuring an intuitive, user-friendly interface for setting up acquisition screens, calibrating signals and analyzing data. A comprehensive set of analytical routines have been preconfigured making data analysis and interpretation quick and easy. LabScribe2 software also includes a scripting function for creating custom analytical routines.

Compact SBC integrates PCI Express with PC/104

WinSystems announced their PXM-C388-S, a PC/104-compatible single board computer (SBC) powered by an Intel® 1.66 GHz Atom™ processor. This new SBC adds the SUMIT™ (Stackable Unified Modular Interconnect Technology) I/O expansion connector onto a PC/104 expandable SBC. This combination provides designers easy I/O expansion for the thousands of standard and custom designed PC/104 modules currently available worldwide plus enhanced performance and throughput of stackable PCI Express™ (PCIe) and USB. The PXM-C388-S processors' high performance enables designs that need multiple video input data streams and high speed A/D which opens up applications for security, automated inspection of production lines, data acquisition and machine-to-machine communications in a small, rugged, form factor.

“This SBC is well suited for directly upgrading existing PC/104-based designs with Intel’s Atom™ processor family”, said Jerry Winfield, founder and President of WinSystems. “It creates a bridge from the past to the future by blending high-speed serial bus expansion with legacy PC/104 I/O modules so as to strike a balance of high-integration computing power for existing low and medium complexity applications. For designers that need I/O such as relays, contact closures, digital I/O, and low-to-moderate serial communications using PC/104, this is an upward migration path and a cost-effective solution.”

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