

DAQ NEWSLETTER

A JOINT PUBLICATION OF DAQSCRIBE, INC. AND PACIFIC INSTRUMENTS, INC.

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News

DaqScribe and Pacific Launch New Web Sites

Both DaqScribe and Pacific have recently launched completely new web sites. You are cordially invited to visit and see the latest technology products and application information.

Visit www.daqscribe.com to see the latest high-performance data acquisition and recording systems. Learn about the FPDP data port that makes possible 150M sample-per-second acquisition.

Pacific's new web site www.pacificinstruments.com contains signal conditioning, data acquisition systems, data acquisition and display software and telemetry systems. Download data sheets and application notes directly from the web site.

Bob Rauworth Joins Sales Team

We welcome aboard Bob Rauworth, the newest member of our product sales and support team. Bob has sales and support responsibility for customers in the mid-west, mid-Atlantic and northeastern areas of the country.

With over fifteen years of experience, Bob has been responsible for the installation and support of many small and large data acquisition systems. Based in Chicago, he travels the territory frequently. If you have a requirement or concern about your present data acquisition system, Bob would like to hear from you. You may contact him at the following:

Email: brauworth@pacificinstruments.com
Office: (815) 439-7930
Mobile: (815) 342-2169
Fax: (815) 439-7926

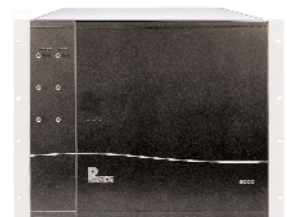
The Perfect Fit - DaqScribe and Pacific

For 25 years Pacific has specialized in high-performance signal conditioning, low-speed data acquisition and software for data acquisition and display. DaqScribe, a Radstone company, specializes in high-speed digitizing and data acquisition. Working together, DaqScribe and Pacific have created the daqPC-II, a Windows-based data acquisition system that acquires, records and displays both high and low-speed, time-aligned data. Using the latest acquisition and storage technology, these systems provide:

- Transducer signal conditioning
- Data acquisition up to 150 MS/s
- 1 S/s to 20 MS/s sample rates
- Windows-based acquisition and display software

Pacific's 6000 system conditions and records low-speed data from thermocouples, strain gages and other transducers where the sample rate does not exceed 100 kS/s and the acquisition rate does not exceed 800 kS/s. Higher speed channels are conditioned by the 6000 and recorded by daqScribe's daqPC using Sigma-Delta ADCs.

High-performance signal conditioning makes the daqPC-II stand out from other systems. Voltage or current transducer excitation, automatic bridge balance and shunt calibration are available for bridge and other resistive transducers. An AC coupled input is provided for voltage mode charge transducers.



Series 6000
Data Acquisition System

Data from high speed channels is stored to RAID. Low speed data acquired directly by the 6000 is stored to a hard drive or RAID. After recording, data is merged in a single, time ordered file that can be exported in Binary Data Exchange and other formats to user or third-party analysis programs. During acquisition, real-time data is displayed on the operator's console and distributed to networked display workstations including a DAC workstation that outputs up to 64 channels. A totally transparent backup system can duplicate recording of critical channels.



daqPC

Finally, there is a total turn-key hardware and software solution that integrates signal conditioning, recording and display of high and low-speed data. See related PI660 software article on Page 2.

PI660 - The Data Acquisition and Display Engine

Here is a software package that can take care of your current requirements and whatever you or your boss can dream up for the future



PI660 is a mature data acquisition software package that is used in a wide range of applications from automotive over-the-road testing to wind tunnels.

Programming 6000 and daqPC operating parameters is done by selection from menus or by downloading an Access database file. The operator can copy programming of the selected channel to one or many other channels. Once programmed, parameters can be changed by hardware specific menus and saved as test files for future tests or to be modified as new tests. PI660 generates text files and reports listing the channel and system parameter settings.

PI660 operates the 6000 and daqPC as a seamless integrated system recording data to disk or RAID. Display and recording are controlled by software "buttons" or remote control inputs. An IRIG time source may be used to time stamp recorded data. Use the "Test Readiness Review" to verify that the system is configured and ready to record test data.

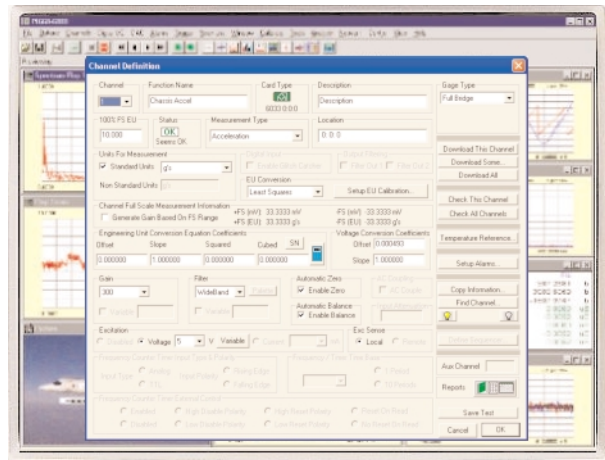
Two levels of calibration are supported: Gain and zero calibration and engineering units (EU) calibration. Gain and zero calibration removes any gain inaccuracy and zero offset, providing a traceable measurement. EU calibration uses resistive shunt or other physical stimulus, or a user entered third-order polynomial to calibrate displays and exported data in engineering units.

Twelve display types provide the operator or test engineer a choice of ways to visualize real-time and played-back data. Most displays show up to ten parameters with individual trace color selection for normal and alarm data. The tabular display can contain up to thirty-two parameters including parameters derived using the Math Engine.

Learn more about PI660 turnkey and custom application software by visiting Pacific's web site, www.pacificinstruments.com and downloading the literature and application notes.

Turnkey Application

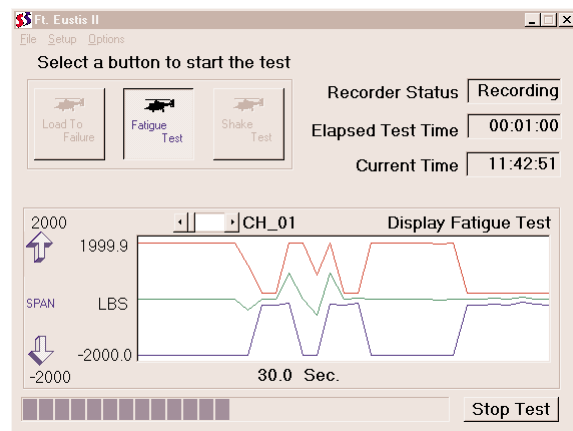
Unlike general purpose programming languages, PI660 is ready for use out of the box. It is specifically tailored for transducer data acquisition and display. Versatile and easy to use, PI660's operator interface employs menus and toolbars to program DAS hardware and acquire and display data. Just configure PI660 for the installed hardware and you're ready to go.



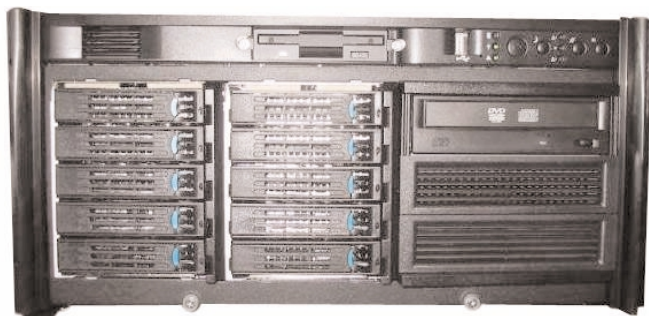
PI660's programming and setup screens self-configure for the installed hardware. A single screen handles all types of analog signal conditioning, making it easy for the operator to navigate. When using the 6000 with the daqPC, high-speed ADC inputs are assigned to signal conditioning channels for end-to-end programming and calibration.

PI660 Custom Applications

Creating custom software applications is simple using the Component Module Dynamic Link Library (CMD). It is similar to but more powerful than an Application Programmer's Interface. Custom applications for data acquisition and display, facility and test control, as well as support for third party hardware and software can easily be developed.



Any Windows programming software such as Visual Basic, LabVIEW, Excel, C++ or C may be used to create an application that calls the data acquisition functions in PI660's DLL. For example, one call opens the screen that programs channel parameters or sets sample rates. This means the application programmer does not need to create acquisition and display software and is free to concentrate on test and facility operation.



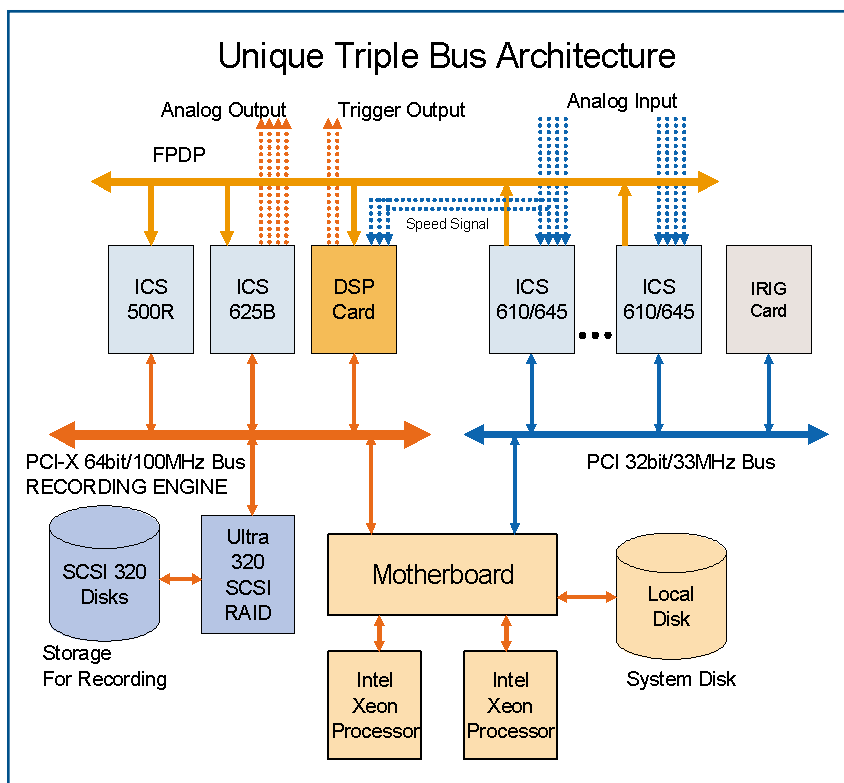
DDR-2000

Applications

- Rocket Motor Testing
- Structural Testing
- Telemetry Data Recording
- Acoustics
- Automotive Safety Testing
- Jet Engine Testing
- Shock and Vibration Testing
- Ballistics Testing
- Tape Recorder Replacement
- Wind Tunnel Testing
- Environmental Testing
- Vehicle Performance
- Thermal Profiling

DaqScribe DDR-2000 is a high-performance digital data recorder that is suitable for real-time acquisition and recording of a large number of sensor signals at high speeds. The DDR-2000 offers up to 480 analog input channels, up to 2.5 MHz/ch simultaneous sampling rate and sustained recording and playback rate of over 300 MBytes/s. For mechanical test and measurement applications, the DDR-2000 can be directly interfaced with the signal conditioning systems such as Pacific Instruments PI 6000 and others. It provides acquisition, archiving, processing and networking capabilities, all-in-one. It comes with complete turn-key software and allows interfacing with all popular third party software packages such as LabVIEW, MATLAB, DaDiSP, Pulse, etc. It also comes with the most versatile real-time capability with both time and frequency domain and waterfall displays.

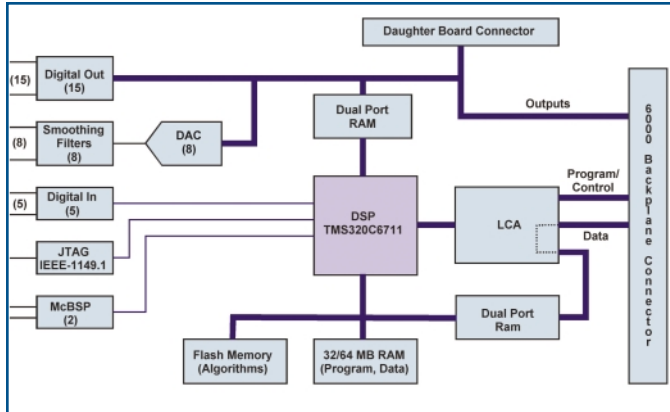
DDR-2000 is based on Intel dual-processor server platform and ICS 'Precision in PCI' acquisition boards. The standard system offers up to 1.44 Terabytes of internal RAID storage (removable) with tape back up facility via the external SCSI port. A 1 Gbit Ethernet network is also a standard feature. The DDR-2000 is the lowest cost and highest performance digital data recorder in the market, occupying only 8.6" of rack space. Other options such as IRIG time code, DSP for high-speed real-time processing and control are also supported.



Features	Standard	Option
Maximum Number of Analog Channels	96	480
Max. Sample Rate - 24-Bit ADC (per channel)	108 kS/s	
Max. Sample Rate - 16-Bit ADC (per channel)	2.5 MS/s	20 MS/s
Sustained Data Recording / Playback Rate	80 Mbytes/s	300 Mbytes/s
RAID Storage Capacity	216 Gbytes	1.44 Terabytes
Network	1 GBIT Ethernet	
Chassis Configuration	19" (W) x 26" (D) x 8.7" (H), Rackmounting	Portable

Control Processor with DSP

Pacific announces the the Model 6042 Control Processor, a new addition to its line of input-output modules for the 6000 data acquisition system. Based on the Texas Instruments' TMS320C6711 floating point digital signal processor, it runs built-in or user programmed algorithms that have access to real-time data from all measurement channels in the enclosure in which it is installed.



Built-in algorithms support PID control using DAC outputs, frequency analysis, waveform generation, derived parameter calculation and a variety of other real-time operations. It has eight 16-bit DAC analog outputs, fifteen digital outputs and five digital inputs that may be used for application control. A daughter board adds more analog and digital outputs. In addition, the 6042 has sixty-four output registers on the 6000 data bus that can accept calculated results for recording and display with measurement data.

The 6042 Control Processor is available from stock. See Pacific's web site, www.pacificinstruments.com for complete description and specifications.

Upcoming Symposiums & Exhibits

50th International Instrumentation Symposium

May 11 - 13, 2004
Hyatt Regency San Antonio Riverwalk
San Antonio, TX USA

ITEA Workshop - Test Instrumentation 2004

May 3 - 6, 2004
Park Plaza Hotel
Lancaster, CA USA

European Telemetry Conference

May 24 - 27, 2004
Garmisch-Partenkirchen, Germany

International Telemetry Conference

October 18 - 21, 2004
Town & Country Resort
San Diego, CA USA

Aerojet Upgrades Engine Test Stands

Gencorp Aerojet selected DaqScribe's DDR-2000-SC digital data recorders with Pacific's 6000 signal conditioning for upgrading six liquid and solid rocket engine test stands at their Rancho Cordova facility near Sacramento. Primary requirements were that the systems acquire both static and dynamic test data, be expandable to 1000 channels, have analog bandwidth to 100 kHz, perform end-to-end calibration and have analog outputs that would interface to existing analog control systems. Further, the systems required backup digital recording of critical channels to replace aging and difficult to maintain analog tape recorders.

The software requirements were extensive, requiring real-time remote displays, a variety of display modes and a client/server video farm that could drive up to nine display monitors. The systems had to be network compatible in order to port test results to Engineers and Scientists located in areas away from the test. According to Lee Kostusak PE, who headed up the project for Aerojet, "We were pleasantly surprised at the (low) cost to make the changes we required to the existing PI660 software module."



Aerojet engine test in E Zone

The DDR-2000-SCs installed at Aerojet incorporated the daqPC high-performance recording engine for dynamic channels and back-up digital recording. Pacific's Series 6000 was used for signal conditioning of static and dynamic channels and recording of static channels. PI660 software integrated the operation of static, dynamic and back-up channels and provided operating support for third-party flow measurement and calibration hardware. In addition, it provided the real-time operator and client/server displays all on PC workstations running the Windows operating system.

Again quoting Mr. Kostusak, "Using DaqScribe and Pacific's system level approach, we have been able to easily add third-party hardware, increase channel counts and upgrade computer performance at minimal cost and effort. Support from DaqScribe and Pacific has been excellent."

Ed Simmons-Inventor of the Strain Gage

Ed Simmons is a former Caltech professor who invented the bonded strain gage. Now at the age of 95, he has had a rough go the past few years. Pete Stein, who most of us know from his many years of instructing measurement technology courses, is dedicated to making life better for Ed. Many of us who have benefited from Ed's past work are helping by contributing to a fund setup for his care. If you would like more information or to make a contribution, please contact Pete Stein at meas.sys@alum.mit.edu.

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