DATAQ Instruments' DI-400 and DI-500 Series Hardware and Software Overview

A Close-Up Look At DI-400 (now obsolete) And DI-500 Series Instruments, The Most Price- And Performance-Competitive DAS Products Available.

Better Performance For A Lower Price

DATAQ Instruments products are redefining the landscape of data acquisition, because they're changing your expectations of price and performance. Briefly and to the point—we pack more data acquisition power into our products than any competing solution. You may expect to pay more for this incremental performance, but in fact you pay less—dramatically less! How did we resolve the two conflicting goals of lower price and higher performance? We developed a revolutionary design approach employing either a 16 or 32 MIPS digital signal processor (DSP) in each product. The DSP costs less than discrete designs and brings the added bonus of programmability that simply cannot be matched by other approaches. The following examines the many salient features common to our products—one of which is right for your application:

- Low cost
- High resolution
- Portable data acquisition systems for laptop, notebook, and desktop computers. Some with optional NiCd batteries and reinforced cases
- Thermocouple systems that also measure VAC and VDC
- And much more

Industry-First Input Scan List Flexibility

Virtually all of our instruments feature a 256-element by 32-bit input scan list that provides the most data acquisition flexibility available. Each scan list element allows complete channel-by-channel instrumentation programmability. We allow the following parameters to be programmed for each scan list element:

- **Channel number**—Define the channel number to be acquired, up to 256
- **Gain**—On most instruments, apply one of four gain factors to any channel
- **Single-ended or differential input configuration**—Most measurements require a mix of SE and DI configurations. Our products allow you to apply input configuration on a channel-by-channel basis
- **Intelligent oversampling**—Built-in oversampling and four burst reporting options allow excellent data reduction analysis techniques
- **Sample rate—**This industry-first feature allows you to program sample rate per channel over a 1:65,000 sample rate ratio range (255:1 with WinDaq/Pro+ recording software)
- **Digital I/O**—Selectable analog input, digital input, or digital output per scan element allows synchronization with external events, and full speed sampling of expansion channels

Flexible Channel Expansion

DI-400 Series instruments feature a Keithley/MetraByte DAS-16-compatible I/O connector. Connect these products to existing instrumentation, or choose our analog channel expansion units providing up to 240 differential inputs. Our analog channel expansion units are ideal for field applications or for desktop expansion. And, unlike many competitive products, you don't pay a speed penalty when you connect the analog channel expanders. Whether you are sampling one channel or 240, all channels may be acquired at the maximum rate of the hardware.

DI-500 Series instruments take a more integrated approach to analog channel expansion. Simply "daisy chain" several DI-500 Series instruments together to get the channel capacity you need. An integrated channel expansion connector is provided on each DI-500 Series instrument. Like the DI-400 Series, you don't pay a speed penalty for expansion, all channels are acquired at the maximum rate of the DI-500.

Industry-first Triggering Flexibility

Only DATAQ Instruments' products support five trigger modes: digital, analog, pre-and post-trigger, external sync, and by software command. The digital trigger mode allows a single bit, or a unique 8-bit pattern to trigger data acquisition. The analog trigger mode allows you to define an analog trigger channel, level, and slope to trigger data acquisition. Both modes allow only 12µs trigger latency and, to acquire the events before and after a trigger condition, may be programmed for pre-trigger and post-trigger configurations. External sync allows sample synchronization from an external digital event such as flywheel rotation, or quadrature decoders. The final trigger mode, software command, allows the PC to trigger data acquisition from a programmed command.

Built-in Output Scan List

The output scan list is the tool you need to pace analog and digital output data at a continuous and predictable rate. Each element in the 16-position, 32-bit wide list allows you to select an analog or digital output, and an output rate. The list forms the template for analog and digital data contained in an output buffer of variable size. An auto-reinitialize feature ensures continuous operation at the fastest rates. Use the list-based output for arbitrary waveform generation and/or synchronization.

Comprehensive Software Support

All DATAQ Instruments' products are provided complete with a software development kit for the Windows and DOS environments, as well as turnkey software for the non-programmer. We provide a DLL supporting all programming languages for Windows, and a series of libraries supporting Quick BASIC, Visual BASIC for DOS, C, Quick C, Turbo Pascal, and more for DOS. All libraries for DOS and Windows are amply supported by example programs providing stream-to-disk, real time display, simultaneous analog I/O, and other examples. National Instruments LabVIEW™ and CEC TestPoint drivers are available to allow support of DI-400 and DI-500 Series products with these programming alternatives.

Use our included WinDaq/Lite to acquire and analyze data minutes out of the box. This multitasking Windows application allows continuous recording of data to disk with a real time display, event marking, event annotation, waveform scaling, time and date stamping, and more. It's provided free-of-charge, as is WinDaq Waveform Browser, for waveform playback and analysis. It supports FFT, DFT, digital filtering, statistical reporting, area bounded by the curve, rate of change, D%, and other operations. Multitasking doubles your productivity by acquiring and analyzing data at the same time. You can even analyze data while its being stored to the data acquisition file!

WinDaq software supports 240 channels for data acquisition and playback and analysis. The Advanced CODAS option allows waveform integration, differentiation, peak capturing, moving average filters, and more to raise your productivity to new levels.

Software Compatibility

Using ActiveX Controls, software developed for one product runs literally without modification on another. For example, you can use the DI-400 plug-in card as a development tool on your desktop computer, then apply the code directly to your laptop for execution using the DI-720 portable DAS. Or, apply it to the DI-410 and instantly quadruple your measurement resolution. It's that easy!

OEMs — Bring Us Your Data Acquisition Problems

Our DSP-based design allows tremendous latitude over conventional approaches for solving specific data acquisition problems. Since the DSP's program is downloaded on power-up, if you change the program, you can completely change the character of the product. Bring us your special data acquisition problems and let us show you how easily we can tailor an instrument to your specific requirements.