



Transient Data Acquisition  
Capture, Calculate, Customize

Greetings ,

Hi-Techniques would like to thank you for all of your support this year. In an effort to improve our products and services, we have expanded every part of our business ... new staff, new facilities and new technology. We are excited about the prospects for the upcoming year and look forward to continuing to improve to help meet new application challenges.

Visit our website at <http://www.hi-techniques.com> to keep up-to-date with our new products and services. Have a happy and safe holiday season !



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### Product News - Portable meDAQ enhancements



The meDAQ data acquisition system from Hi-Techniques continues to evolve into the preferred platform for portable and distributed test and measurement applications.

New extensions to the meDAQ include :

#### In-Vehicle Engine Combustion Analysis

A new timebase board is available for the meDAQ that integrates the Engine Analysis input/output ports (TDC IN/OUT, ENCODER IN, ...). This allows the meDAQ to function as an in-vehicle engine combustion analyzer, with 16 input channels for cylinder pressure or other signals (e.g., needle lift, spark timing, MAP, ...).

#### IRIG/GPS Timing

An IRIG/GPS timing and synchronization option has been added to the meDAQ timebase board. Simple to use ... connect the antenna cable directly to the meDAQ and the system time stamps each data point using GPS satellite timing.

#### Wireless

Using our Wireless Ethernet option, the meDAQ can operate from as far away as 400 meters outdoors and 100 meters indoors from your PC. Especially useful in harsh operating environments (e.g., explosive, high voltage, extreme temps, ...), the wireless interface allows the PC and operator to be located a safe distance from the meDAQ measurement source.

#### Connectivity

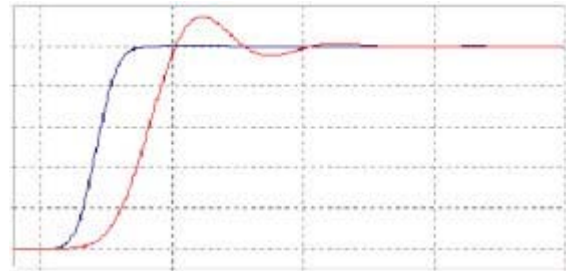
The distributed meDAQ architecture enables real-time remote control and display of live data from any PC connected to the network. Multiple systems can be controlled from a host PC via a single Ethernet connection. This approach enables sensitive analog measurements to be made closer to the measurement point reducing potential sources of unwanted noise.

Other features include :

- « Small, portable, DC-powered
- « Ideal for fast transient measurements of voltage, current, pressure, strain/bridge and current-fed accelerometers
- « 2 to 16 simultaneously sampled channels from 100 kSps to 50 MSps per frame
- « Remote operation via Ethernet ... link multiple frames to create a distributed DAS with hundreds of channels

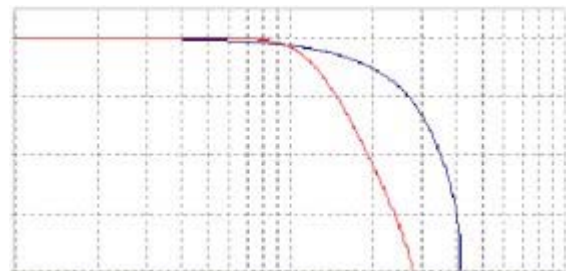
### Application - Selecting Filter Types

Most Hi-Techniques digitizers offer a choice of Butterworth or Bessel filters for noise reduction and anti-aliasing. Since the "perfect" filter does not exist, how do you know which filter type to select for your applications? While both types are 8-pole filters (48 dB/octave), they differ in frequency response and step response. Your measurement priorities determine the best choice. The Bessel filter shown in the blue trace has excellent time-domain step response, where the Butterworth in red exhibits about 15% overshoot on a fast step. That means the Bessel is preferred for oscilloscope and transient recording use, particularly in mechanical, mechatronic and ballistics applications. When accuracy of peak values and waveform shape are the top concerns, select a Bessel type.



Step Response: Bessel (blue) and Butterworth (red)

On the other hand, a Butterworth filter provides flatter response and a faster cut-off in the frequency domain as shown below. The Bessel begins rolling off at a lower frequency and slopes downward more gently. For these reasons the Butterworth filter is preferred for frequency-domain work like FFTs, vibration analysis, shock response and harmonic measurement. When accuracy of frequency content and steep anti-aliasing are the top concerns, select a Butterworth type.



Frequency response: Bessel (blue) and Butterworth (red)

Our applications group can assist you in selecting the right filter. Contact us at 800-248-1633 or at [info@hi-techniques.com](mailto:info@hi-techniques.com)

### How To - Improved Win600e/meDAQ manuals

Hi-Techniques has integrated all of the new features of the HIT software into a new and improved manual for the Win600e and

- « Dedicated on-board channel memory for transient or streaming applications
- « Sophisticated triggering and auto-start capabilities
- « Includes our easy-to-setup Hi-Techniques software ... intelligently taking you from data capture to report generation

meDAQ products. The manual was re-designed and expanded, with complete table of contents, detailed descriptions and quick index.

The new manual is available in PDF download format at <http://www.hi-techniques.com/downloads.htm> or in print version (nominal charge) by contacting Hi-Techniques at (800) 248-1633.

[>> More Info >>](#)

### What, Where, and When

Shows: [IMAC-XXIII](#) - Orlando, FL - Jan 31-Feb 3, 2005

Training: In-house [Apr 18-22](#)

Updates: [Win600e/meDAQ 5.00.30](#)  
[Win600 4.05.56](#)  
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