

DaqView Overview

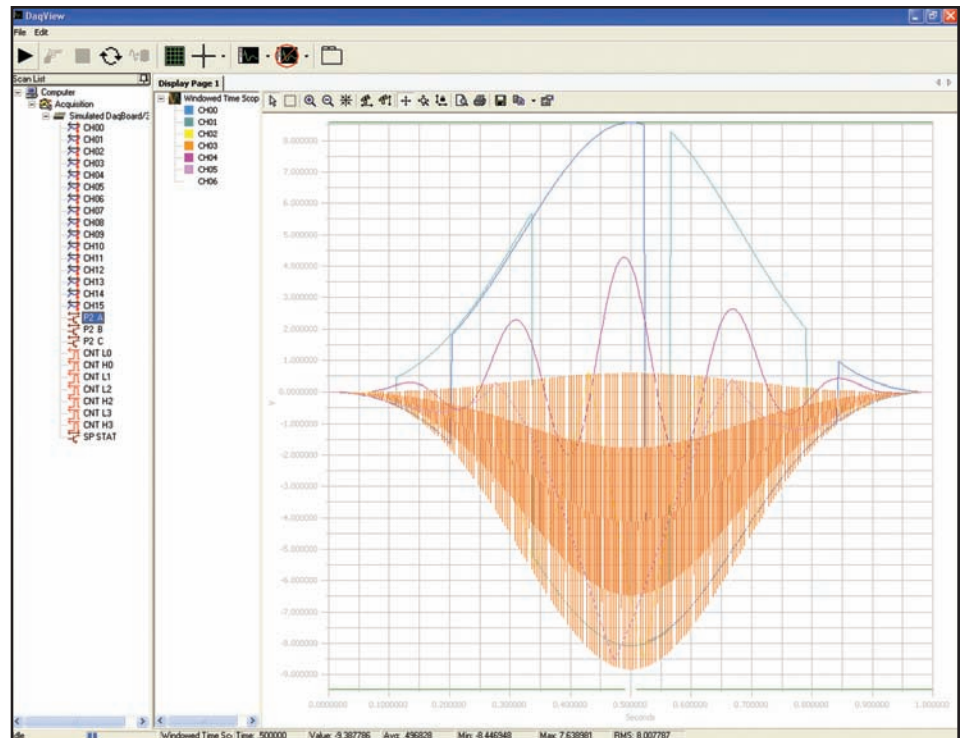
Out-of-the-Box Spreadsheet-Style Setup, Data Acquisition, & Display Software

Features

- Included with all Daq Series and Personal Daq/3000 Series products from IOtech
- Spreadsheet-style channel configuration and set-up
- Real-time displays include Digital, Dial, Bar Graph, Strip Chart, and Scope
- Real-time storage to disk
- Scaling and averaging functions built-in
- Setpoint output configuration mode
- Export directly to Excel® and MATLAB®, plus a wide variety of output formats including Text, DIAdem®, DASyLab®, .wav, UFFA, and UFFB
- Overlay recorded with real-time data
- Frequency analysis and display

DaqView allows you to verify signal connections, acquire and save data to disk, and graphically view real-time data within moments of taking your IOtech hardware *Out-of-the-Box*. Easily set up all of your hardware, acquisition, and display parameters without programming via a simple spreadsheet-style screen. DaqView is a full-featured acquisition and display application that provides all the functionality you'll need for most data-logging applications.

DaqView includes real-time export to Microsoft® Excel® as well as increased charts/scope capabilities and time-domain analysis. DaqView also includes frequency-domain analysis, digital filtering, and spectrum analysis.



Out-of-the-Box spreadsheet-style setup, data acquisition, and display software for DaqBoard, DaqBook, DaqLab, DaqScan, and Personal Daq/3000 Series

DaqView Support	
Version	DaqView
Signal type to log or view	Analog, digital, or counter
Real-time log to disk	Yes
Post-acquisition waveform viewer	Yes
Real-time strip chart and scope displays	Yes
Scope zooming	Cursor, mouse, area
Save screenshot	Yes
Print scope or chart	Yes
Data scrolling	Yes
Max. no. of traces per scope or chart	16
Max. no. of scope or chart displays	64
Copy text data to clipboard	Yes
Real-time Excel update	Yes
Excel integration	Yes
Signal analysis	Avg, RMS, Dec, Time, Window, Digital Filter, FFT, Spectrum Analysis
Meter displays	Yes
View recorded data	Yes
Export to 3rd party	Excel, Text, DIAdem, DASyLab, DADisp, MATLAB, .wav, UFFA, UFFB
Simulated Instrument Mode	Yes
Overlay recorded with real-time data	Yes

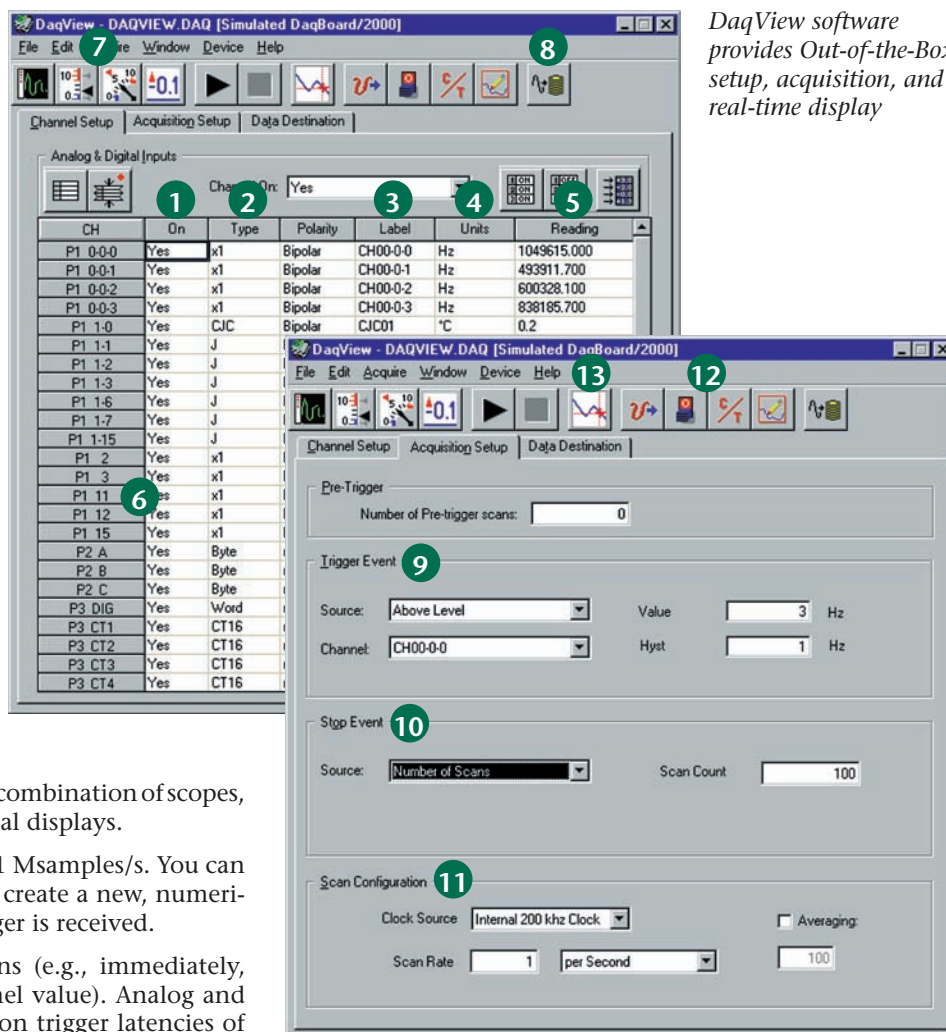
DaqView

Out-of-the-Box Software

DaqView lets you:

- 1 Designate an individual data channel as active or inactive by clicking on a selected channel.
- 2 Choose different ranges or gains for each channel, based on the installed signal conditioning options. You can also select bipolar or unipolar scales for each channel.
- 3 Assign each channel a unique label, which will be automatically referenced throughout PostView.
- 4 Choose the desired engineering units in which to display acquired data, based on the installed signal conditioning options. You can also enter parameters to perform $mX+b$ on each reading before displaying it.
- 5 Display real-time readings of all selected channels.
- 6 Scan digital and counter inputs with the analog inputs, for time-correlated data.
- 7 Customize a real-time display using any combination of scopes, strip charts, bar graphs, dials, and digital displays.
- 8 Store data to disk in real-time at up to 1 Msamples/s. You can also select an auto-increment mode to create a new, numerically indexed data file each time a trigger is received.
- 9 Select programmable trigger conditions (e.g., immediately, keyboard hit, external TTL, and channel value). Analog and digital trigger latency is dependent upon trigger latencies of the hardware.
- 10 Acquire up to 10 million scans post-trigger. In addition, you can acquire up to 100K pre-trigger scans.
- 11 Program the scan sequencer, from one scan every 1 μ s to once per hour.
- 12 Set up analog output, digital I/O, and counter/timer functions.
- 13 Review acquired waveforms with a stripchart-style display via PostView (see PostView software section for complete information).

DaqView software provides Out-of-the-Box setup, acquisition, and real-time display



DaqView

Out-of-the-Box Software

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I/O Support

In addition to analog input, DaqView lets you easily set up and configure analog output, digital I/O, and counter/timers prior to beginning an analog scan sequence.

Digital I/O

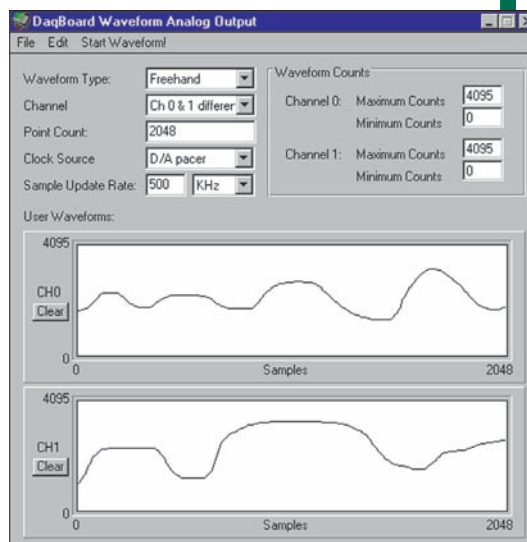
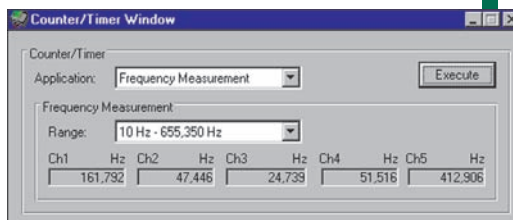
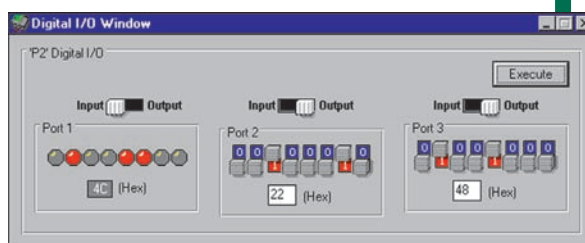
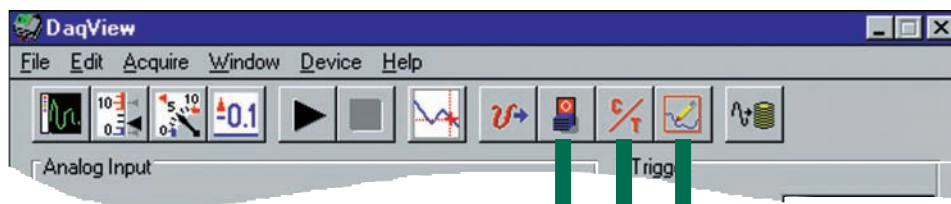
Each of the three 8-bit digital I/O ports can be configured for input or output. DaqView also allows you to set up and configure up to 192 channels of digital I/O expansion if DBK digital options are installed in your system. Signals are updated each time the execute button is pressed.

Counter/Timers

You can set 5 counter/timers to measure frequency, totalize pulses, or generate periodic digital outputs. Signals are updated each time the execute button is pressed.

Analog Output

You can set up the analog outputs as simple voltage levels or as waveforms. DaqView lets you draw waveforms, load files containing waveforms, or choose from a variety of pre-loaded waveform types. The maximum waveform update rate is dependent upon maximum rate attainable by the hardware.



Signal Conditioning & Expansion I/O Support

DaqView supports a wide variety of input and output signals via IOtech's DBK signal conditioning and expansion hardware options. These DBK products support various analog and digital I/O signals from thermocouples and RTDs to accelerometers and strain gages. DaqView automatically converts readings from the DBK options into real-world parameters such as temperature, displacement, frequency, and many other engineering units. For example, DaqView automatically performs cold-junction

compensation and linearization on thermocouple readings before passing them along for display or for storage to disk.

DaqView lets you expand up to 1024 analog inputs. A sample hardware installation screen, which identifies different DBK options attached to an IOtech data acquisition system, is depicted below.

- 1 Thermocouples
- 2 RTDs
- 3 Accelerometers
- 4 5B & 8B signal conditioning
- 5 Frequency input
- 6 High-voltage input
- 7 Strain gages
- 8 Low-pass filtering
- 9 Simultaneous sample & hold
- 10 4-20 mA current input
- 11 Analog output
- 12 4-20 mA current output
- 13 Isolated high-voltage input
- 14 Isolated low-voltage input
- 15 Analog input simultaneous sample & hold, and low-pass filtering
- 16 Digital I/O expansion
- 17 Isolated digital input
- 18 Isolated digital output
- 19 Relay
- 20 Vehicle Bus

Configure System Hardware

Analog I/O Option Cards

External Connection	P1 Channels
1 DBK82 Dual 7 channel TC Card	→ 0
2 DBK9 RTD Card	→ 1
3 DBK4 Dynamic Signal Card	→ 2
4 DBK44 Dual 5B Module Card	→ 3
5 DBK7 Frequency-Voltage Card	→ 4
6 DBK8 Voltage Input Card	→ 5
7 DBK43A Strain Gage Card	→ 6
8 DBK18 Filter Card	→ 7
9 DBK17 Sample/Hold Card	→ 8
10 DBK15 Current/Voltage Card	→ 9
11 DBK2 Voltage Output Card	→ 10
12 DBK5 Current Output Card	→ 11
13 DBK50 Isolation Card	→ 12
14 DBK51 Isolation Card	→ 13
20 DBK70 Analog Multiplexor	→ 14
15 DBK45 Filter/SSH Card	→ 15

Digital Option Cards

External Connection	P2 Channels
DBK20 16	→ 0
DBK20	→ 1
DBK21 16	→ 2
DBK21	→ 3
DBK23 17	→ 4
DBK24 18	→ 5
DBK25 19	→ 6
None	→ 7

A/D Signal Reference
☒ Single-ended ☐ Differential

D/A External Reference
 Channel 0: -10.00 Volts
 Channel 1: -10.00 Volts

Custom Real-Time Display

You can create your own real-time display screen using DaqView's built-in display options. No programming is required—simply point, click, and drag desired display options to create a custom screen. Examples of DaqView's real-time displays follow.

1 Digital Display

You can display up to 32 channels of digital readings. You can enable or disable the trend indicator.



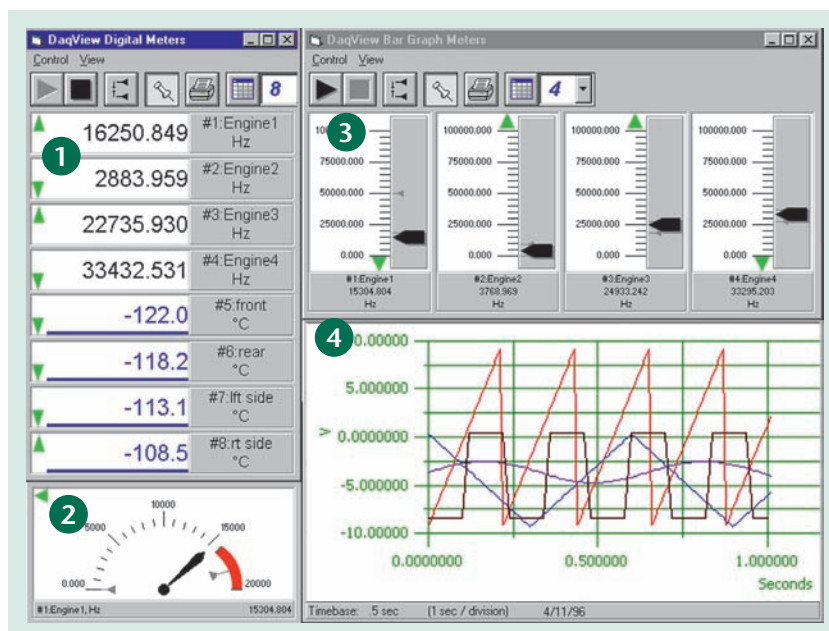
2 Dial Meter

DaqView allows you to show up to 32 channels in a dial display format. Each dial indicates instantaneous levels, as well as peak hold and trends.



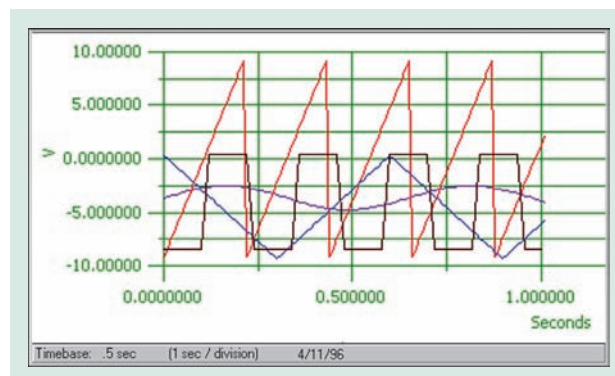
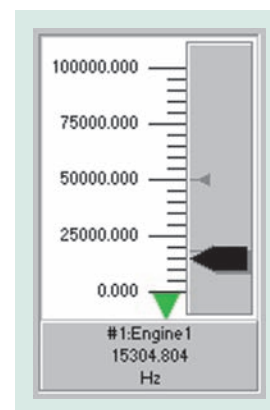
4 Scope & Strip Chart

DaqView lets you display up to 1 display page of scope or strip charts of data, all of which scroll at the same rate. See Scope and Strip Chart sections on the following pages for more details.



3 Bar Graph

You can select up to 32 channels for display in a bar graph format. Each bar graph shows instantaneous levels, as well as peaks and trends.

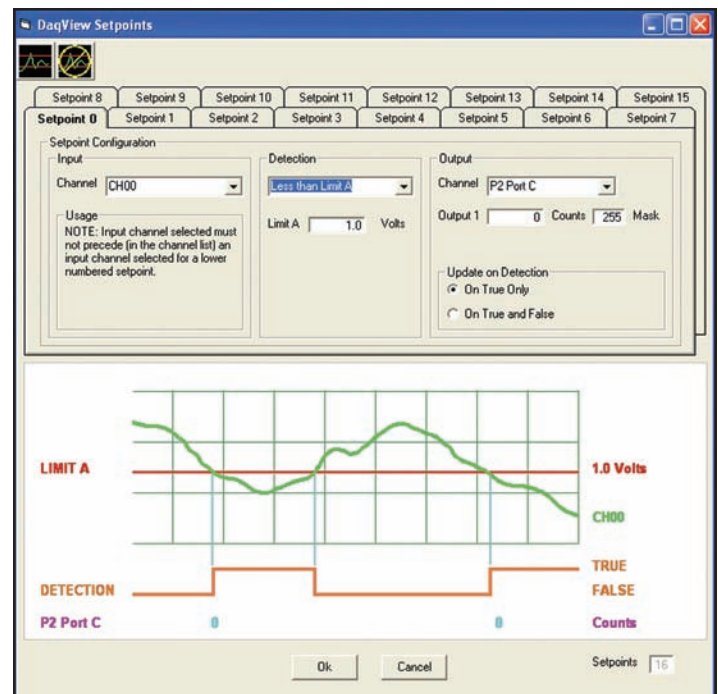


Setpoint Configuration Dialog

DaqView has a new setpoint configuration dialog that allows the user to configure setpoints for their /3000 Series hardware. The setpoint configuration dialog allows up to 16 individual setpoints to be configured. Each setpoint can utilize any valid voltage, digital, or counter input as an input source, and can evaluate that channel against configured limit conditions as follows:

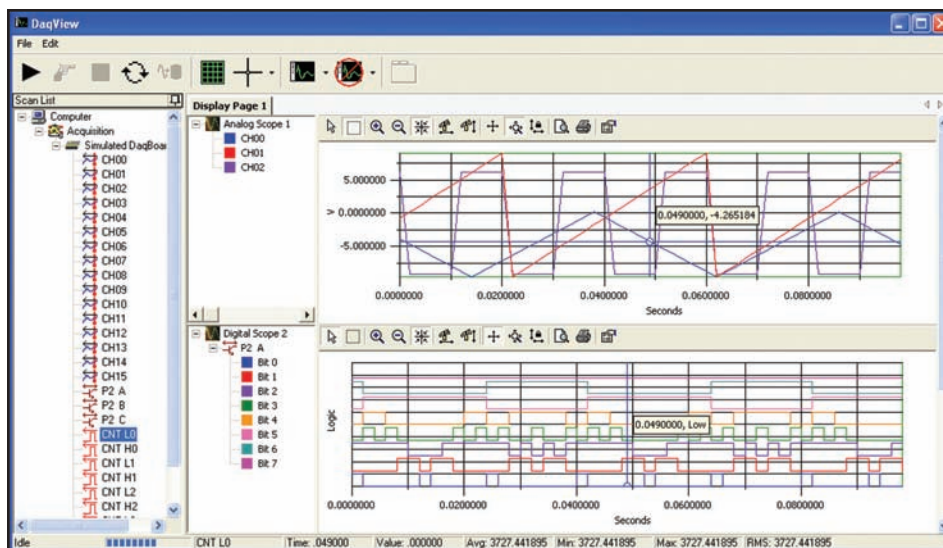
- Input channel greater than limit
- Input channel equal to limit
- Input channel less than limit
- Input channel inside high and low limits
- Input channel outside high and low limits
- Input channel satisfies hysteresis criteria

The setpoint configuration dialog also allows configuration of output actions when the input criteria has been met. The output action can be to drive any of the valid analog, digital, or timer output ports to a value configured by the user. Refer to the /3000 Series for further information on setpoint features and operation.



The Setpoint configuration dialog allows the user to configure up to 16 setpoints for their /3000 Series products

Scope & Strip Chart Display



Multiple Analog, Logic, and Counts displays can be viewed concurrently on the same display

DaqView now has greatly enhanced scope and strip chart displays including Analog, Logic, and Counts display modes. The Analog display modes allow users to display analog channels such as voltage, temperature, and other analog measurements in either a scrolling strip chart or scope format. In a like manner, digital and counter values can be displayed in strip chart or scope format by using the Logic and Counts display modes respectively.

Each display can allow up to 16 channel traces and up to 4 displays can be added to the standard display page. An unlimited number of display pages can be created. Channels are easy to add to each display by simply dragging and dropping them onto the display of choice. A main toolbar allows easy display manipulation and operation that includes button controls for acquisition starting, triggering, and stopping as well as overall cursor and gridline controls. In addition, each display has its own toolbar controls allowing independent operation

DaqView

Out-of-the-Box Software



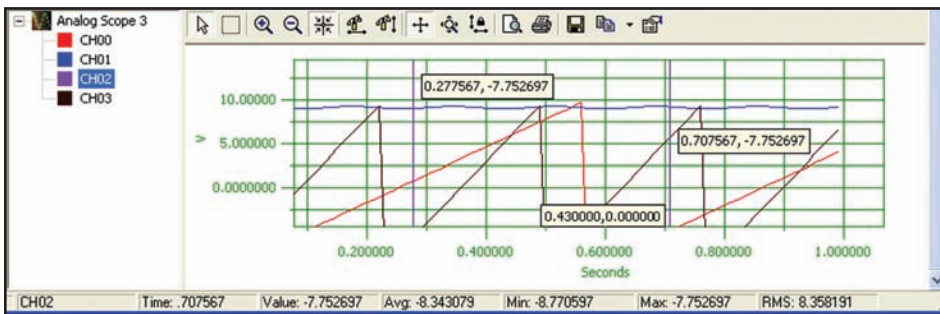
and control of the display including zooming, scaling, axis control, printing, and exporting of display data to the clipboard. Each display also has an easy to understand configuration dialog that allows easy configuration of the display such as display, trace, and gridline colors. A main status bar indicates overall acquisition status as well as data representation of the currently selected display and cursor.

The latest version of DaqView now contains features that let users overlay real-time data with previously recorded data. The data may have from either recent or older Daq product files, or any other IOtech product, such as the WaveBook. The overlays may be presented in

different fashions so users can compare the results of previous tests with real-time or newer data to fine-tune their process.

Multiple file sets previously recorded with any particular configuration tree may be brought into the DaqView scope display. Users can then observe all the channels that were in the file, and each channel can be individually selected and put into any plot of the users choice. DaqView users also may compare data recorded in the frequency domain with data recorded in the time domain. Regardless of the domain in which the data was recorded, the latest version of DaqView converts the time-domain data into the frequency domain to let users observe the comparison.

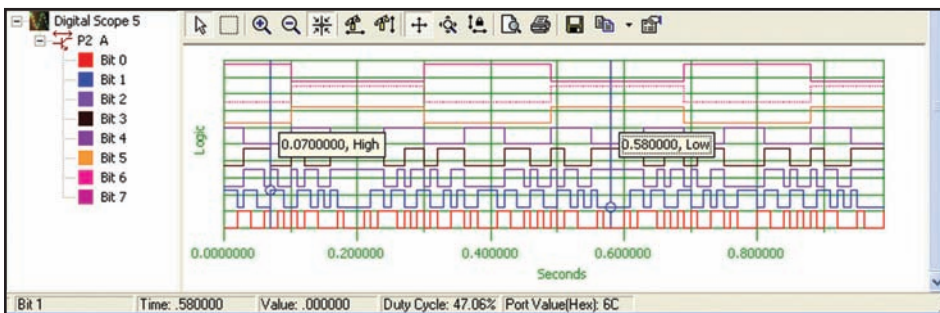
Analog Display



The Analog Scope allows users to easily display and analyze analog data such as temperature, voltage, strain, acceleration, or other analog data

The Analog display allows users to display analog measurement data such as temperature, voltage, strain, and acceleration in an easy to understand format. A status bar indicates current cursor information as well as overall Average, Minimum, Maximum, and RMS values for the data in the display. Cursor annotations are available for easy data interpretation. If dual cursors are enabled, annotations for differences of X and Y values are displayed.

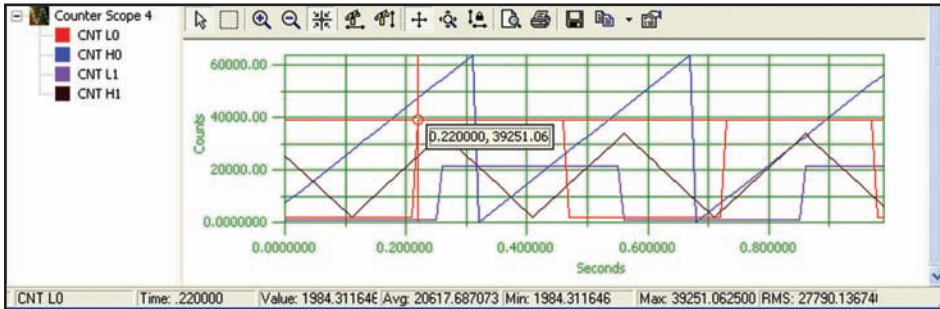
Logic Display



The Logic display allows users to display and analyze digital data in a Logic Analyzer format

The Logic display allows users to display digital data that is measured in a synchronous manner to be displayed in a logic analyzer format. Each bit of the digital port is displayed as a separate trace allowing users to easily analyze digital data. It's value is indicated as either *High* or *Low*. A status bar indicates current cursor information for each bit as well as overall value of the port in a Hex format. Duty cycle information is also included. Cursor annotations are available for easy data interpretation. If dual cursors are enabled, annotations for duty cycle between the cursor values are displayed.

Counts Display



The Counts Scope allows users to easily display and analyze counter based data

Display Modes

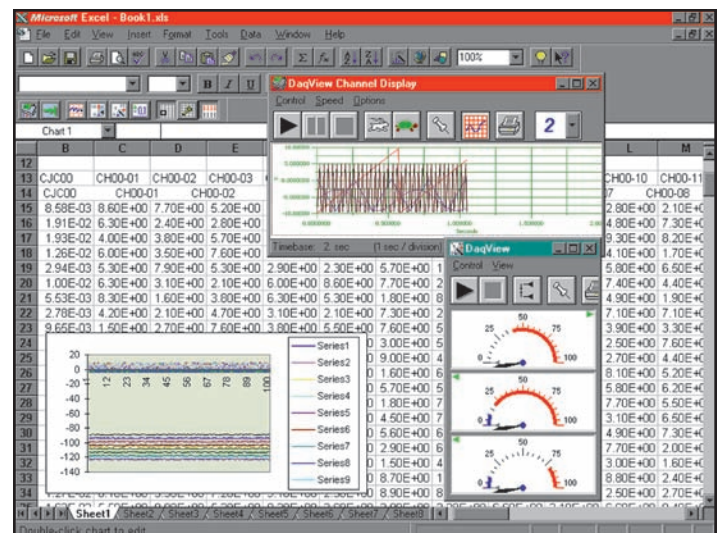
There are several types of display modes available for the Analog, Logic, and Counts display types.

- **Scrolling Strip Chart** continuously scrolls new data to the right while old data falls off the display to the left
- **Scrolling Overlay Chart** will continually overlay the oldest data with newest data on the display
- **Scrolling Block Chart** will add new data from the left until the display is filled and then clear the display and begin again displaying new data from the left
- **Scope Display** will not display data until the entire acquisition is complete and then render all the data on the display

Scrolling chart displays allow data to be displayed as the acquisition runs. This mode allows real time interpretation of slower moving signals such as temperature. The Scrolling chart displays each have settings allowing the total display time as well as history settings to allow the user to scroll back and view previously collected data. The Scope display can be used to analyze fast moving or transient signals in display frames. The Scope display mode is utilized for advanced signal analysis found in DaqView.

Excel® Integration

DaqView provides complete data acquisition functionality and is seamlessly integrated into Excel's tool palette. Excel is an ideal tool for test engineers because it provides a variety of graph and charting functions for presenting data in a graphical format, as well as mathematical and analysis functions such as FFTs. Excel's ability to retrieve and manipulate previously acquired data in a spreadsheet format and DaqView's advanced data acquisition functions form a comprehensive data acquisition solution.



DaqView seamlessly executes from within Excel's tool palette

With DaqView there is no limit to the number of displays or display pages that can be added thus allowing hundreds of acquired channels to be displayed and analyzed. The unique display page design allows numerous display pages to be added and managed. In addition, each display page can have a nearly unlimited number of displays that can be scrolled through by the user.

Frequency Domain Analysis

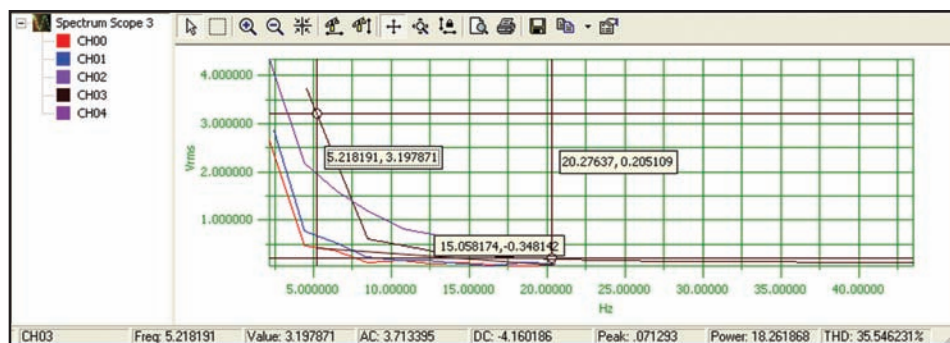
DaqView provides advanced signal processing and analysis features in an easy-to-use and intuitive graphical environment. Setup is easy with intuitive configuration dialogs. Useful analysis information is also provided in the DaqView Scope display status bar.

DaqView includes Windowed time functions such as Blackman, Blackman-Harris, Cosine Tapered, Exact Blackman, Exponential, Flat Top, Force, Hamming, Hanning, and Kaiser Windowing functions.

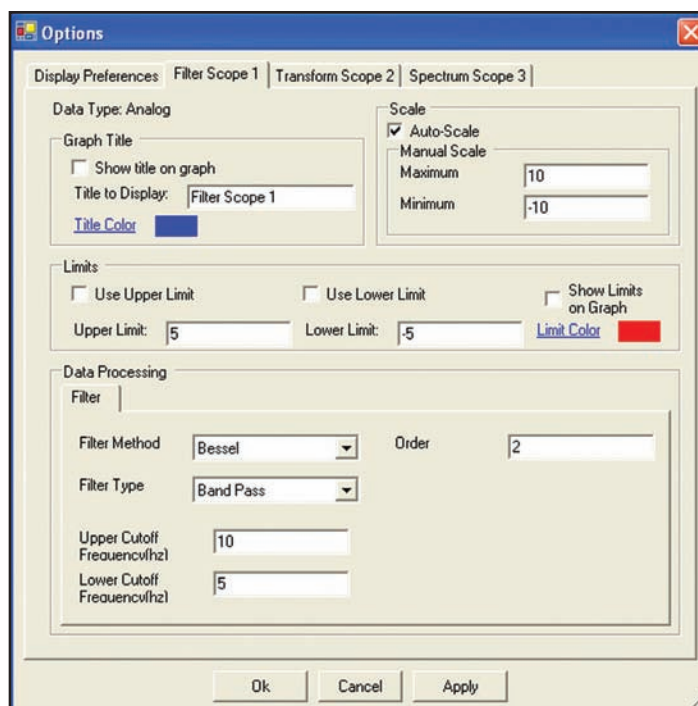
In addition, advanced digital filtering is included with DaqView. Bessel, Butterworth, Chebyshev, Elliptic, EquiRipple, Inverse Chebyshev, Kaiser and Windowed FIR for Band Pass, Stop Band, High- and Low-Pass Filters are provided. Filter Cutoff Frequencies are also configurable via an easy to understand dialog.

DaqView offers a rich selection of Frequency Transforms including FFT, Fast Hartley, Fast Hilbert, and Power Spectrum. When in this mode the status bar reflects Minimum, Maximum, Peak, and Power calculations.

Also included are spectrum analysis functions such as Auto Spectrum, Amplitude Spectrum, Phase Spectrum, and a Harmonic Analyzer. When in this mode, the status bar reflects AC and DC component, Frequency Peak, Power, and THD (Total Harmonic Distortion) calculations. Linear and DB scaling is user selectable.



DaqView includes powerful spectrum analysis features such as AC and DC component, Frequency Peak, Power, and THD calculations



As with other setup dialogs the filter setup dialog is easy to use