# SpectraPLUS-DT with DT9837A DAQ System

- Hardware Supported: Data Translation DT-9800 series
- Sampling Rate: highest rate supported by Data (2.0 MHz using DT-9832A)
- Frequency Span: Up to 1/2 of selected sampling rate
- Sampling Precision: 8, 16 or 24 bit (hardware dependent)
- Maximum Channels: 16 (hardware dependent)
- Selectable Input Voltage Range (gain), AC or DC coupling, IEPE Current source, Single Ended or Differential Inputs (hardware dependent)
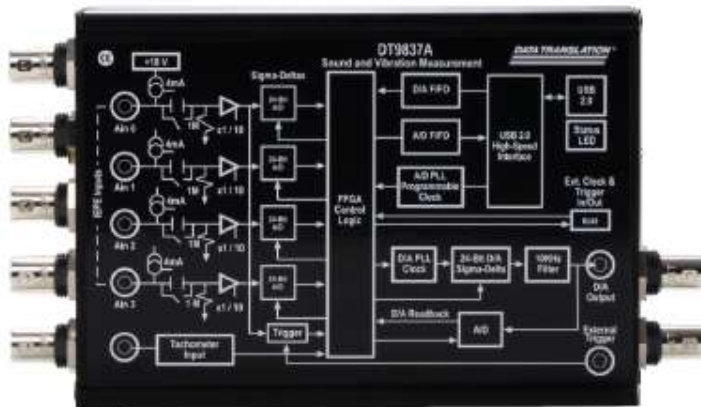


**Analog output subsystem (DT9837A)**

- **One 24-bit D/A converter**
- **Single value, waveform, and continuous streaming**
- **Programmable output rate from 10 kS/s to 52.734 kS/s**
- **Output range of ±10 V**
- **±3 mA output current**

**Software-programmable trigger source (software trigger, external digital trigger, or analog threshold trigger) to start the analog output**

- Tachometer input channel support: Plot RPM versus Time as well as dedicated RPM display window.
- Order Analysis: plot Order vs RPM and Amplitude vs Order
- Triggering: Analog or TTL with user Accept/Reject option. Selectable threshold, channel and delay. Edge or Level detection.
- Run Control: automatically stop after user selectable FFT count or time limit
- Modes: Real-Time, Recording, Post-Process
- Post-Process Editing: Cut, Copy, Paste, Play, Play Special, Mute, Gain Adjust, DC Offset, Dynamic DC Offset removal, Digital Filtering
- Digital Filtering Options: Low Pass, High Pass, Bandpass, Notch or User defined filter shape
- Hard Disk Recording: Automatic rollover when Wave file size limit reached.
- Displays: Time Series, Spectrum, Phase, 3-D Surface Plot, Spectrogram
- Data Views: Popup window of underlying data values.
- Spectral Overlays: Up to 6 simultaneous overlay traces, unlimited save and retrieve from hard disk
- Composite overlay: average of any selected overlays or the difference between any two overlays.
- Video Zoom: Arbitrary Zoom In to any portion of overall frequency or time span
- Auto Scaling
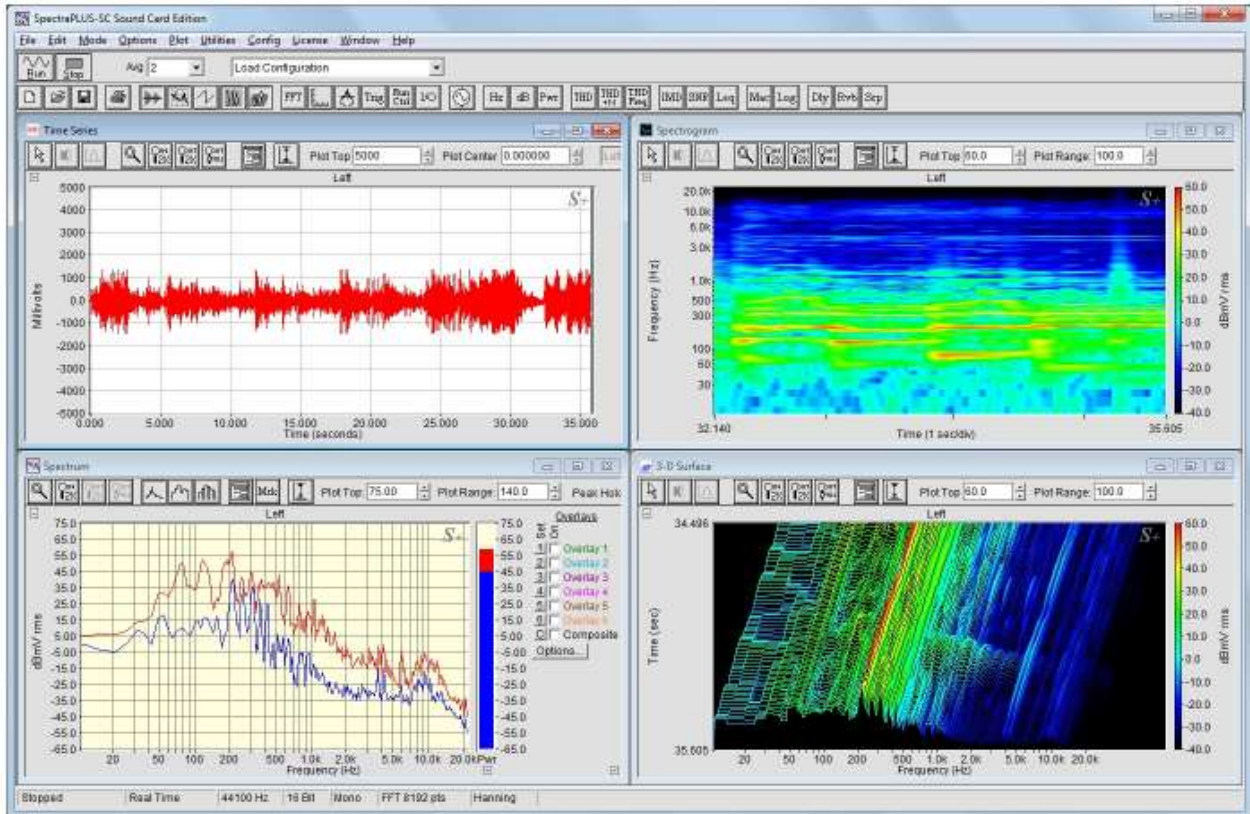
- Cursor Measurements: Absolute, Differential (Ctrl key), Harmonic cursors (Shift key), Sideband cursors (Ctrl + Shift key)
- Right Click Action Menus: Various Cross display functions, Inverse FFT, Cepstrum, Smooth Spectrum, Expand and other Edit functions
- FFT Sizes, 32, through 1,048,576 pts (in powers of two increments)
- Overlap Processing: Up to 99% of FFT size in Post Processing mode
- Smoothing Windows: Bartlett, Blackman, Flat Top, Hamming, Hanning, Kaiser, Parzen, Triangular, Uniform, Force, Exponential, Gaussian
- Averaging Modes: 1) Free Run with selectable block size. 2) Sound Level Meter mode (Off/Fast/Medium/Slow/Forever)
- Averaging Types: Exponential, Linear or Vector moving average
- Peak Hold: live peak hold with selectable timeout
- Composite Channel operations: Average, Cross Spectrum, Real and Complex Transfer Functions, Coherence
- Amplitude Axis Scaling: Linear, Logarithmic or Log Magnitude.   Power Spectral Density (PSD) option
- Frequency Axis Scaling: Narrowband Linear, Narrowband Logarithmic, 1/1, 1/3, 1/6, 1/9, 1/12, 1/24, 1/48 or 1/96 Octave
- Spectral Weighting: Flat, A, B, C ANSI weighting curves
- Transducer Compensation: Independent compensation for each channel
- Markers: Up to 8 user defined markers with user customizable labels
- Calibrated Inputs (Volts, Millivolts)
- Calibrate directly by specifying transducer sensitivity (mic, hydrophone, accelerometer, force) or calibrate to an external reference source.

- Amplitude Calibration: V, mV, dBV, dBmV, dBu, SPL or PA (in air or water),
- psi, or custom units
- Vibration Measurements: Acceleration (G), Velocity (ft/sec, in/sec, mils/sec, mm/sec), Displacement (ft, in, mils, mm)
- Independent Calibration and Scaling: each channel can be scaled and calibrated independently
- Signal Generator: Pink Noise, White Noise, Tone Burst, Noise Burst, 1 kHz Tone, Multiple Tones (freq, level, phase), Frequency Sweep, Frequency Step, Level Sweep, IMD test tones, Pulse, Sawtooth, Triangular, Squarewave, User Defined (from .WAV source). DTMF, Digital Zero.
- Utility Measurements: Peak Frequency, Peak Amplitude, Total Power
- Distortion Measurements: THD, THD+N, SNR, IMD
- THD+N versus Frequency utility - quickly and conveniently measure the distortion characteristics of a device over a range of frequencies.   Results are shown on a semilog/log plot and can be saved/loaded from disk or printed.
- Acoustic Tools: Reverberation Time (RT-60), Equivalent Noise Level (Leq, LeqT, Lsel, Lpk, Lmax, Lmin, L10, L50, L90.   Sound Power Level utility (ISO-3744/3746)
- Automation Tools: COM based Application Programming Interface (API).   Data Logging - output text file (per channel) containing selected spectral parameters + time-stamp.
- Import/Export: .WAV, ASCII, and Binary file formats
- Configuration Files: Store and recall common analyzer test setups from disk. Quick load from toolbar
- Color Printing: All displays plus annotation, comments, and margin control
- Clipboard support: WAV segments, tabular data and bitmap images

### ANALOG INPUT

| CHANNELS | RESOLUTION | MAX SAMPLE RATE | SAMPLING |
|---|---|---|---|
| 4 | 24-bit | Up to 105.4 kS/s/ch | Simultaneous |

| ISOLATION | SNR | THD | SFDR |
|---|---|---|---|
| — | 95 dB Typ. | -104 dB Typ. | 110 dBFS Typ. |

### ANALOG OUTPUT

| CHANNELS | RESOLUTION | SPEED |
|---|---|---|
| Up to 1 | 24-bit | Up to 96 kS/s |

### DIGITAL I/O

| CHANNELS | COUNTER/TIMERS | TACHOMETER |
|---|---|---|
| — | — | Up to 1 |

### SOFTWARE / POWER

| OS SUPPORT | DRIVERS | POWER |
|---|---|---|
| Windows® and Linux® | Open Layers® SW Suite | Bus powered |