Product Data

DT9857E-16 USB Dynamic Signal Analyzer

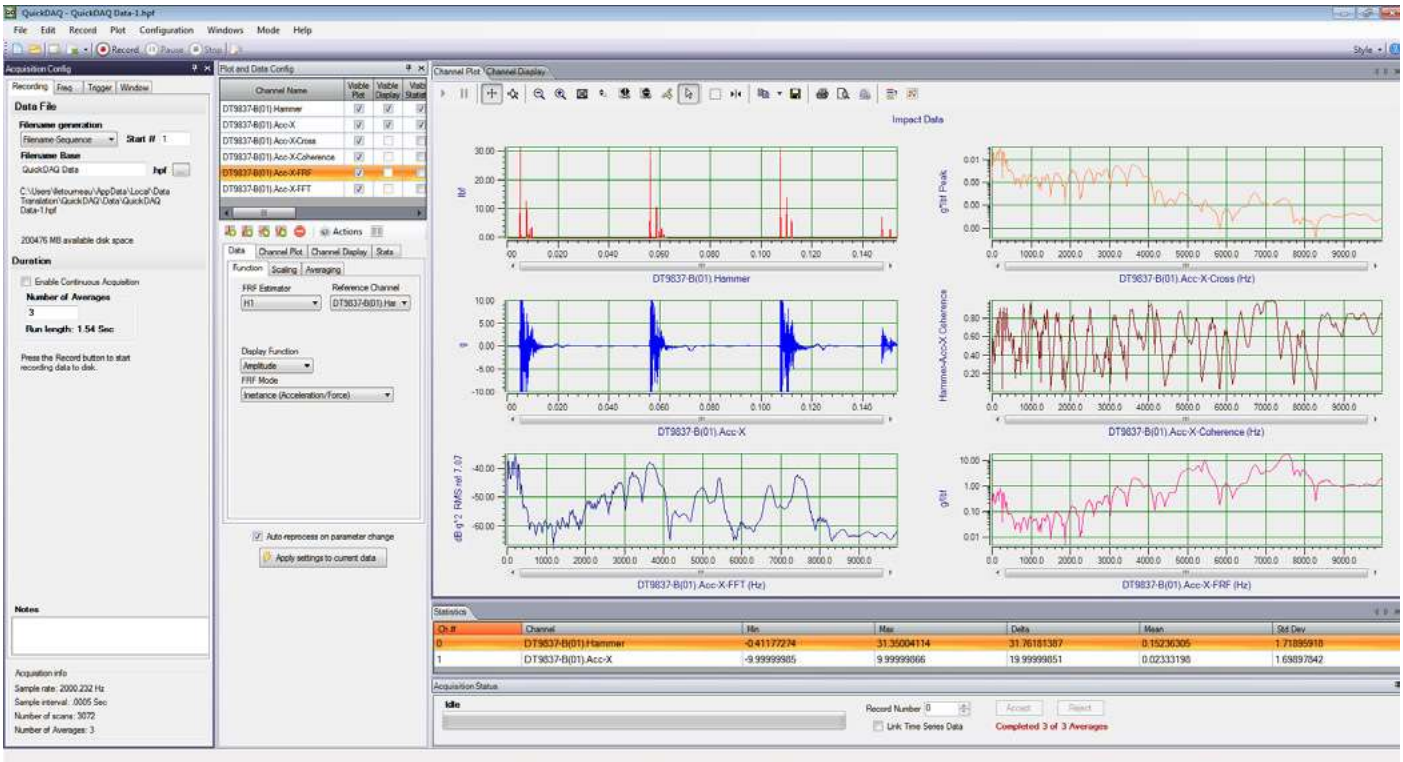
The DT9857E is a high accuracy dynamic signal acquisition module for noise, vibration, and acoustic measurements.

Eight or sixteen, 24-bit, IEPE (ICP®) sensor inputs are synchronized with a tachometer input, two measurement counters, and a general purpose counter/timer to provide data streams that are matched in time, for field or laboratory use. Two stimulus D/A outputs, each 32-bit resolution, and an 8-bit digital output port are available for dynamic waveform generation and control. This rugged, compact module, connects via USB making them ideal for many measurement applications.

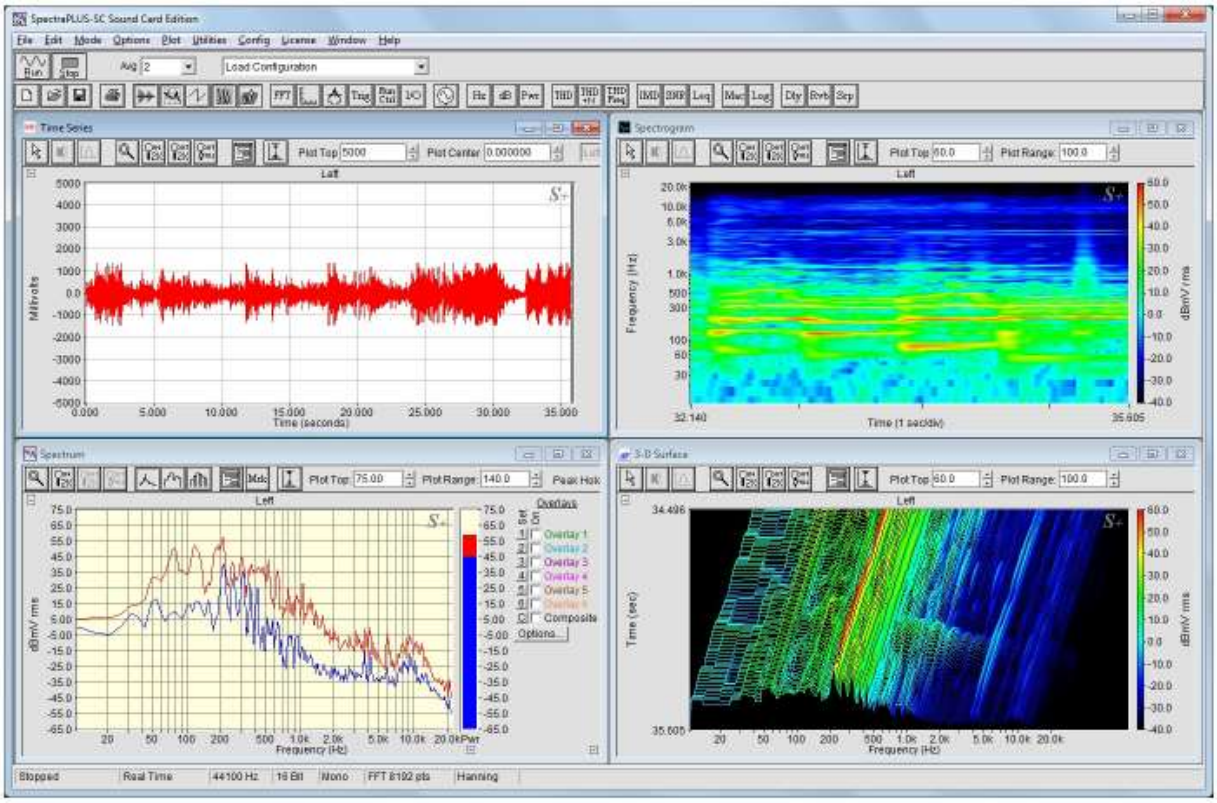
The DT9857E offers many capabilities for vibration measurement such as 16 IEPE 24-bit Delta-Sigma sensor inputs, two 32-bit D/A stimulus outputs, a 32-bit tachometer, pre- and post-triggering.

The Sync Bus allows expansion to 64 analog input channels and 8 analog output channels, and the ability to time sync all data to the input data stream.operation.

- **QuickDAQ with Advanced FFT Analysis option adds realtime analysis features to sound & vibration test systems. It supports the DT9857E through a series of easy-to-use configuration windows.**



SpectraPLUS-DT FFT Spectral Analysis System

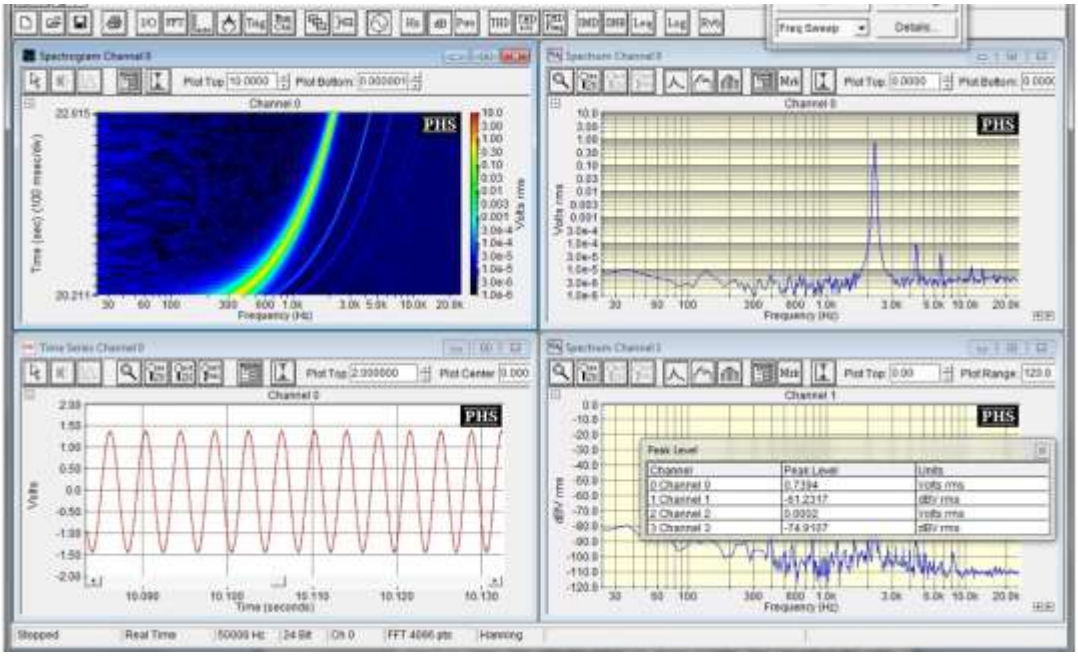


- Tachometer input channel support: Plot RPM versus Time as well as dedicated RPM display window.
- Order Analysis: plot Order vs RPM and Amplitude vs Order
- Triggering: Analog or TTL with user Accept/Reject option. Selectable threshold, channel and delay. Edge or Level detection.
- Run Control: automatically 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

Base Analyzer		Features include 16 channels, Real Time Mode, Spectrum, Time Series, and Phase displays, Narrowband FFT sizes through 32,768 points, 1/1, and 1/3 Octave Analysis, Triggering, Markers, Overlays, Averaging, Peak Hold, Decimation, Mic Compensation, A, B, C Spectral Weighting.
Option /01	Composite Channel Processing	Up to 16 Composite channels: Real and Complex Transfer Functions, Coherence, Multichannel Averaging, Cross Spectrum. Each composite channel can be separately configured and displayed in any or all of the spectrum plots (Spectrum, Phase, Spectrogram, 3-D Surface).
Option /02	Recording and Post Processing Modes	Recorder and Post Processing modes - allows direct hard disk recording and playback of up to 16 channels. Post Processing mode provides comprehensive analysis from WAV files. Includes Digital Filtering capability
Option /03	Signal Generator Utility	Advanced Signal Generation - Pink/White noise, Noise Burst, Frequency Sweep, Frequency Step, Level Sweep, 1 kHz tone, Multiple Tones, Saw, Square, Pulse, IMD test tones and User Defined WAV source. Can generate different signals in each channel. Generator can utilize either the Data Translation D/A channels or your sound card output (not all DT modules provide analog outputs)
Option /04	Color Spectrogram Display	Spectrogram Plot - displays the spectrum versus time in greyscale or color format for advanced joint time-frequency analysis. Up to 16 spectrogram plots can be displayed
Option /05	3-D Surface Display	3-D Surface Plot - displays the spectrum versus time in a 3-Dimensional perspective format. Up to 16 3-D Surface plots can be displayed
Option /06	Distortion Analysis Utilities	DistortionAnalysis - measurement utilities for THD, THD+N, IMD, SNR, NF, SINAD. Each measurement is displayed in real time in a separate resizeable window. Also includes a dedicated THD+N versus Frequency utility that quickly and conveniently measures the distortion characteristics of your device over a range of frequencies
Option /07	High Resolution Analysis	Adds FFT sizes from 65536 to 1,048,576 points, and Octave resolutions of 1/6, 1/9, 1/12, 1/24, 1/48, and 1/96
Option /08	Advanced Scaling, Calibration and Order Analysis	Calibration conversions from Acceleration to Velocity or Displacement. Power Spectral Density scaling option for noise measurements. Support for Tachometer input channel and RPM versus Time plots. Order Analysis - Spectrogram plot with Order vs RPM options and Spectrum Order Plot
Option /09	Acoustic Tools	Reverberation Time (RT60) utility features bar graph of reverberation time versus frequency band, 3-D Surface plot of the decay versus frequency and individual decay plots versus time. Equivalent Noise (Leq) utility provides comprehensive noise level calculations for LeqT, Leq, Lpk , Lsel, Lmax, Lmin, L10, L50, L90. Sound Power Level measurement utility (ISO-3744)
Option /10	Automation Tools	Automation interface API allows the capability for an external program to control and read results from the analyzer in real time. Works with any program that supports COM such as C++, VB, Excel, and others. Also includes a Data Logging utility which produces output text files (per channel) containing selected spectral parameters + time-stamp for dynamic signal tracking and unattended event monitoring.



KEY HIGHLIGHTS

The DT9857E USB dynamic signal analyzer provides a higher channel count over other DSA devices to provide highly accurate measurements for portable sound, vibration, and force response measurements. Features include an A/D per channel, up to two analog outputs, one tachometer, and IEPE signal conditioning for direct sensor measurements.

ANALOG INPUT			
CHANNELS	RESOLUTION	MAX SAMPLE RATE	SAMPLING
Up to 16	**24-bit**	**105.4 kS/s/ch**	**Simultaneous**
ISOLATION	SNR	THD	SFDR
—	**94 dB Typ.**	**-110 dB Typ.**	**118 dBFS Typ.**

ANALOG OUTPUT		
CHANNELS	RESOLUTION	SPEED
Up to 2	**32-bit**	**Up to 216 kS/s/ch**

DIGITAL I/O		
CHANNELS	COUNTER/TIMERS	TACHOMETER
16	**—**	**1**

SOFTWARE		POWER
OS SUPPORT	DRIVERS	POWER
Windows®	**Open Layers® SW Suite**	**External**

IEA Electro-Acoustic Technology Co., Ltd.

易祿達科技有限公司 Tel:+886-2-77209988 Email: iea888@ms71.hinet.net www.iea.com.tw