



# DataFlex™-515

## Ultra-Portable, Battery-Powered, Ruggedized Data Recorder

### FEATURES

- ◆ Real-time, high-speed data recording, playback, display and analysis at bandwidths up to 115 kHz
- ◆ Ultra-portable, battery-powered, lunchbox configuration specifically designed for extended use in the field
- ◆ Two hot-swappable, dual lithium battery packs provide 3x the capacity of conventional notebooks
- ◆ Sustained, continuous recording speed up to 256,000 samples/second/channel
- ◆ Standard 32-channel configuration with optional 64-channel capacity available
- ◆ High-capacity recording - One Terabyte (dual 500GB hard disk drives)
- ◆ Standard DVD-RW drive, Firewire, four USB 2.0 ports, and Ethernet connections up to 1000 Base - TX
- ◆ Rugged, flame-retardant design with fully integrated keyboard and 15-inch anti-glare LCD screen



## *The Perfect Blend of Mobility and Performance!*

The new DataFlex-515 represents a significant breakthrough in rugged, portable, real-time data acquisition and analysis. Its two, hot-swappable, dual lithium ion battery packs provide a total of 100 watts of output power and 190 watt-hours of capacity to deliver an unmatched four hours of continuous operation. Recharging of the battery pack is accomplished in roughly two hours via a standard wall outlet and the system can operate under AC power simultaneously or independently when power is available.

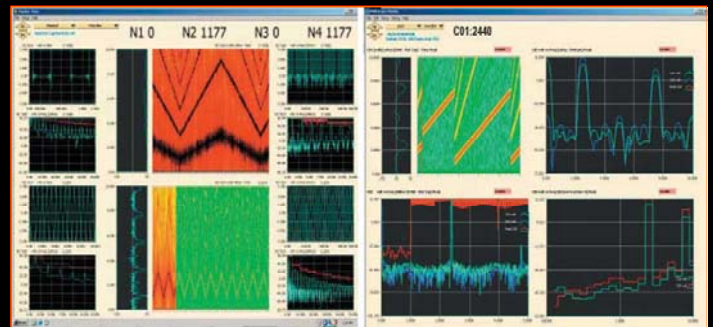
Featuring an open-standards design architecture, standard 32-channel capacity, a bandwidth of up to 115 kHz and a sample rate of up to 256,000 samples/second/channel, the DataFlex-515 has been specifically designed to provide real-time, online and post-test analysis for a variety of rotating machinery, acoustic frequency, shock and vibration applications. Incorporating a fully-integrated software suite that includes DSPCon's unique MultiScope™ virtual, real-time display tool that combines the functionality of 32 oscilloscopes and spectrum analyzers in one convenient package, the DataFlex-515 features a user-friendly GUI with wizard for easy, step-by-step control and execution of key acquisition, calibration, playback and export functions along with simple, spreadsheet-driven set-up for defining key test parameters.

The DataFlex-515 is fully transportable and easily fits in standard aircraft overhead racks. Its ease of set-up in the field, along with its rugged outer housing, robust safety features, and extended battery life make it an ideal solution for data and video recording of seismic, flight line, in-flight, and factory floor applications.

## Standard Software Highlights

- Easy-to-use GUI with wizard
- Spreadsheet set-up for defining test parameters including EU conversions, channel names, spectral processing & more
- EU conversion in real-time & conversion factors written to output data files
- MultiScope real-time display
- Playback of data displays with indexing & speed controls
- Data Viewer utility provides data inspection in time- or spectral-domain format. Provides full zoom/pan/resampling capabilities
- Matrix Plotter for quick inspection of time-history data - up to 12 channels per page. Plots data in envelope or time history format
- CATS/DATX Limit File generator for definition of spectral data limits in terms of frequency/amplitude pairs
- End-to-end calibration of all common signal conditioning & sensors
- Export to various file formats (DATX/CATS, UFF58, CSV, ATI and more)
- Durable, modular signal conditioning solution available as an option

***Standard, award-winning MultiScope tool combines the power of 32 test and lab instruments to optimize data monitoring, playback, analysis and plotting routines!***



## System Specifications

- **Recording Capacity:**
  - Over 1000 hours (standard 32-channels @ 4,000 samples/sec)
  - Over 8.5 hours (optional 64-channels @ 256,000 samples/sec)
- IRIG-B input with time stamping to 1 msec accuracy
- **Dimensions (WxDxH):** 16.3 x 6.3 x 11.3 inches
- **Net Weight:** 20 lbs
- **Case:** Aluminum alloy frame; flame retardant external chassis
- **Display:** impact-resistant, anti-glare 15" LCD, 1024 x 768, XGA
- **Keyboard/Mouse:** Full size w/integrated touchpad
- **Processor:** Intel® Core™ Duo T7200, 2.0 GHz (Dual Core)
- **Memory:** 2 GB DDR2 667 MHz
- **DVD:** Reader/Writer
- **USB:** 4 external ports; 2 internal ports, USB 2.0 compliant
- **Ethernet:** Dual ports (10/100/1000 Mbit; 10/100 Mbit)
- **Ports:** Two serial; one VGA
- **Speakers:** Built-in amplified speakers
- **Power:**
  - 12V @ 7A; 5V & 3.3V @ 10A; 12V@0.3A
  - 190 Watt-hours Smart Packs Battery (Hot-Swappable)
  - Simultaneous Charging Level III AC-DC Power Adapter (18V, 5.56A)
  - Software monitoring/control software (Microsoft Windows OS90-265 VAC, 47-63 Hz)
- **Battery Operation Time:**
  - 4 hours in Monitor or Review mode
  - 2 hours in Record mode
  - Charging - 2.5 hours (From empty to full)

## Environmental Specifications

- **Operating Temperature:** 0° C - 60° C
- **Relative Humidity:** 10 - 90% (non-condensing)
- **Shock:** 15G operating, all axes
- **Vibration:** 1.25G @ 10-100Hz operating, all axes
- **Compliance:** CE & FCC Class B, CCC, UL

## Analog Specifications

- **Sample Rate:**
  - Range: up to 256,000 samples/sec/channel
  - Resolution: .001 samples/second
- **Bandwidth:** Up to 115 kHz
- **Number of Bits:** 24 optionally rounded to 16
- **SNR:** >90 dB
- **SFDR:** >95 dB
- **SINAD:** >90 dB
- **Simultaneous Sampling:**
  - Inter-channel Skew: <50 ns
  - Inter-channel Phase Match: <0.1 degree @ 10 kHz, <1 degree @ 90 kHz
- **Input Slew Rate:** 15V/uSec
- **Frequency Response:** ±0.1 dB, DC to 90 kHz up to 200,000 samples/sec
- **Input Type:** 32 channels, differential input ± 10 v full scale
- **Input Impedance:** 100 Kohms
- **CMMR:** 100 dB Typical
- **Input Anti-alias Filter:**
  - Analog: 2-pole Butterworth at 320 kHz
- **Secondary Digital Filter:**
  - Sigma-Delta @ .4535 x Sample Rate
- **Calibration:** Factory calibrated to +/-0.05%, traceable to NIST

## Hardware Options & Accessories

- **64-Channel Configuration**
- **Onboard 1/10/100 Gain Control** for +/-10, +/-1.0 and +/-0.1v full scale input
- **32-Channel Analog Input Cable** with BNC female breakout box
- **64-Channel BNC Breakout Box Assembly** with Cable
- **Integrated Control of Signal Conditioning** for all common makes and types including IEPE, charge and strain-gauge sensors
- **Additional Smart Battery Pack** - (14.4V @ 6.6A)
- **External Battery Charger** - 110V/220V auto switch
- **Padded Carrying Case** on wheels with pull-out handle

# DataFlex-515 Optional Software

DSPCon's high-performance software provides users with robust, real-time and post-processing analytical capabilities. In addition to our standard run-time and utility software, we offer a variety of optional software bundles that can be mixed and matched so you get the exact application functionality you need at the price you want to pay.

## Acoustic Analysis

From noise reduction in trains, planes and cars to detecting, classifying and tracking battlefield targets, our acoustic analysis software bundle provides accurate, stable acoustic measurement and analysis. It incorporates our innovative **Nth Octave** processor that processes CATS and DATX data files to provide single-channel, octave-fraction-based spectral analysis in sound pressure level (SPL) and power spectral density (PSD) form.

## General Analysis

Our general analysis software provides a comprehensive bundle of analytical tools for general, dynamic-signal analysis applications, including:

- ◆ **Narrowband** post-processor to provide interactive and batch single-channel Fourier-Transform-based analysis
- ◆ **Cross-Channel** post-processor that provides interactive and batch two-channel Fourier-Transform-based analysis
- ◆ **Time Domain** analyzer that performs digitally-synthesized filtering on one or more time history files, then processes and displays the data in the time domain
- ◆ **Overlay & Concatenation** utility to further reduce data that has been analyzed by other DSPCon post-processing software
- ◆ **Data Resampler** that decimates and interpolates any signal, and can be used to match sample rates between two files.

All processors utilized in our general analysis software bundle analyze data stored in public-domain-format CATS and DATX files and offer outputs in graphical form (screen/hard-copy and electronic/JPEG), result files in CATS, spreadsheet (.CSV) and SDRC Universal (Type 58) formats, and a statistics file that contains critical parameters from the input and calculated results

## Rotating Machinery

Our **Rotating Machinery Analyzer (RMA)** processes DATX and CATS data files to provide a variety of single- and two-channel analyses as functions of time or RPM. A proprietary shaft speed analyzer determines the relationship between time and RPM for up to four tachometers and algorithms are provided to determine, plot and create output files representing the following types of analysis:

- Campbell • Shaft Speed • Combined Campbell
- Spectral • Time • Order • Time Limits
- Order with Phase • Waterfall • Cross-Channel Analysis

## Shock & Vibration

DSPCon's shock and vibration software bundle provides an extensive solution for engineering personnel involved in structural shock and vibration application modeling and prediction. Specifically designed to optimize test data for better analytical calculation and display, our software processors reflect over 20 years of refinement and incorporate classical algorithms with advanced post processing capabilities to provide interactive and batch analysis of sine-sweep and shock tests.

The **Sine Analyzer** included in our shock and vibration software bundle processes CATS and DATX sine-test-data files to provide single- or two-channel spectral analysis based on peak response or a narrowband-tracking filter. The drive frequency is determined by a proprietary "COLA" analyzer. The tracking filter has very selective response and can have constant or proportional-to-frequency bandwidth.

Our **Shock SRS** feature processes data in CATS files to produce shock response spectra. It applies "time-series pre-conditioning" functions designed to compensate for errors and distortions induced in the data by measurement and data acquisition processes. These "pre-conditioning" functions entail zero offset and band-pass filtering.

## Test Execution

In addition to its standard MultiScope data visualization software, the DataFlex-515 can be ordered with the following test execution software options:

- ◆ **Amplifier Control Interface** to provide rapid and easy gain configuration, creation, modification and maintenance to enhance the visibility of test data as well as the flexibility and safety of testing operations. It directly manipulates gains on any logical channel and interfaces via Ethernet to DSPCon's system executive software. This enables it to be run remotely by any PC.
- ◆ **Limits & Alarms** software tool to facilitate graphic and numeric viewing of statistics calculated by the real-time processing software in DSPCon's data acquisition systems. It performs time and frequency domain peak detection and presents alarm information in several graphical forms for quick information interpretation and timely reaction to alarm conditions. All channels in the system can be monitored.

