



DataFlex-1000™

***Now, With Optional, Built-In Signal Conditioning!***

- High-speed, high-capacity Data Recording & Replay
- The power of three virtual Lab Instruments
- Full, end-to-end Data Acquisition & Analysis



**1** cost-effective,  
space-saving system  
with complete  
touch-screen control!



**ACQUIRING,  
PROCESSING & MANAGING  
THE WORLD'S DATA!**

# It's Finally Here...A Compact, High-Performance Data Recorder with Fully-Integrated, Software-Driven Signal Conditioning

## Introducing DataFlex-1000 With Optional Signal Conditioning!

It's a data recorder...it's an oscilloscope and spectrum analyzer...it's a real-time data analysis system...**And now, it's an entire catalog of signal conditioning**...all in one compact package!

It's the DataFlex-1000 with optional, fully integrated signal conditioning...And it's unlike anything you've experienced before in a data recorder. With more bandwidth capacity, storage alternatives, scalability and analysis functionality than any other single product on the market today.

With DataFlex-1000, you start with a full-featured, easy-to-use data recorder that easily handles your analog and digital requirements for a wide variety of telemetry, voice and video data storage applications. At analog bandwidths of 97.2 kHz per channel with anti-alias filtering and no degradation of bandwidth as channel count increases. Regardless if your channel count is 16 or 1,000!

But there's more! We now have added fully-integrated, software-driven signal conditioning to provide you with an easy, cost-effective way to perform a wide variety of tests, and satisfy a multitude of applications, **WITHOUT** separate signal conditioning plug-in modules...For all types of sensors including, strain gauges, RTDs, accelerometers, voltage and IEPE.

Imagine, now you can go from simple data recording to real-time data display, monitoring and storage for multiple channels, with unprecedented test flexibility for a wide variety of vibration, rotating machinery and audio applications with no additional, separate, signal conditioning purchases required. Regardless of your signal conditioning requirement...DataFlex-1000 handles it...on every channel...through our unique software-driven menu!

And, through our comprehensive software bundles, you can add the functionality and capabilities of a digital oscilloscope and spectrum analyzer with real-time analysis, alarm and limits processing and gain manipulation. For 16 to over 1,000 channels, thanks to our scalable, stackable data expansion modules.

So stop choosing between cost, functionality and performance. With the DataFlex-1000 with optional signal conditioning, you can have it all in a complete, one-box solution that won't take too much space in your lab or production facility or much of a bite out of your budget.

**need more information?**

Contact us at 1 (888) DSPCON-8  
or email to [info@dspcon.com](mailto:info@dspcon.com)

## Benefits

- Fully-integrated, comprehensive signal conditioning for strain gauges, RTDs, accelerometers, IEPE sensors and voltage output devices saves time and money by eliminating need for additional, separate devices
- High capacity, flexible storage (dual 750 Gbyte hard disk drives or optional dual LTO-4 800 Gbyte tapes or solid-state memory storage devices up to 128 Gbytes each) significantly reduce recurring storage costs
- Infinite, lossless recording capability with unique, "change-on-the-fly", "hot-swappable" digital media functionality improves operational efficiency through reduced number of tape transfers
- High bandwidth accommodates a broad range of demanding applications with just one box
- IRIG-B time code recording with real-time display and output during replay
- Produces and accepts a variety of data formats including DATX and UFF-58
- Compatible with and a replacement for many popular recorders
- Optional MultiScope tool for real-time display
- Compatible with all DataFlex-1000 models, including those without integrated signal conditioning to facilitate cost-effective mix and match application scenarios
- Full 24-bit analog data capture capability as a factory-installed option

# configuration options to meet **your** exact application requirements



## DataFlex-1000 Optional Software & Hardware Components

### Acoustic Analysis

For noise reduction in trains, planes and cars, 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. All components of the bundle analyze data stored in public-domain-format CATS and DATX files and offer outputs in graphical form (screen/hard-copy/electronic), result files in CATS, spreadsheet and SDRC Universal (Type 58) formats, and a statistics file that contains critical parameters from the input and calculated results. Components include:

- ◆ **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.

### 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

This software bundle provides an extensive solution for structural shock and vibration application modeling and prediction. The software incorporates classical algorithms with advanced post processing capabilities to provide interactive and batch analysis of sine-sweep and shock tests. Its **Sine Analyzer** feature 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 while the tracking filter has very selective response and can have constant or proportional-to-frequency bandwidth. The bundle's **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.

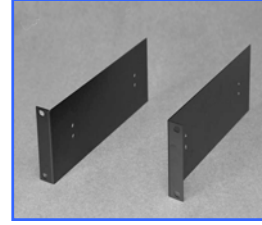
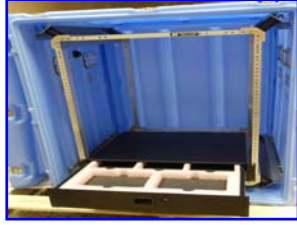
### Test Execution

- ◆ **MultiScope** is an innovative tool for real-time monitoring of multiple channels. A user-friendly, graphic visualization HMI for monitoring or displaying data while it's being acquired, MultiScope is a cost-effective, space-efficient solution to the inconvenience and clutter of racks and racks of small oscilloscopes. In essence, MultiScope is an array of up to 32 miniature digital oscilloscopes and/or spectrum analyzers. Each scope has all of the display power of any modern oscilloscope, plus all the capabilities of a spectrum analyzer, and beyond.
- ◆ **Limits & Alarms** is a 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.

### DataHauler

DSPCon's **Data Hauler** is a ruggedized, rack-mountable, cost-effective solution for uploading and downloading up to four drives of mission-critical test data to and from your DataFlex-1000 and a centralized data repository. Specifically designed for simple "plug-and-play" operation, right out of the box, the new Data Hauler is a turnkey solution that combines user-friendly, specialized application software with high-performance hardware components.

# Accessories



## System Overview/Configuration/Specifications:

Mass storage data recording system consisting of a single control base unit and one analog expansion module in desktop form factor. Optional accessories include 19-inch rack mount configuration availability as well as a variety of shipping/carrying cases and cables.

### Control Base Unit

- Easy-to-use touch screen for local system set-up/control/status
- Flexible input/output mechanisms for signal inputs/outputs including IRIG-B, analog monitor channel and voice annotation. 10 MHz reference input

#### Touch Screen Display:

- System controls
  - Start/stop recording
  - Enable/disable channels
  - Set bandwidth (sample rate)
  - Set gains
  - Enable/disable IEPE signal conditioning
- System information display
  - Run status (idle/monitor/record)
  - Media status (remaining disk and projected time)

#### Ethernet Control Interface:

- Back panel 10/100/1000 Ethernet port
- Connector = RJ-45
- Standard protocol = TCP-IP
- Used for additional, optional capabilities
  - Remote control
  - Remote, real time monitoring of ALL channels
  - Remote, real time frequency and time domain limits monitoring
  - Calibration and configuration

#### Voice Annotation:

- Input
  - Quantization = 24 bits rounded to 16 bits
  - Input type - phono jack with volume control for headset usage
- Output
  - Phono jack with volume control for headset usage

#### Analog Monitor Channel:

- Full bandwidth output
  - Front panel BNC
  - Direct voltage (single ended)
  - Output impedance = 50 Ohm
  - Output range = +/-10 volt
- Audio output
  - Phono jack with volume control for headset usage
  - Direct voltage (single ended) - 600 Ohm output impedance

#### IRIG-B:

- Input
  - BNC connector
  - IRIG-B -123 AM modulated signal
- Output During Replay
  - BNC connector
  - IRIG-B -123 AM modulated signal

#### Physical/Environmental:

- Dimensions (HxWxD) = 10.5 x 17 x 14.5 inches (control unit with one analog module)
- Weight = 47 lbs (21 kg) - (control unit with one analog module)
- Operating temperature = 0° C to 50° C
- Relative humidity = 20 – 80%
- Power = 50-60 Hz; 100-240 Volts; Control Module 35 Watts, Analog Module 195 Watts typical

### I/O Expansion Modules

#### Analog

- Dual, "hot swappable", front-mounted 750 Gbyte hard disk drives (HDD) or optional dual LTO-4 800 Gbyte tape units or solid state memory storage devices of up to 128 Gbytes each
- Up to 97.2 kHz bandwidth per channel (across all channels)
- Standard 16/32 channel base unit, infinitely expandable in 16 or 32 channel increments, to produce large channel count synchronously sampled systems
- IEPE compatible and direct voltage (unbalanced/differential: switchable)
- Voice and IRIG-B channels
- System sampling frequency – adjustable 1 kHz to 216 kHz, selectable
- Analog input characteristics
  - Quantization = 24 bits rounded to 16 bits
  - Direct voltage - oversampled sigma-delta codec or IEPE sensor
  - Optional, fully-integrated, external support for PE and strain/bridge conditioning
  - Input impedance = 1 mega-ohm
  - Input connector = Rear panel BNC or DB-25
  - Input range = +/- 0.01 to +/- 10 volts in 1, 2 & 5 steps
  - AC and DC coupling
  - IEPE excitation = 3 – 21 milliamps
  - Dynamic range > 88 dB (measured at input > +/- 1 volt)
  - Filtering = complete anti-alias filtering to 10 MHz
- Analog output characteristics
  - Number of Bits = 24 bits rounded to 16 bits
  - Output connector = Front panel BNC outputs
  - Output impedance = 50 Ohm
  - Output level = +/- 10 volts in .01 volt steps
  - Total harmonic distortion (record plus playback) < -84 dB

#### Fully-Integrated Signal Conditioning Option

#### General

- Gain: 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000
- Maximum Measurable Input Voltage: 10Vpk, 20Vpp
- Maximum Input Voltage Protection: 40Vpk minimum
- CMMR: 110dB, 0-60Hz
- Input Impedance: 10 Mohms
- Calibration: Full end-to-end and shunt
- Built-in calibration bus
- Differential/Single Ended
- Over voltage, compliance voltage, short circuit continuous monitoring on each channel
- Built-in test and automated, full-factory acceptance test

#### Constant Voltage Excited Bridge:

- Voltage excitation with selectable remote sense
- 3 wire to 8 wire support
- Built-in shunt calibration 10.000K, 15.000K, and 47.000K Ohms
- Quarter-, half-, and full-bridge completion for 120, 350, and 1000 ohm devices
- 0 - 24 volt excitation level, 3 millivolt resolution
- Automatic gain selection based on gauge resistance, gauge factor, excitation, bridge type, lead-wire resistance
- Automatic and manual bridge balancing
- Excitation monitoring

#### Constant Current Excitation:

- Current excitation 0-25 ma maximum with better than 1 uA resolution
- 2 wire to 4 wire support

#### IEPE Excitation

- 3 to 21 ma, resolution 3 ma
- Compliance voltage 21 volts maximum
- Bias voltage monitoring
- Short detection



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