



Solutions in Signal Processing

The Industry Standard Just Got Better

SignalStar®

Vector

4 to 32 input channels

120 to 150 dB dynamic range

Advanced vibration control and analysis

SignalStar

Vibration

Control

System

Vector

powered by

ABACUS

dp *Data Physics*
Corporation



SignalStar®

Vibration Control Systems




Vector

Comprehensive Vibration Control and Analysis

SignalStar Vector incorporates the Data Physics DSPcentric ABACUS hardware in a modular, expandable system, providing comprehensive vibration control capabilities with powerful analysis features. The SignalStar graphical user interface makes Vector easy enough for the novice while providing advanced control and analysis features to meet the most demanding test requirements.

Standard Features

- Random
 - Up to 6400 frequency lines,
 - Up to 20 kHz bandwidth
- Mixed Mode
 - Sine on Random
 - Random on Random
 - Sine and Random on Random
- Shock Response Synthesis
 - Up to 65,536 point frame size
 - RRS, time, frequency, freq + RRS, or freq + time control strategies
- Transient Control
 - Import arbitrary waveforms with up to 65,535 time points
 - Time, frequency or mixed control strategies
- Time Data Replication
 - Time history import with resample, filtering, and editing
 - Pre-test drive
- Sine
 - Up 20 kHz sweep range
 - True continuous swept sine
 - Digital tracking filters with user-specified fixed or proportional bandwidth
 - Resonance search and phase-tracked dwell
- Classical Shock
 - Up to 65,536 point frame size
 - Time, frequency, or mixed control strategies



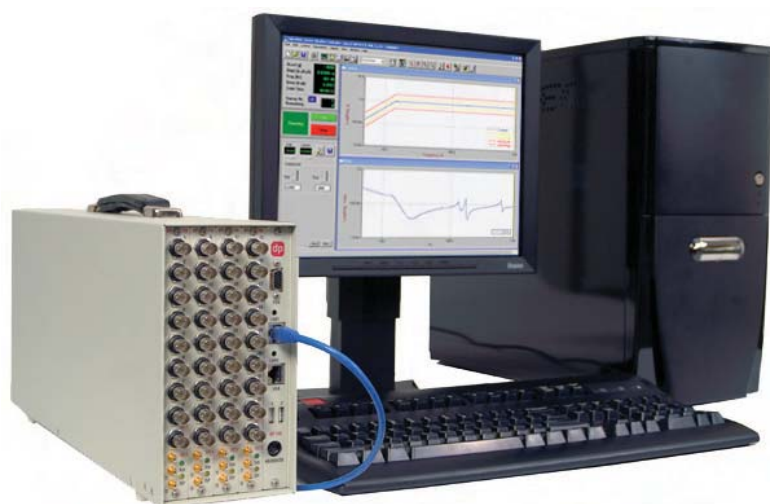
SignalStar Vector vibration control system satisfies all modes of vibration testing: Random, Sine, Resonance Search and Dwell, Classical Shock, SRS, Transient, Mixed Mode, Time Replication and FFT Analysis.

Distributed Digital Signal Processing Architecture

ABACUS is a compact, modular system, configurable with 4 to 32 input channels. The distributed digital signal processing hardware architecture is ideal for vibration control applications where signal processing speed is critical for realtime control. Each input module, providing up to 8 channels, has a 32-bit floating point DSP rated at 1 GFLOP. As the number of input channels in a system increases, so do the number of digital signal processors. The result is control loop processing that is not dependent on the number of input channels.

ABACUS provides sample rates of up to 107 kHz for accurate reproduction of high frequency vibration. A local throughput disk in the ABACUS allows simultaneous recording to disk of time data at up to the maximum sample rate on all input channels with no loss of data.

Since measurement and output signal accuracy is essential to vibration control, high quality analog components with 24-bit analog to digital and digital to analog converters are used to provide up to 150 dB of dynamic range.



Software selectable single ended and differential inputs eliminate common mode noise associated with ground loop problems. TEDS support and ICP power are provided under software control.

SignalStar Vector

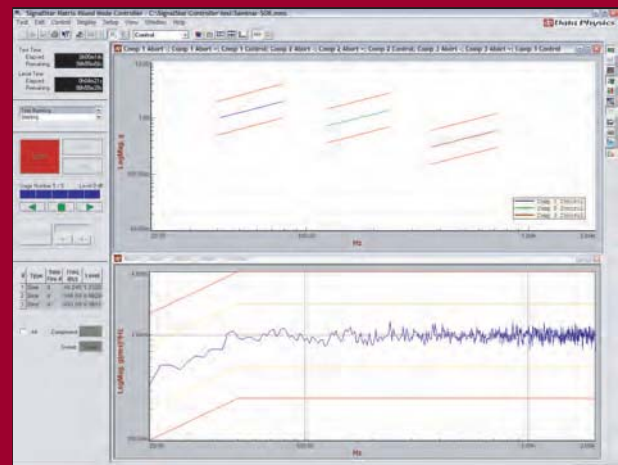
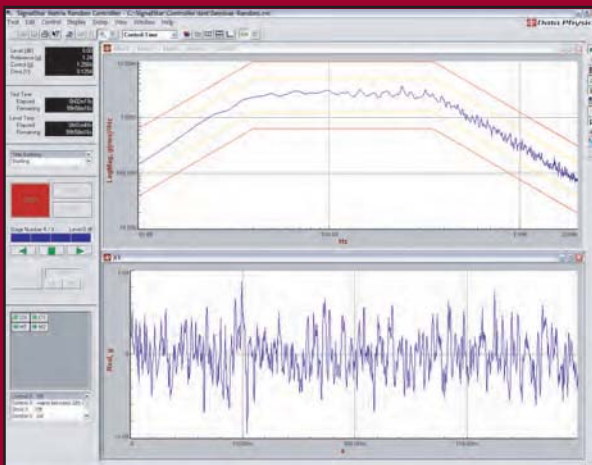
Advanced Control Capabilities

Vector benefits from Data Physics more than 25 years of experience in developing proprietary algorithms for closed loop vibration control. Vector vibration control software encompasses the complete range of vibration environments.

Random vibration can be controlled up to 20 kHz bandwidth, with up to 6400 frequency lines. Multi reference limit profiles provide the ability to limit the drive signal at frequencies where vibration levels can cause damage to the test article.

Sine employs high quality digital tracking filters to accurately measure amplitude of true continuous swept sine signals. The resonance search and dwell option automates the identification of resonances and enables phase tracked dwell for fatigue testing.

Transient frame sizes of up to 65,535 points and sample rates up to 107 kHz allow both long duration seismic and high frequency pyrotechnic shock control.





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Powerful Analysis Capabilities

SignalStar Vector provides up to 32 input channels for analysis of the dynamic response of devices under test. The powerful graphical user interface makes extensive online analysis possible. Vector displays can be configured with up to 32 graph windows containing up to 16 signals each. All relevant signals are available for live display such as Control, Response Channels, Drive, Error, Transfer Functions, Reference, and Tolerance Limits. Live test data is available in both time and frequency domain. Single, dual, harmonic and peak pick cursors are available on every graph. Cursors can be locked for synchronized movement among windows, or they can be controlled independently. Annotation can be added to graphs in the form of user text or parameters automatically extracted from the test setup or data file.

Independent Measurements

Vector has the ability to make independent measurements of transfer functions, auto spectra, and cross spectra during random vibration control tests. These measurements may be independently scheduled to occur at any time during the random test and may be tailored to the analysis task. Measurement data may be used for further analysis, such as operating deflection shape and operating modal analysis.

Throughput to Disk

Disk throughput allows continuous (gap free) simultaneous time streaming to the local disk in the ABACUS hardware during vibration control testing for all channels at up to 107 kHz. Throughput can be manually started and stopped multiple times during a single test. Throughput data can be post processed using either SignalCalc Analyzer or SignalCalc DSA software. Analysis Options include auto and cross spectrum analysis, Sine Data Reduction, and SRS Analysis.



Discover more at www.dataphysics.com

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Data Physics has been supplying high performance solutions in signal processing to the noise and vibration community for over 20 years. With the addition of a full line of electrodynamic shakers to complement its vibration controllers and dynamic signal analyzers, Data Physics is a total solution supplier for vibration applications.

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