Vibration VIEW

SHAKER VIBRATION CONTROL SYSTEM

Familiar Microsoft Windows interface

The VibrationVIEW controller runs on all varieties of the Microsoft Windows® operating system. Since most people are already familiar with the Windows environment, this allows you, our customer, to leverage your knowledge and accelerate your learning curve.

System Check

All VibrationVIEW software packages include a System Check mode which provides a manually controllable sine wave output and oscilloscope and spectrum analysis plots of the accelerometer inputs. This test mode is used to calibrate the system and verify operation of the controller, amplifier, shaker and accelerometers.

Networking (Optional) VR 656

The system can easily be incorporated into your corporate network to facilitate data sharing. The VibrationVIEW program may be installed on any number of machines, using Net Seats, and used to view test data and create test reports from virtually anywhere.

Remote Control (Optional) VR 655

A variety of remote monitoring and control options are available. The controller can be monitored or controlled via network and web with built-in web page and e-mail server. Other applications can control the VibrationVIEW program through any easy-to-use file-based interface. External TTL logic level inputs and outputs may also be used to start and stop tests. Tests can be configured to set and clear TTL logic level outputs during the test to trigger external events.

Active-X (Optional) VR 626

Industry standard active x remote control.

Calibration Standard

No extra software required.

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Graphs

All of the VibrationVIEW software packages share a common easy-to-use graphing system. Graphs can be easily auto-scaled or zoomed. Cursors can be used to locate peaks and highlight particular data points. Data and text annotations can be easily placed on the graphs, with annotations updated live as the data changes. Graph images and raw graph data can be copied and pasted into your favorite word processor or spreadsheet.

Documentation

Test reports can be easily created from customizable report templates. Graphs and raw numerical data can be transferred through the Windows clipboard into any word processor or spreadsheet program.

Web server/ E-mail (Optional) VR 627

Alternate Units (Optional) VR 628

SOFTWARE OPTIONS

Sine VIEW

Run swept and/or fixed-frequency sine wave vibration tests, with control over acceleration, velocity and displacement.

Random VIEW

Run controlled spectrum random tests (tests with a spectrally shaped gaussian amplitude distribution).

Shock VIEW

Run standard classical shock pulses as well as user-defined or SRS synthesized transient pulses.

Field Data Replicator VIEW

Reproduce, in your test lab on your shaker, the actual acceleration waveforms you measured in the field. The controller automatically compensates for shaker and fixture responses.

Sine on Random VIEW

Run mixed-mode tests with sine tones superimposed on a random background.

Random on Random VIEW

Run controlled spectrum random tests with swept random "tones" superimposed on a random background.

8500 HARDWARE SPECIFICATIONS

Input Channels

The system comes with simultaneously sampled 24-bit input A/D's with 100dB dynamic range. The input impedance is 100k ohms. 1 to 16 channels. The channels are configured in blocks of 4.

Output Channel

The system comes standard with two 24-bit output D/A's with 100dB signal to (noise+distortion) ratio. Outputs are low impedance with a range of 20-volt peak-to-peak.

Ethernet Interface

24-bit Accuracy

TEDS Interface

8500 TECHNICAL SPECIFICATIONS

Vibration Research's hardware and software integration with your PC is easy. No need to open the PC, and hunt for open PCI or ISA slots. Just connect the signal processing front end to the PC through the ethernet port, load the application software, and you are ready to test. Shaker control applications are available for the complete spectrum of vibration testing - from random, sine and shock to mixed-mode, resonance dwell, and "field data replication" of long duration waveforms. The control system comes with a Front End signal processing box, application software, ethernet cable, a user manual, and a one-year warranty.

INPUTS

Analog channels: 1 to 16 simultaneous channels. Each can be control, monitor, or disabled. All are differential inputs with 500K Ohm impedance. Setup allows per channel selection of transducer sensitivity, coupling (AC or DC), accelerometer constant current supply (4 mA), TEDS transducer interface, and a unique DC offset that allows measurement to true DC with constant current type accelerometers.
Electronics per channel: Differential amplifier, anti-aliasing filters, and 24-bit Analog to Digital Converter (ADC).
Filtering: An analog RC filter plus a 160 dB/octave digital FIR filter eliminates non-linear phase distortion and aliasing.
Frequency range: Up to 43000 Hz analysis frequency (86000 samples per second).
Voltage range: +/- 10 Vpeak.
Resolution: 24-bit.
Dynamic range: 120 dBfs, 110 dB minimum in FFT mode.
Phase match between channels: Within +/- 0.5 degree from DC to 10000 Hz.
Signal-to-noise ratio: >100 dB (from DC to 1000 Hz measured with half-full-scale sine wave).
Channel cross-talk: <-110 dB.
Total harmonic distortion: <-105 dBfs.
Digital input and output: Rear pluggable terminal block enables the digital level signals - 8 inputs and 8 outputs to be interfaced with your product and other systems. Used for remote start/stop/pause/continue and other functions such as close/open control loop, manual/auto schedule, and enable/disable aborts.

OUTPUTS

Analog channels: One drive channel standard. One COLA output.
Drive channel: 24-bit Digital to Analog Converter (DAC), anti-imaging filter, and emergency stop shutdown circuit, and power failure transient prevention shutdown circuitry.
Filtering: A 160 dB/octave digital FIR filter plus an analog RC filter eliminates non-linear phase distortion and imaging.
Frequency range: Up to 43000 Hz output frequency (86000 samples per second).
Voltage range: +/-10 Vpeak.
Resolution: 24-bit.
Total harmonic distortion: <-100 dB.

REPORT GENERATION

Test reports are easily generated with a user editable template. Don't spend all your time generating test reports. Simply design a template, and print all your reports automatically.

WEB SERVER & E-MAIL OPTION

The control system PC will serve up html web pages when a request for an index page comes over the network. The system status can easily be monitored from anywhere in the company, or anywhere in the world. Try looking at our controller, located in our laboratory in Jenison. Use any web browser to view www.vibres.com/demo. The web pages can be edited, to give them the look of your company, should you choose to do so. E-mails can be sent to report your system's status. Eliminate that expensive down-time easily! Simply send the e-mails to your cell phone, or pager.

ACTIVE-X OPTION

Interface variables and control functions easily to your application. Applications such as LabVIEW can easily interface by way of the active-x functions.

ALTERNATE UNITS OPTION

Many times, you may wish to monitor things like strain gages, switches, or power supplies. The inputs can be configured to display the actual units on graphs, and reports with this function.

HIGH FREQUENCY OPTION

This option expands the realtime closed loop control range above 4000 Hz. The Random and Swept Sine Vibration Control Software and their add-on modules (e.g., Random-On-Random, Resonance Search Track and Dwell, etc.) use realtime closed loop control techniques.

Without this option, the Random and Sine Control Software can operate up to 4000 Hz but no higher. With this option, they can operate to much higher frequencies (please see their individual specifications for details).

The reason for splitting this functionality out as a separate option is not technical, but is due to United States Government Export Regulations. This does not absolutely restrict all export of this option. It is country dependent and occasionally requires an end user certificate and an export license.

DRIVE NOTCHING / LIMITING OPTION

This option links to all Random and Sine family software to provide additional safety for fragile test articles or components. The Automatic Drive Notching feature can be used to set acceleration limits on the input channels in any of the Random modules (i.e., Random, SoR, RoR, or SRoR) or the Sine modules (i.e., Swept Sine and RSTD).

Any channel can be enabled as a limit channel. Each limit channel has a corresponding Limit Profile. Both the limit channel input spectrum and Limit Profile can be viewed during a test.

If any input channel exceeds its limit during testing, the drive output (at that frequency) will be reduced (notched) until the input channel does not exceed it's limit. The functionality and performance of this feature is truly exceptional in comparison to other commercially available control systems.

SOFTWARE

Operating system: Windows 95/98/NT/2000/Me/XP.
Architecture: The high speed processor in the signal processing box takes the control tasks out of the PC. This allows the PC to deliver maximum graphics performance and responsiveness to the user. The software provides both on-line test status and management through text displays, software toggle buttons, and screen displays of multiple time and/or frequency signals.
Applications: Random, Sine on Random, Random on Random, Sine and Random on Random, Swept Sine, Resonance Search, Track and Dwell, Classical Shock, Shock Response Spectrum, Transient Time History Control, Field Data Replication Control for road simulation testing, High Frequency, and Drive Notching/Limiting Options.
Features: On-line help, consistent management of user defined engineering units, on-line graphics, and test documentation of both setup parameters and signals through Microsoft Word as printed media or disk files via single click on Icon. Test sequencing for automated testing to a mission profile.

HARDWARE

Front End signal processing box: Low-noise design with a dedicated high speed processor for signal processing. Front BNC connectors for 4 accelerometer connections. Front panel status LEDs. Rear panel connectors drive output and COLA output, connection to ethernet port, and a terminal block of digital I/O lines.
Input channel expansion: Can be expanded from 1 to 16 total analog inputs by adding signal processing boxes. Each box processes 4 inputs. Additional boxes connect to the PC via a network hub.
Output channels: One analog output (drive) standard; COLA (Constant Output Level Amplitude) optional.
PC configuration: PC with Windows 95/98/NT/2000/Me/XP Operating System, and an ethernet port are the only requirements. Microsoft Word and Excel are recommended.
PC expansion: PC upgrades and peripheral additions do not delay or interrupt the control loop processing.

SAFETY

Manual abort: Red button interfaced to the signal processing box, software button on screen, and F10 key on keyboard.
Pre-test: Drive waveform validated against shaker performance table. Integrity checking of system and control loop.
Test: Open loop checks, loss of control signal checks, input overload checks, alarm and abort tolerance band checks, RMS abort limit checks, and continuous gap free processing of all inputs. Graceful shutdown at a smooth rate. Emergency stop allows immediate "crow bar" type shut-down.
Power Failure: Transient free shut-down.

TEST SEQUENCE

A Test Sequence provides the capability to automatically execute a sequence of tests. All of the tests may be the same type of application, such as all random tests, or they may be for a variety of applications. For this type of project sequencing, a random test might be followed by a shock test and then a sine on random test. The Test Sequence is included as a no-charge option included with every system.

REMOTE OPTION

The remote option enables you to interface your controller to other systems, allowing starting and stopping of tests by way of a TTL type input signal. A typical application would be interfacing to an environmental chamber control system. Also allows binary encoded test selection, so different tests can be selected with a simple TTL interface.

NET VIEW OPTION

Define Tests, access stored data, create reports, monitor an active controller from any location on the network.

Subject to change without notice.

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