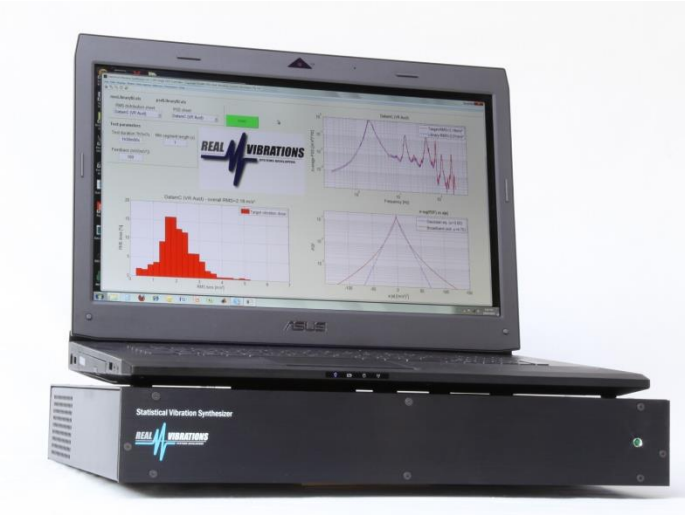
Vibration Shaker Controller for Seismic Simulation and Testing



Simulate and control seismic motion

Our Vibration Shaker Controller (VSC) is a state-of-the art instrument for recreating and controlling seismic motion in a laboratory setting for earthquake testing. The system is designed to simulate and control (time-history replication) of numerous seismic test waveforms such as VERTQII (zones 1 -4) as well as any measured or created transient waveforms. The Shock/Test Response Spectrum SRS or TRS) is automatically calculated and compared with the relevant Test Response Spectra (TRS) such as those specified by Telcordia (Bellcore) GR-63-CORE NEBS.

Swept-sine and random testing.

The controller also includes a sine and swept-sine controller module as well as a random controller module for vibration response investigations and resonance search and identification – as per EN ETSI 300 019-2-3 and IEC 60068- for example. The modules not only provide the selected excitation to the shaker system but also allows for the measurement of a number of response (measurement) channels to automatically identify resonances. In swept-sine mode this is achieved by means of tuneable band-pass filters whereas in random excitation mode, the Fast Fourier Transform (FFT) is used to calculate the Frequency Response Function (Magnitude, Phase and Coherence). More information on the sine and swept-sine controller and the Dual Channel Analyser (Random) modules can be found on our web page.

The system can be configured to control up to six axes or degrees-of-freedom (axes) simultaneously or sequentially. It consists of a software / hardware package that connects directly onto any standard laboratory random vibration test system such as servo-hydraulic and electro-dynamic shakers.

Easy-to-use and comprehensive real-time test information

Our software is designed to be used easily and intuitively. It contains on-line help and guidance throughout and our website includes video dedicated to guiding users through the features and functions of our system. The target waveforms and TRS are defined and managed within MS Excel® which is made to interact seamlessly with our software.

The Real Vibrations VSC provides comprehensive test information in real-time. This includes all measurements time histories (feedback + additional response signals), statistical parameters such as rms, peak acceleration and the SRS.

Performance

The Real Vibrations VSC is based on powerful National Instruments® hardware recognised across the globe for quality and reliability. It offers 16 Bit (96 dB) dynamic range, high conversion rate (up to 2 MSamples/s) and multiple input channels for real-time data acquisition. The software module incorporates the latest control algorithm that includes an optimized FFT processor which affords a broad control bandwidth (up to 20 kHz) along with frequency resolutions of up to 16,000 lines across the frequency range.

Gap-free data capture

The Vibration Shaker Controller can accommodate gap-free (streaming to disk) capture of data on all available input channels (up to 31) including the feedback signals. In addition to data streaming, the system can display the Frequency Response Function (FRF) between a number of signal pairs thus transforming the controller into a real-time multi-channel spectrum analyser. This capability is useful for monitoring the response of the test system or structure at various points during a test. This information can be used to establish variations in the system's characteristics such as dynamic stiffness and damping.

Demonstrations and guided tours of the Vibration Shaker Controller for Seismic Simulation and Testing in operation are available from the Real Vibrations website at www.RealVibrations.com