

# SPANDON<sub>USB</sub> VIBRATION CONTROLLER

## Technical Performance Parameters

### HARDWARE

*Spandon USB*



#### INPUT

<b>Analog</b>	4/ 8/ 16 simultaneous sampling
<b>Resolution</b>	24-bit ADC
<b>Voltage Level</b>	±40 Volt Peak (max.)
<b>Dynamic range</b>	> 110 dB
<b>Direct Sensor Compatibility</b>	Charge, ICP & mV type, software selectable
<b>Filter Characteristics</b>	Anti-aliasing (Analog & Digital) on each input
<b>Channel Accuracy</b>	± 0.04 dB @ 1 KHz full scale sine
<b>Channel to Channel Deviation</b>	Amplitude - within ± 0.05 dB Phase - within ± 0.2 deg
<b>Signal-to-noise Ratio</b>	> 100 dB
<b>Total Harmonic Distortion</b>	< -95 dBfs
<b>Cross-talk limit</b>	< -100 dB
<b>Digital Input</b>	4 TTL signals to interlock operation with Environmental Chamber and/ or Hand Held Remote Unit

#### GENERAL

**PC or Laptop configuration (min.)**

P4 processor, 512 MB Ram, color monitor and standard computer accessories and peripherals required

**Operating system**  
**Connectivity to PC**  
**Signal conditioning**  
**DSP architecture**

Windows XP  
USB 1.1/ 2.0

Built-in  
32-Bit, Floating Point processor, 50 MHz  
230VAC ± 10%, 50/ 60 Hz, Single Phase,  
Consumption-48 W

**Power requirement**

#### OUTPUT

<b>Analog</b>	One for Servo/ Drive signal ; One for COLA signal
<b>Resolution</b>	24 Bit DAC for Servo; 16 bit DAC for COLA
<b>Voltage Level (Max.)</b>	20 Volt (Pk-Pk) for Servo >10 Volt (Pk-PK) for COLA
<b>Dynamic Range</b>	> 110 dB
<b>Filter Characteristics</b>	Analog & Digital to remove signal distortion and imaging
<b>Total Harmonic Distortion</b>	< -95 dBfs
<b>Digital Output</b>	4 TTL signals to interlock operation with Environmental Chamber and/ or Hand Held Remote Unit

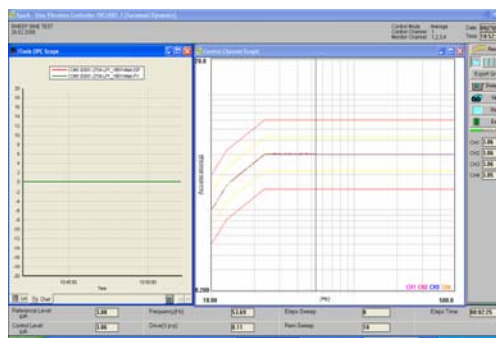
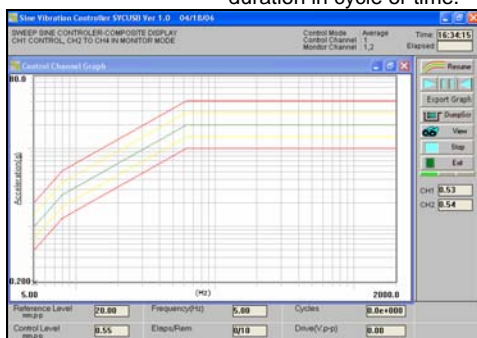
#### REGULATORY COMPLIANCE

<b>Compliance</b>	CE Marking
<b>Safety</b>	EN 1050-1997, EN ISO 12100-1:2003, EN ISO 12100-2:2003, EN 61010-1 Second Edition, EN 60204 89/336/EE (EN 61000, EN 55011)
<b>EMI/EMC</b>	

### SINE TEST PACKAGE

<b>Reference profile (Test Profile)</b>	Programmable for combination of Constant Amplitude (CA), Constant Velocity (CV), Constant Acceleration (CA), Variable Amplitude (VA), Variable Velocity (VV), Variable Acceleration (VA)
<b>Cross over points</b>	Automatic adjustments
<b>Frequency range</b>	0.5 to 5000 Hz
<b>Dynamic range</b>	>100 dB
<b>Loop time</b>	5 milliseconds (typical)
<b>Control accuracy</b>	Within ±1 dB
<b>Channel sensitivity</b>	1.0 to 1000 pC or mV/g
<b>Fixed &amp; Sweep frequency test</b>	Dwell at fixed frequency or Sweep at programmed rate with duration in cycle or time.

<b>Sweep Rate</b>	0.01 to 25 dB/Octave (Logarithmic), 1 to 10000 Hz/min (Linear)
<b>Compression rate</b>	0.001 to above 2000 dB/sec
<b>Control strategy</b>	Control with single or multiple channel with Average/ weighted/ fixed /Maximal
<b>Data Logging Display Graph/ Profile</b>	At defined interval Selection to display all graphs on common axis, individual channel response
<b>Report Generation (during and after the test)</b>	Hardcopy generation of graph/ tabular data Export of graph to MS Word
<b>Resonance Search, Track &amp; Dwell</b>	Finding resonance points and dwell



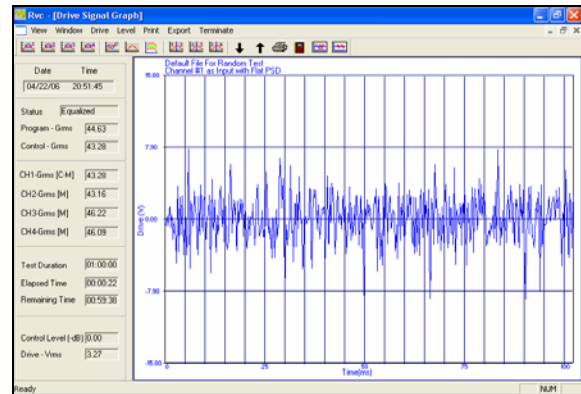
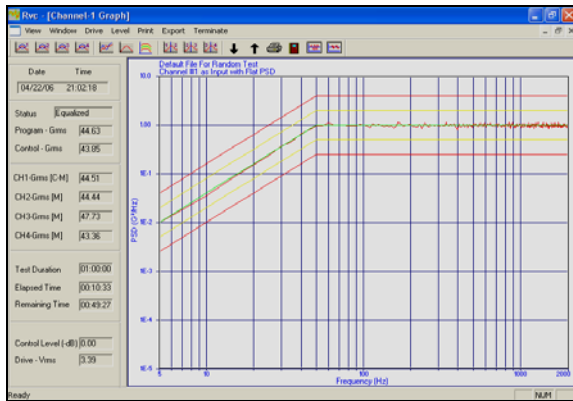
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## Technical Performance Parameters

### RANDOM TEST PACKAGE

<b>Reference profile</b>	100 breakpoints of PSD levels with slop (dB/octave), Import of PSD Data from file
<b>Frequency range</b>	Up to 4000 Hz
<b>Spectral Lines</b>	100, 200, 400, 500 800, 1600, 3200 (optional)
<b>Dynamic range</b>	> 95 dB
<b>Channel sensitivity</b>	1.0 to 1000 pC or mV/g
<b>Randomization</b>	True and Pseudo gaussian distribution
<b>Loop time</b>	200 mS @ 2000 Hz/400 lines (typical)
<b>Transfer function</b>	Measured during Pre-test/ Gain test or main test or recall from file
<b>Degree of Freedom</b>	2 to 800 DOF
<b>Randomization</b>	True Gaussian

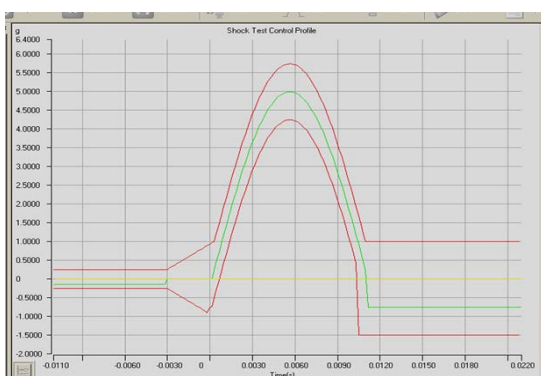
<b>Control accuracy</b>	±1 dB for pseudo random, ±3dB for true random
<b>Control strategy</b>	Control by any single or multiple channel (Average or maximal)
<b>Drive clipping</b>	1.8 to 8 Sigma
<b>Level scheduling</b>	Up to -27dB
<b>Soft Start &amp; Shut down</b>	Duration programmable (1 to 30 sec.)
<b>Data Logging</b>	At defined interval
<b>Display of Graph</b>	Selection to display all graphs on common axis, individual channel response
<b>Report Generation (during and after the test)</b>	Hardcopy generation of graph/ tabular data Export of graph to MS Word



### CLASSICAL SHOCK TEST PACKAGE

<b>Pool of Waveforms</b>	Half Sine, Triangular, Forward Saw Tooth, Backward Saw Tooth, Rectangular, Trapezoidal, User Defined/ Arbitrary Shapes
<b>Reference Pulse Amplitude</b>	1 to 200 'g'
<b>Pulse Width</b>	0.5 to 50/ 100 mS
<b>Pre &amp; Post Pulse Amplitude</b>	5 to 50% of Reference Amplitude
<b>Channel sensitivity</b>	1.0 to 1000 pC or mV/g
<b>Control strategy</b>	Control by any single or multiple channel (Average or maximal)
<b>Pulse Repetition Rate</b>	50 to 3000 mS

<b>Total no. of Pulses</b>	Up to 1,00,000 pulses
<b>Pre-Test feature</b>	To determine transfer function
<b>Pulse Polarity</b>	Positive & Negative
<b>Data Logging</b>	At defined interval
<b>Display of Graph</b>	Selection to display all graphs on common axis, individual channel response
<b>Report Generation (during and after the test)</b>	Hardcopy generation of graph/ tabular data Export of graph to MS Word



### OTHER SOFTWARE APPLICATIONS

- Sine -on- Random
- Random-on-Random
- Sine-on-Random-on-Random
- Shock Resonance Spectrum
- Long Time History/ Field Data Play
- Transient Time History
- Resonance Search, Track & Dwell
- Re-calibration