

Key Benefits

- Very economical yet suitable for random, sine and shock tests
- Simplified or advanced user interfaces to be suitable for different operators and tests
- Setup Wizard for quick and sure test setup
- Coordinated operation of thermal chamber and vibration controller from the same PC for seamless combined thermal and vibration testing
- Superb dynamic range aids control of highly dynamic structures
- Automatic safety checks to protect your valuable equipment
- USB connectivity makes it as easy to install as adding a mouse or keyboard to your PC

COMET_{USB}TM VIBRATION CONTROL SYSTEM

Bringing Economical Vibration Test into the New Era of USB 2.0 Connectivity!

Offering high performance at a very affordable price, the *COMET_{USB}* Vibration Controller is an ideal solution to the everyday demands of your shock and vibration testing. *COMET_{USB}* provides the flexibility to do random, swept sine, and shock testing on both electrodynamic and hydraulic shakers. Easy to use software together with extensive automation features it a perfect fit for vibration stress screening and production test applications.



COMET_{USB} delivers what test engineers demand: Convenience, Performance, Flexibility, and Safety

Convenience

All major PC makers, and consumers worldwide, have adopted USB 2.0 because of its superior speed and convenience. *COMET_{USB}* connects to your PC as a true USB 2.0 device. In the lab or on the production floor, connecting *COMET_{USB}* to your PC or notebook is as easy as plugging in a mouse or keyboard. But plug and play is just the beginning of *COMET_{USB}* convenience. The vibration control applications are also easy to master. Our setup wizard smoothes the learning curve and reduces set-up time. And powerful automation features takes the tedium out of repetitive tasks, allowing you to run complex test schedules with a single keystroke.

Performance

COMET_{USB} delivers exceptional performance in both R&D and production environments. Distributed DSP processors provide fast loop times for quick test load equalization and enhanced safety. *COMET_{USB}* is a true multi-tasking system with the control loop handled independently of the PC. You can use test run time to analyze data and prepare test reports, instantly transmitting all reports and data via email. The system features 24-bit resolution hardware. Housed in a low noise enclosure, the hardware offers programmable voltage ranges on all inputs and outputs. This design provides the exceptional dynamic range you need for precise control of complex structures or difficult fixtures.

Flexibility

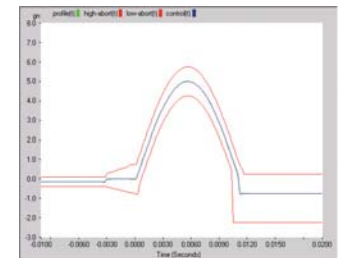
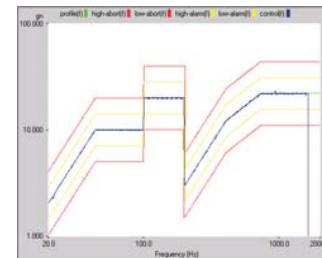
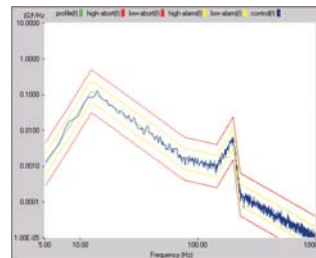
We've worked with test engineers from many industries to make the software for *COMET_{USB}* userfriendly and rich in features. Our applications minimize training time, allow quick test setup, and easy report generation. They help you handle operation, monitoring and reporting in the way that works best for you. *COMET_{USB}* is an ideal solution to the everyday demands of your vibration testing. It provides the flexibility to do random, swept sine, and shock testing on both electrodynamic and servo-hydraulic shakers.

Safety

COMET_{USB} offers enhanced safety and reliability. Over 20 safety checks and interlocks act to ensure the safety of the test article, shaker system, and personnel. In addition, *COMET_{USB}* provides unique safety features not available with other controllers. A builtin hardware abort button connects directly to the output hardware circuitry so that you are never at the mercy of the software user interface. Special circuitry on the output protects the shaker from voltage transients due to power failures or accidents such as switching off controller power.



COMET_{USB} connects to any PC as a USB peripheral. Multiple DSP processors in the *COMET_{USB}* handle the control loop in real-time independent of the PC host.




Specifications
Hardware
Inputs

Analog channels Two inputs standard; differential inputs with 220 k Ohm impedance

Resolution 24-bit Analog to Digital Converter

Voltage ranges ± 10 , 1 or 0.1 Volts

Filtering An analog filter plus a 160 dB/octave digital filter eliminates non-linear phase distortion and aliasing.

Signal conditioning Voltage or ICP[®] sensor power (4.7 mA, 23 V_{peak} open circuit)

Maximum Input 36 V_{peak} without damage

Dynamic range 120 dBfs

Accuracy 0.08 dB (1 kHz sine at full-scale)

Channel Match

Amplitude Within 0.04 dB

Phase Within + 0.5 degree from DC to 20000 Hz

Signal-to-noise > 100 dB (from DC to 1000 Hz measured with half-full-scale sine wave)

Channel cross-talk < -110 dB

Harmonic distortion < -105 dBfs

Output

Analog channels One drive channel standard

Resolution 24-bit Digital to Analog Converter

Filtering A 160 dB/octave digital filter plus an analog filter eliminates non-linear phase distortion and imaging

Voltage range ± 10 V_{peak} with adjustable attenuator

Harmonic distortion < -95 dBfs

General

AC Power 100 to 240 Volts, 50/60 Hz, auto-sensing

Consumption 25 Watts

Dimensions

Height 8.1 in. 20.6 cm

Width 3.5 in 8.9 cm

Depth 13.4 in. 34.0 cm

Weight 6.8 lbs 3.1 kg

Temperature 41 to 132 °F, 5 to 45 °C

Humidity 10% to 90% RH non-condensing

Regulatory Compliance

Compliance CE Marking

Safety EN 61010-1, IEC 1010-1

EMC FCC Par 15 (CFR 47) Class A, EN 61326 Class A, CISPR22 Class A

Software
Random

Reference profile Breakpoint table with unlimited combination of PSD levels with slope (dB/octave) at user defined frequencies

Frequency range Zero to 2400 Hz in eight ranges; 4000 Hz optional

Resolution 110, 225, or 450 spectral lines; 800 lines optional

Dynamic range Up to 95 dB

Randomization True gaussian distribution

Loop time Typically 100 milliseconds

Transfer function Measure during pre-test or, for quickest test startup, recall a function from disk

Two to 1000 Degrees of Freedom

DoF ± 1 dB at 99% confidence with 200 DoF

Control accuracy Control to any single channel;

multiple channel control optional

Drive clipping 2.5 to 6 sigma

Swept Sine

Reference profile Unlimited combination of amplitudes (A, V, or D) and slopes at defined frequencies

Frequency range 0.4 Hz to 2400 Hz; 4000 Hz, 12000 Hz optional

Dynamic range Up to 100 dB

Loop time Typically 10 milliseconds

Control accuracy ± 1 dB through a peak-notch with a Q of 50, at 1 octave/min

Compression rate Adaptive or fixed 0.3 to 3000 dB/sec

Control strategy Control to any single channel; multiple channel control optional

Signal processing Peak, mean, or RMS input channel amplitude processing; tracking filters optional

Sweep type & rate Linear from zero to 6000 Hz/min or logarithmic from zero to 100 octaves/min

Drive resolution As fine as 0.000001 Hz

Sine dwell User specified dwell frequency with duration in cycles or time

Classical Shock

Pulse types Half-sine, Haversine, initial and terminal peak sawtooth, triangle, rectangle, and trapezoid

Compensation Pre- and post-pulse, post-pulse only, or pre-pulse only; single or double sided for minimum acceleration and full use of shaker stroke

Frequency range Zero to 22000 Hz

Frame size 128 to 16384 points or automatically optimized; Linear filter design minimizes distortion and preserves the true waveform shape

Transfer function Measure during pre-test or, for quickest test startup, recall a function from disk

User set coefficient from 1 to 500

Averaging User specifies cut-off frequency

Filtering for low pass filtering

Pulse delay User specified in seconds

Set-up Features

Validation tools Profile displayed and updated as it is created. Automatic listing of peak acceleration, peak velocity, and peak to peak displacement values for profile. Profiles are validated against shaker parameter table.

Engineering units English, SI, Metric, mixed

Test schedule User defined sequence of events, or profiles, that are automatically executed during the test.

Safety Features

Control signal Automatic detection of input overload, open loop, and loss of signal

Line-abort trigger Ratio of spectral lines allowed to exceed their limits; from zero to one

Test shutdown Shutdown initiated by operator or software is performed gracefully at a user specified rate.

Post-Test Documentation

Icon for single click generation of data plots and test reports, including setup parameter listings, test logs, and formatted signal plots, within Microsoft Word.

Hardware

COMET_{USB} Vibration Control System

- 2 input channels – voltage and ICP coupling
- 1 output channel
- Integrated manual abort button
- USB interface port and cable

Options

- Rack mount kit
- Wireless Remote Control Pendant
- Re-Calibration Software



Software

Vibration Control Options

- Value Random Vibration Control
 - Multiple Channel Control
 - Resolution Extension to 800 Frequency Lines
 - Frequency Range Extension to 4 kHz
 - Import of PSD as Reference Profile
- Value Swept Sine Vibration Control
 - Multiple Channel Control
 - Tracking Filters
 - Frequency Range Extension to 4 kHz
 - Frequency Range Extension to 12 kHz
- Value Classical Shock Transient Control
- Sine Oscillator

General Options

- Multi-Layer Password Security System

Other Options

- Analyze Anywhere for Vibration Control
- Thermal Chamber Communication & Control
- Signal Reader (ActiveX commands to read binary files)

Networked Enabled Test Options

- NET-Remote
- NET-Integrator
- NET-Integrator Run-time license
- iNET - internet enabled test; price is per Seat

Dynamic Signal Analysis Applications

- ▶ *RT PRO*[™] (FFT, Transient Capture, and Waveform Source)
- Environmental Data Reduction (SRS Analysis)

Also available from LDS-Dactron

The *LASER_{USB}*[™] Vibration Control System combines the speed, precision, and versatility, needed for your advanced or demanding vibration tests. *LASER_{USB}* provides high performance and superb dynamic range with 2 - 16 inputs and the full range of vibration control applications – Random, Sine, Shock, Mixed Mode, SRS, Road Simulation and more.



LASER_{USB} Vibration Controller

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LDS Test and Measurement Ltd
Jarman Way, Royston
Herts, SG8 5BQ

Phone: +44 (0) 1763 255 255
E-Mail: info-uk@lds.spx.com

www.lds-group.com

LDS Test and Measurement LLC
8551 Research Way, M/S 140
Middleton, WI 53562 USA

Phone : +1 (608) 821-6600
E-Mail: info-us@lds.spx.com

www.bksv.com

LDS Test and Measurement GmbH
Carl-Zeiss-Ring 11-13
D-85737 Ismaning

Phone: +49 (0) 89 92 33 33 0
E-Mail: info-de@lds.spx.com

www.lds-group.com

LDS Test and Measurement SARL
9 Avenue du Canada – BP 221
F-91942 Courtaboeuf CEDEX

Phone: +33 (0)164864545
E-Mail: info-fr@lds.spx.com

www.lds-group.com

LDS Test and Measurement
Room 2912, Jing Guang Centre
Beijing, China 100020

Phone: +86 10 6597 4006
E-Mail: info-cn@lds.spx.com

www.lds-group.com

**Brüel & Kjær Sound & Vibration
Measurement A/S**
Skodsborgvej 307,
DK-2850 Nærum, Denmark

Phone: +45 4580 0500
Fax: +45 4580 1405



Brüel & Kjær 