Brüel & Kjær

COMET$_{USB}$

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$_{USB}$™ 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 electrodynamic shakers using a switching power amplifier (HPA-K, SPA-K). Easy to use software together with extensive automation features it a perfect fit for vibration stress screening and production test applications.

LDS

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. Thisdesign provides the exceptional dynamic range you need for precise control of complex structures or difficult fixtures.

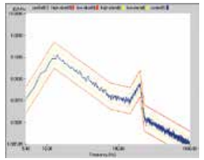
Flexibility

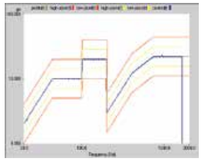
We've worked with test engineers from many industries to make the software for COMET$_{USB}$ userfriendly and rich in features. Our applications minimize training time, allow quick test setup, and easy report generation. They help you handle operation, monitoring and reporting in the way that works best 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 electrodynamic shakers.

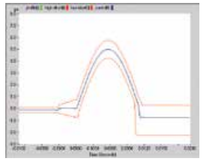
Safety

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 Vpeak open circuit)
Maximum Input	36 Vpeak 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 Vpeak 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
DoF	Two to 1000 Degrees of Freedom
Control accuracy	±1 dB at 99% confidence with 200 DoF
Control strategy	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
Averaging	User set coefficient from 1 to 500
Filtering	User specifies cut-off frequency 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.

Comet$_{USB}$ - The Economical Solution for Vibration Control and Analysis

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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