

JAGUAR SYSTEM

Flagship High-
Channel MIMO
Framework

Comprehensive documentation,
hardware specifications, and
application architecture
overview for the Jaguar
platform supporting up to 588
simultaneous input channels.



Jaguar™

Powerful Vibration Controller, Analysis and Measurement System.

- From 8 to 588 input channels
- Up to 98 control channels
- Spectral Dynamics adaptive control patented algorithm
- Hardware & Software designed and manufactured by Spectral Dynamics
- Continuous Input Auto ranging
- Dedicated real time processor
- Very high reliability for the most demanding industries
- MIMO Functions for patented, true, real-time Multi-exciter control

A COMPLETE SOFTWARE SUITE

MISO Control software (Multiple Input Single Output)

Sine - Random - Shock
Sine on Random
Random on Random
Sine & Random on Random
Shock Response Spectrum (SRS)
Replication
Random Acoustic

MIMO Control software (Multiple Input Multiple Output)

Sine
Random
Shock
Waveform Replication
Random acoustic
Waveform generator

Analysis software

Signal analysis
Transient capture
Swept Sine Analysis
Waveform processor

And much more.

TECHNICAL OVERVIEW



Measurement Channels : All channels are simultaneously sampled at up to 102.4k samples / second / channel with 64 X oversampling. A six pole analog filter precedes each ADC with 96 dB/Oct roll off and Linear Phase characteristics. Each channel pair utilizes a 32 bit DSP. Each DSP is automatically loaded with Application-specific filters and code, when the application is selected.

Accuracy : The Jaguar™ is the only system in the world capable of changing the input ranges during a test with no adverse effects on the data. Summing junctions are designed into the signal path that permit calibration constants to be used for each of the separate 18 input ranges. The software then sets zero DC levels dynamically, while a test is running in Sine or Random applications. So the channels may auto-range to ensure optimum use of the dynamic range.

Adaptive control algorithm : The Jaguar™ uses an advanced Adaptive Control method, which is patented and declared to be a fundamental and revolutionary control method by the European and US patent offices. The adaptive control updates the system model as part of the multi-dimensional optimization used by the underlying optimal control method. These integrated control methods permit the Jaguar™ to reach the best control performance on the market for any test conditions.

Digital to Analog Systems (DAC) : Each DAC channel includes programmable 12-bit attenuators plus the DAC converter. These are adjusted in real-time assuming that only a signal near full-scale is presented to the DAC. These signals are further interpolated and passed through high-pass and low-pass filters to ensure the cleanest possible alias-free drive signals.



Jaguar™



SPECTRAL DYNAMICS

2199 Zanker Road,
San Jose, CA 95131-2109 USA
Phone: 760-761-0440

JAGUAR™ HARDWARE DETAILS

Acquisition & Control Peripheral (ACP)

Output channels	1 to 16+. Compatible with electrohydraulic and electrodynamic exciters
Input channels	8 to 588 (with 6 ACPs synchronized)
Synchronization board	Sample rate clock and critical timing signals shared via phase-locked loop
Connector type	Standard BNC for Input and Output
ACP controller	1GHz RISC processor / 512MB RAM
Host interface	Base-T Ethernet
Throughput disk	1TB SSD (optional)

Input Channel Performance

Dynamic range	> 95 dB
Amplitude accuracy	+/- 0.03 % full scale
Overload detection	Full scale on all channels
Maximum input signal	+/- 35 V without component damage
Voltage ranges	Random, Shock and Signal analysis: 55 mV to 10 V, in 3 dB steps Swept Sine: 27 mV to 10 V in 1 dB steps
Sampling rate	Up to 102.4K samples per sec
Sample rate multiplier	2.56 to 81.92 selectable over-sampling
Sampling interval	None ; simultaneous on all channels
Freq. range reduction	Decimation & filtering by on-board DSPs
Freq. accuracy	+/- 5 ppm
Anti-aliasing filters	
Analog filter	
Cutoff freq.	Fixed at 225 kHz
Alias Attenuation	> 96 dB/octave
Band-pass ripple	Within +/- 0.10 dB
Digital filters	
Cutoff freq.	Variable (50 to 10 000 Hz)
Stopband atten.	> 96 dB at 1.56x cutoff freq.
Pass-band ripple	Within +/- 0.15 dB
Channel to channel match	
Amplitude (Calib.)	Within +/-0.5 dB
Phase	+/- 0.2° to 2 kHz; +/- 0.3° to 5 kHz; +/- 0.5° to 10 kHz; +/- 1.0° to 20 kHz; +/- 2.0° to 40 kHz Typically +/- 0.1° to 5 kHz
Cross-talk	< -90 dB below full scale
Offset removal	
Type	Digitally controlled offset removal
Accuracy (Calib.)	Within +/- 0.5 dB of full scale or +/-0.6 mV for each input range
Input impedance	1 MOhm
Calibration	Internal digital calibration, NIST ref. Constants stored in each board
Coupling / IEPE	AC, DC, IEPE

Output Channel Performance

Dynamic range	> 90 dB
Maximum amplitude	Application dependant. At least +/-10 V pk
Max. output current	16 mA
Attenuator range	0 to -96 dB using 36-bit programmable, auto ranging device
Attenuator resolution	0.05 dB steps
Output sample rate	204.8 K samples/sec.
Image attenuation	> 96 dB
Freq. accuracy	+/- 5 ppm
Freq. range reduction	Digital interpolation & smoothing filters
Smoothing filters	
Analog filter	
Cutoff freq.	Fixed at 30 kHz
Pass-band ripple	Within +/- 0.35 dB
Digital filter	
Cutoff freq.	Variable
Stop-band atten.	> 96 dB at 1.56x cutoff freq.
Pass-band ripple	Within +/- 0.07 dB
Output offset removal	
Type	Digitally controlled removal of internal and external offsets
Accuracy (Calib.)	Within +/- 0.1 % of full scale
Output impedance	60 Ohms
Const. amplitude output	1 Volt peak (COLA), BNC
Output cabling	Designed to drive up to 50 feet (15m) of 50 Ohms coaxial cable
Calibration	Patented Calibration technique gives fastest and more accurate, in-situ, NIST Traceable calibration available today on any Control/Analysis System
Tot. harmonic distortion	< -80 dB, 0-20 kHz

PC Windows 10 Host with Linux virtual machine

PC format	Industrial rack or laptop
Processor / Memory	Intel i7 3.0 GHz min/16 GB
Storage	SSD 500GB expandable
Monitors	Two LCD 27 in. (except laptop)
Additional information	
Option	Remote Communication interface (RCI)
Voltage	100-125 or 200-240 VAC 50/60 Hz
Typical power usage	From 250 to 600 W per ACP
Operating temperature	10 °C to 40 °C
Humidity	20 % to 80 % non condensing

In keeping with our commitment to continuous product improvement, the information herein is subject to change.
Rev_B_US, Spectral Dynamics Inc. All rights reserved.

PANTHER SYSTEM

Next-Generation
Modular MISO
Platform

Technical specifications and
functional guidelines for the
phase-synchronized,
expandable Panther vibration
control and analysis suite.



Panther

SPECTRAL DYNAMICS

COMPLETE MISO SOFTWARE SUITE™

Why Choose the Panther System?

The Panther System sets a new standard in vibration testing and data analysis, offering unmatched flexibility, precision, and efficiency. Designed for engineers and researchers, Panther empowers you to tackle complex testing scenarios with ease, delivering actionable insights in real time.

- **Multiple Acquisition Streams:** Simultaneously capture and analyze data from multiple streams. Monitor overall vibration levels while zooming into specific frequency bands for detailed analysis, all during a single test.
- **Real-Time Digital Resampling:** Dynamically adjust sampling rates during tests, from high-frequency transient capture to low-rate long-term monitoring, without interruption.
- **Process Lines:** Continuously calculate and monitor data channel values with customizable warning and alarm levels for real-time insights.
- **High Precision Frequency Tracking:** Lock onto changing frequencies, like those from rotating machinery, for synchronized and accurate analysis.
- **Powerful Report Generation:** Create professional reports in Microsoft Word, PDF, or image formats, with customizable pre/post-test forms for comprehensive documentation.
- **Multi-Source Data Definition:** Overlay live and historical data for side-by-side comparisons, enhancing test result analysis.
- **Custom Status Panels:** Visualize data with flexible display modes, including graphs, gauges, and tachometers, tailored to your needs.
- **Time Domain Analysis (TDE):** Edit and fine-tune time-stream data interactively with intuitive tools for precise control.
- **Easy Data Conversion:** Seamlessly import and export data in formats like ASAM, ASCII, MAT, SDD, and UFF for integration with other workflows.
- **Touch Screen Interface:** Navigate effortlessly with a touch-friendly interface, streamlining setup and operation.
- **Stream to Disk & Playback:** Save time-domain data for later analysis and playback in any Panther application, ensuring no detail is missed.
- **Secure Remote Access:** Monitor and control tests in real time from any location using a Windows 11 PC or tablet.
- **High Sampling Rate:** Achieve superior frequency resolution with up to 262,144 samples per second for precise shock response spectrum analysis.
- **Modular Design:** Expand your system in 8-channel increments, scaling to meet your growing testing needs.
- **Advanced Calculator:** Perform custom calculations, such as normalized Power Spectral Density, for deeper data analysis.

MISO CONTROL SOFTWARE (Multiple Input Single Output)

- Sine
- Random
- Shock
- Sine on Random
- Random on Random
- Shock Synthesis
- Road Simulation

ANALYSIS SOFTWARE

- FFT
- 1/n Octave
- Statistics
- Modal Data
- Acquisition
- Playback
- Transient Capture
- Rotating Machinery

Versatile Test Capabilities

Panther is the culmination of over eighty years of experience in vibration instrumentation.

- Extraordinary accuracy
- Optimum Dynamics Control
- Unparalleled adjustability
- Expandability in both Hardware and Software

Spectral Dynamics stands as a pioneer in vibration testing technology, boasting over eighty years of unparalleled expertise in developing innovative solutions for structural dynamics, acoustic analysis, and vibration control.

Founded on a legacy of groundbreaking advancements, the company created the world's first vibration control system, revolutionizing how engineers simulate real-world conditions to ensure product reliability and performance. Building on this foundation, Spectral Dynamics' visionary engineers introduced the first PC Windows-based vibration control system, seamlessly integrating user-friendly software with robust hardware to democratize advanced testing for industries worldwide. Today, this storied heritage continues to drive Spectral Dynamics' commitment to precision engineering, empowering manufacturers to push the boundaries of design verification and process optimization with confidence.

At the heart of Spectral Dynamics' offerings is the Panther vibration control system, the culmination of decades of refinement that delivers extraordinary accuracy, optimum dynamics control, unparalleled adjustability, and seamless expandability in both hardware and software. Designed for the most demanding applications, Panther represents the evolution of the company's pioneering vibration control technologies, providing a complete Multiple Input Single Output (MISO) Software Suite™ that adapts to evolving test requirements without compromise. Whether validating aerospace components or automotive assemblies, Panther's intuitive interface and real-time processing ensure tests are conducted with the precision that has defined Spectral Dynamics since its inception, minimizing risks and maximizing insights into product behavior under stress.



S P E C T R A L
D Y N A M I C S

Panther's MISO Control Software empowers users with a versatile array of test profiles tailored to replicate diverse environmental challenges, including Sine, Random, Shock, Sine on Random, Random on Random, Shock Synthesis, and Road Simulation. These capabilities allow for precise simulation of operational vibrations, enabling engineers to identify potential failures early in the development cycle. Drawing from Spectral Dynamics' long history of innovation—rooted in the creation of the first vibration control system—this software suite offers intuitive controls and advanced algorithms that ensure repeatable, high-fidelity results, making complex testing accessible while upholding the rigorous standards that have made the company a trusted partner for over eight decades.

Complementing its control prowess, Panther's Analysis Software provides comprehensive tools for post-test evaluation and deeper insights, featuring FFT, 1/n Octave, Statistics, Modal Data, Acquisition, Playback, Transient Capture, and Rotating Machinery analysis. These modules enable users to dissect vibration data with exceptional detail, uncovering subtle patterns and resonances that inform design improvements. The engineers behind the first PC Windows-based vibration control system infused this software with modular flexibility, allowing seamless integration with existing workflows and expandable data handling to support everything from routine quality checks to intricate research projects.

Safety remains paramount in every vibration test conducted with Spectral Dynamics' systems, as the company's eighty-plus years of experience underscore the critical need to mitigate risks during high-energy simulations. Panther incorporates built-in safeguards, such as automated abort sequences, real-time monitoring, and user-configurable limits, to prevent over-testing that could damage equipment or compromise operator well-being. This emphasis on safety—honed through the development of foundational technologies like the first vibration control system—ensures that tests not only yield accurate data but also adhere to the highest industry standards, protecting both personnel and investments in an era of increasingly rigorous regulatory demands. With Spectral Dynamics, reliability isn't just engineered; it's a legacy.

Input Subsystem		Output Subsystem	
Input Channels	8 Channels Expandable up to 32	Dynamic Range	>110dB
Dynamic Range	>110dB	DAC	20 Bit
ADC	24 Bit	Max Output Amplitude	+/- 12 volts Peak
Amplitude Accuracy	+/- 0.20% of value or +/- 0.03% of full scale whichever is greater	Max Output Current	16 mA
Amplitude Linearity	+/- 0.20% of value or +/- 0.03% of full scale whichever is greater		
Voltage Ranges Auto Ranging	+/-12v to +/-0.5 volts in 8 steps Yes		
Overload Detection	Full scale on all channels, analog and digital detection		
Voltage Coupling	AC or DC or GND		
IEPE Power	4 mA (24V max into open circuit)	Max Attenuator Rate	Software Selectable
Max Rated Input Signal	+/- 35 Volts Peak	Max Output Rate	262,144 samples per second
Max Sampling Rate	262,144 samples per second	Image Attenuation	< 96dB
Sampling Interval	None; simultaneous on all channels	Frequency Accuracy	+/- 5ppm
Frequency Accuracy	+/-5 ppm	Freq Range Reduction	10 stage smoothing filters
Freq. Range Reduction	Digital decimation and filtering using onboard FPGA and DSP	Reconstruction Filters Analog Cutoff Frequency Image Attenuation Pass Band Ripple	1khz, 10khz, 25khz, OFF > 96dB Within +/- 0.15dB
Anti-Aliasing Filters Analog Filter Cutoff Frequency Alias Attenuation Pass Band Ripple Digital Filter Cutoff Frequency Stop Band Atten. Pass Band Ripple	Fixed @ 524kHz >105dB Within +/- 0.10dB Variable >96dB @ Nyquist frequency Within +/- 0.15dB	Output Offset Removal Type Accuracy	Digitally Controlled Better than +/- 0.5% of Full Scale
Channel-Channel Match Amp Phase Single Unit Channel Crosstalk Phase between Units	Better than +/- 0.25dB Better than +/- 1.0 degrees to 100kHz < -100dB Better than +/- 1.0 degrees to 100kHz	Output Impedance	60 Ohms
Offset Removal Type Accuracy (compressed)	Digitally Controlled Better than +/- 0.5% of full scale for each input range	COLA Output Level	1 Volt Peak, generated after analog smoothing filter
Input Impedance	1 Mohm	Output Type	Pseudo-Differential 10 Ohms to System Ground lo side return
Connector Type	BNC	Output Cable	Designed to drive up to 50 feet of shielded 50 Ohm coaxial cable
Connection Type	Pseudo-differential, 10Ohms to system ground, low side return	Calibration	Automatic Internal digital calibration, NIST referenced
Calibration	Internal digital calibration, NIST referenced	Calibration Constants	Digital Calibration Constants stored in ASCII file
Calibration Constants	Digital Calibration Constants stored in ASCII file	Host to Unit Communication	USB or Ethernet or Optional WIFI
TEDS Compliant	Yes		

In keeping with our commitment to continuous product improvement, the information herein is subject to change.
Rev_A_US, Spectral Dynamics Inc. All rights reserved.

Panther

SPECTRAL  DYNAMICS

COMPLETE MISO SOFTWARE SUITE™

Spectral Dynamics invented closed-loop digital vibration control and continues to lead the field with Panther — the next-generation vibration control and analysis system that combines advanced capability, intuitive operation, and intelligent safety. Built on decades of experience, Panther represents the culmination of Spectral Dynamics' expertise in control algorithms, adaptive equalization, and precision hardware design.

Comprehensive Capability

Panther delivers a complete range of vibration control and analysis applications within a single integrated platform. Whether performing Sine, Random, Shock, Sine-on-Random, Random-on-Random, RMA, or Replication tests, engineers can rely on Panther for accuracy and repeatability. Its architecture supports up to 32 input channels, all phase-synchronized to within $\pm 1^\circ$ at 100 kHz, with a dynamic range exceeding 110 dB.



Applications

- Multi-Sine
- Swept Sine & Sine Analysis
- Shock (classic and SRS)
- Random on Random
- Replication
- Transient Analysis
- Random
- Sine on Random
- RMA (Rotating Machinery Analysis)



Ease of Use

Panther's modern GTX interface simplifies setup, operation, and data review. Through the Library feature, users can access test setups, data files, and analysis results instantly — eliminating the need to navigate Windows folders. Touch-screen compatibility across Windows PCs and Microsoft Surface devices ensures seamless interaction during setup and monitoring.

Built-In Safety

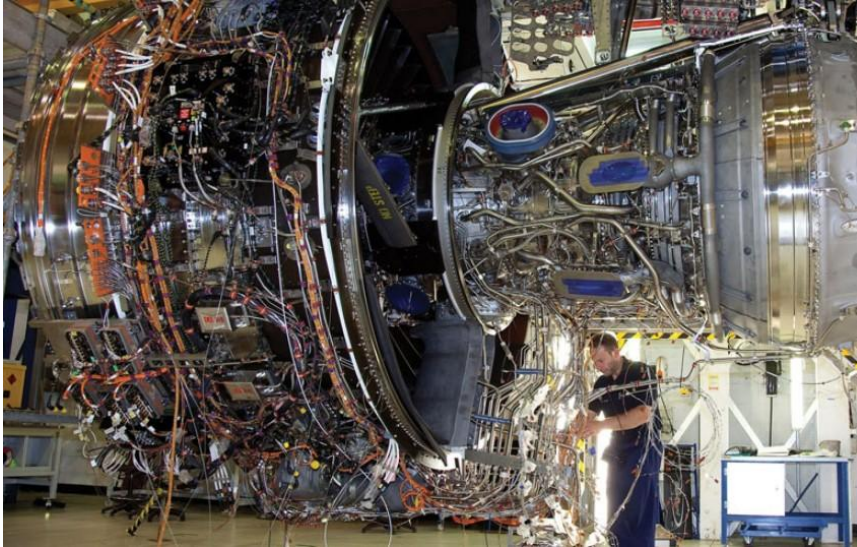
Panther continuously monitors more than a dozen system parameters up to 25 times per second to ensure protection of both operators and equipment. Intelligent interlocks, adaptive limits, and watchdog diagnostics make Panther the safest vibration control platform in its class.

Trusted Heritage

Spectral Dynamics pioneered digital vibration control technology and remains a benchmark for reliability and innovation. Panther embodies this legacy — uniting advanced digital processing with a focus on usability and system integrity.

Key Differentiators

- **Comprehensive Capability:** Supports Sine, Random, Shock, Sine-on-Random, Random-on-Random, RMA, Multi-Sine, and Transient Analysis applications from one interface.
- **Built-In Safety:** Over a dozen system parameters are monitored continuously, up to 25 times per second, ensuring complete protection for operators and equipment.
- **Touch-Screen Ready:** Optimized for Windows touch operation, including Microsoft Surface devices.
- **Data Integrity:** Real-time, gap-free data streaming and synchronized multi-rate acquisition guarantee accurate analysis and traceability.



Comprehensive Capability

Panther integrates both hardware and software into a single synchronized architecture. The system's modular design supports up to 32 fully phase-aligned input channels using 24-bit ADCs and 20-bit DACs for exceptional resolution. Sampling rates up to 262,144 samples per second ensure precise time and frequency domain measurements.

Digital calibration, automatic gain ranging, and IEEE 1451.4 TEDS compliance ensure accuracy and repeatability across every test configuration.

Panther defines the modern standard in vibration control and analysis — a system engineered for accuracy, reliability, and ease of use. From setup through report generation, Spectral Dynamics ensures that every test runs with confidence, precision, and safety.

Contact Information

Spectral Dynamics Inc.
2199 Zanker Road, San Jose, CA 95131 USA
Phone: 800.778.8755
Website: www.spectraldynamics.com
Email: salesna@spectraldynamics.com



LYNX SYSTEM

Compact &
Affordable
Instrumentation
Platform

Production screening,
laboratory test suites, and
software licensing guidelines
for the 4-channel expandable
Lynx system framework.



Classical Applications with Lynx™ Vibration Test Control System.

- Control, Analyze and Measure
- Multi-channel control capability
- Developed by Spectral Dynamics
- Advanced data storage & reports
- Safety & automation features
- Compatible OS Windows 11

LYNX™ SOFTWARE - CLASSICAL APPLICATIONS

Analysis

FFT
Transfer function
1/n Octave
Playback
Calculations

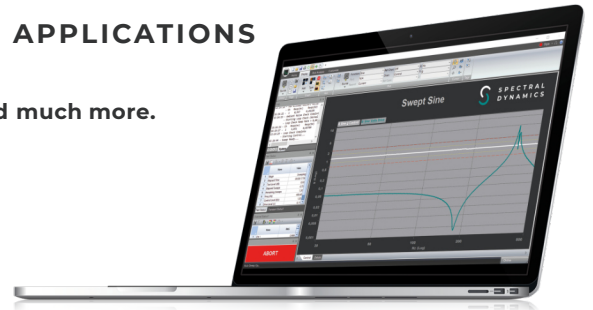
Test features

Manual operation
Automatization
Test sequence
Remote control

Export & Report

Direct export of
report and data :
in Word®
in Excel®

And much more.



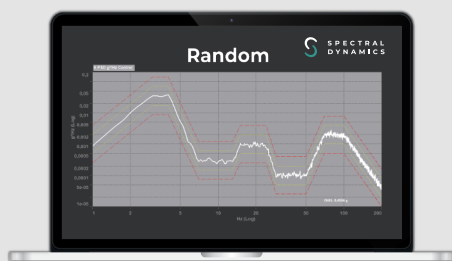
RANDOM

Random vibration testing is intended to verify that the device under test will withstand the vibration and perform to specifications afterward. With Random testing, the aim is to excite a complete range of input frequencies for the device under test. These types of test are often based on known or specific profiles of the random amplitudes across a frequency range.

Random testing with Lynx™

To perform the optimal test, Spectral Dynamics developed a patented adaptive control algorithm with separate controls loops dedicated to controlling the shape of the drive spectrum and overall RMS level, which optimizes both control speed and stability. With this tool, the Lynx™ is able to “see the future” and adjust the control speed in real time to the next measure of error that is about to happen.

Thanks to advanced control parameters, test automation and safety features, the Lynx™ is uniquely placed to maintain your random test control.



SINE

Sine vibration testing exposes the device under test to a single frequency or tone for a specific period of time. Traditionally, the goal of sine testing was to identify resonant frequencies of the structure. Today, the requirements are to stimulate all frequencies one at a time with pure analog quality sine energy that constantly and smoothly changes frequency with no detectable steps in the frequency.

Sine testing is useful:

- in identifying resonant conditions within a test item
- when the test items environment includes a range of exciting frequencies, from things like reciprocating equipment or motors, engines, turbines, or fans
- for testing worst case fatigue exposure, if a natural frequency and an excitation frequency overlap for example.



Sine testing with Lynx™

Spectral Dynamics develops its own algorithms in order to always provide the best control. For sine testing, it means a true analog-quality sine sweep with a double precision integrated phase algorithm for low distortion. Thanks to the Lynx™ easy-to-use interface, you can adapt your control parameters : manual or automatic test, control with the fundamental signal (tracking filter) or on the RMS of the broadband, number of control channels and strategy.

With the “Resonance search & Dwell” option, fatigue tests can also be performed.



Lynx™



**SPECTRAL
DYNAMICS**

2199 Zanker Road,
San Jose, CA 95131-2109 USA
Phone: 760-761-0440

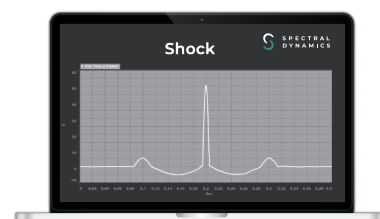
LYNX™ Classical Applications

SHOCK

Shock testing is used to measure the effect of impact or a sudden acceleration, which could be caused by an explosion, a drop, or a collision on the test item. In order to simulate a complex vibration/shock like an earthquake or pyrotechnic shock, tests based on SRS (shock response spectrum) have been developed to match with a known or given frequency spectrum.

Shock testing with Lynx™

Lynx™ generates different types of shock pulses to simulate the test item experiences in its real environment. Thanks to its expertise, Spectral Dynamics developed an adaptive control algorithm for shock testing with transfer function updating and coherence smoothing to accurately and quickly compensate for non-linearity or time varying changes in the dynamic load. In the software, the control strategy is easily defined by the user with pulse compensation, tolerances, number of control channels. SRS testing, automation of the shock test and repetitive pulse mode are only some of the features you can expect with your Lynx™ system.



TECHNICAL SPECIFICATIONS

PERFORMANCE

Dynamic range
Output

Random application

> 90 dB
True Gaussian noise

Sine application

> 90 dB
Analog-quality digital sine

Shock application

> 90 dB
Half-sine, sawtooth, trapezoidal, import reference (UFF)
-

Control loop time

With 4 control CH., 4 new frames/loop,
120 DOF, 2000 Hz, 200 lines, < 0.5 s
Customization of Sigma and Kurtosis
parameters
Adjustable control signal loss feature

Less than 5 msec for single channel
control
Harmonic Distortion < - 75dB
Compress. rate: Up to 3,500dB/sec with
unconditionally stable feedback control
loop

Other parameters

Repetitive pulse mode (from 1 to 1M of
pulses / delay and pulse polarity change)

REFERENCE PROFILE

Definition

Defined by a combination of up to
1000 amp./freq. breakpoints & slopes
Up to 0.1 Hz - 20 kHz
Up to 12800 frequency lines
Limiting (Notching) or abort profile
for all measurement channels

Up to 500 frequency segments (disp.,
velocity, accel.; linear or logarithmic)
Up to 0.1 Hz - 20 kHz
Up to 2400 points per sweep
Limiting (Notching) or abort profile
for all measurement channels

Pulse up to 32000ms, 0.01 to 500g
Buffer 10 to 64 s
Automatically adjusted
512 - 8192 samples, in powers of 2 steps
Pre/Post pulse compensation (5 to 100%)
Delay between pulses 15 to 8000ms

CONTROL PARAMETERS

Number of control CH.
Control Strategy

Up to all channels
Average, max., min.; user-defined
weighting for each control channel
Manual, automatic, automatic only
DOF : from 8 to 30000

Up to all channels
RMS, arithmetic average, min, max
Manual, automatic
RMS processing or tracking filter (1 to
200% of drive freq. or fixed bandwidth)

Any one channel selectable as control
Drive update off/on (equalization function
updated after pulse) - output polarity +/-
Manual, semi-automatic, automatic
Equalization with transfer function
Weighting for averaging : user selectable

Mode of operation
Specific parameters

CHANNEL SETUP

Channel type
Channel loop check
Transducer database

Control, measurement, limit, abort
Enabled, disabled
Yes (License)

Control, measurement, limit, abort
Enabled, disabled
Yes (License)

Control, measurement
Enabled, disabled
Yes (License)

ANALYSIS

Spectra, Time, PSD, Transfer function...

Spectra, FRF, Transfer function...

Pulses and Spectra, SRS displays...

DATA STORAGE

Automatic storage every 1 to 10,000 s
save on level change, on alarm, on ext.
command, manual save

Save every x sweep, first sweep, last
sweep

Save every pulse, last pulse, off

LICENSE FOR APPLICATION

Level 1

Include 1 Hz to 2 kHz freq. range, 800
lines of resolution

Include 1 Hz - 2 kHz freq. range, 800
points per sweep

Include half sine and trapazoid pulse
shapes, manual mode only

Level 2

Include 1 Hz to 5 kHz freq. range, 3200
lines of resolution

Include 1 Hz - 5 kHz freq. range, 2400
points per sweep - Limit channels

Include all pulse shapes, Ref. Importing,
Level and Pulse Scheduling

Level 3

Include 0.1 Hz to 20 kHz freq. range,
12800 lines of res. - Limit Channels

Include 0.1 Hz - 20 kHz freq. range,
2400 points / sweep - Limit channels

-

Specific licenses

-

Sine Resonance Track and Dwell
Stepped Sine Vibration Control

Waveform Generation and SRS Control

OTHER LICENSES

Time storage (Stream to disk) / Transducer database / Data export manager / Uff data explorer / Print automation
Programmable function calculator / Mission simulation / Test schedule / Security option / And much more.

In keeping with our commitment to continuous product improvement, the information herein is subject to change.
Rev_C_US, Spectral Dynamics Inc. All rights reserved.

Spectral Dynamics Inc. 2199 Zanker Road, San Jose CA 95131, USA www.spectraldynamics.com



Powerful, Compact and Affordable Vibration Test Control System.

- Control, Analyze and Measure
- 4 Input channels expandable
- Multi-channel control capability
- Hardware & Software designed and manufactured by Spectral Dynamics
- Advanced data storage & reports
- Safety & automation features
- Powerful multiple DSP architecture
- Compatible OS Windows 11 / USB3 connection to host

LYNX™ SOFTWARE SUITE

MISO Control software (Multiple Input Single Output)

Sine
Random
Shock
Sine on Random
Random on Random
Shock synthesis
Road simulation

Analysis software

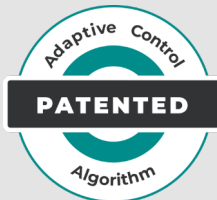
FFT
1/n Octave
Statistics
Modal
Playback
Transient capture

Export & Report

Direct export of
report and data :
in Word®
in Excel®

And much more.

SYSTEM OVERVIEW



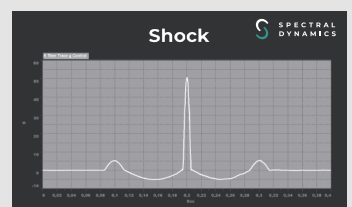
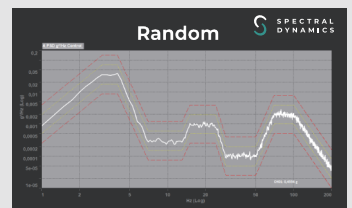
Versatile Test Capabilities : The Lynx™ control system is designed to meet a wide range of environmental test requirements. It combines simplicity of operation required for production screening with the power and versatility required for R&D prototype testing.

Superior Control : The Lynx™ is no ordinary controller when it comes to vibration testing. To meet your most stringent test requirements, the Lynx control system incorporates patented adaptive digital vibration control methods.

User Friendly: The Lynx™ graphical user interface provides test operators with friendly operation from setup to report preparation. You can customize the interface so that it's easy to use whether you are a new user or an expert.

Built by the Experts :

Spectral Dynamics introduced the first digital vibration control system in 1969. Over the next nine generations of systems, we perfected and patented industry-leading vibration control technologies.





Lynx™



**SPECTRAL
DYNAMICS**

2199 Zanker Road,
San Jose, CA 95131-2109 USA
Phone: 760-761-0440

LYNX™ HARDWARE DETAILS

Input subsystems

Input channels	4 channels expandable
Dynamic range	> 95 dB
ADC	Effective 40 bit resolution with precision 24-bit input A/D & 16-bit programmable input attenuator
Amplitude accuracy	±0.20 % of value or ±0.03 % of full scale, whichever is greater
Amplitude linearity	±0.20 % of value or ±0.03 % of full scale, whichever is greater
Voltage ranges	440 mV, 2.5 V, or 12 V full scale
Overload detection	Full scale on all channels, analog and digital detection
Voltage coupling	AC or DC
IEPE power	4 mA (20 V maximum into open circuit)
Max. rated input signal	+/- 35 Volts without component damage
Sampling rate	51,200 samples per second
Sampling interval	None ; simultaneous on all channels
Frequency accuracy	±5 ppm
Freq. range reduction	Digital decimation and filtering using on-board DSPs
Anti-aliasing filters	
Analog filter	
Cutoff frequency	Fixed at 290 kHz
Alias attenuation	> 96 dB
Pass band ripple	Within ±0.10 dB
Digital filter	
Cutoff frequency	Variable
Stop band atten.	> 96 dB at 1.56 times cutoff frequency
Pass band ripple	Within ±0.15 dB
Channel-to-channel match	
Amp. (compensated)	Better than ±0.25 dB
Phase (compensated)	Better than ±1.0 degree to 20 kHz
Crosstalk	> -90 dB below full scale
Offset removal	
Type	Digitally controlled offset removal
Accuracy (compensated)	Better then ±0.5 % of full scale, for each input range
Input impedance	1 MOhm
Connector type	BNC
Connection type	Pseudo-differential, 10 Ohms to system ground, low side return
Calibration	Internal digital calibration, NIST referenced
Calibration constants	Digital calibration constants stored in ASCII file

Output Subsystems

Dynamic range	> 95 dB
DAC	Effective 64-bit output with precision 16 bit D/A and Quad 12-bit Programmable attenuators
Max. output Amplitude	± 12 Volts peak
Max. output current	16 mA
Volt. range attenuator	Programmable 48-bit
Attenuator range	0 to -160 dB
Attenuator step res.	
0 to -90dB	0.05 dB
-90 to -110dB	0.10 dB
-110 to -135 dB	0.20 dB
-135 to -160 dB	0.30 dB
Attenuator accuracy	±0.01 % of full scale or ±1.0 % of value, whichever is greater
Max. attenuator rate	> 4000 dB/sec
Sampling rate	51,200 samples per second
Image attenuation	96 dB
Frequency accuracy	±5 ppm
Freq. range reduction	Digital interpolation & smoothing filters
Filters	
Analog	
Cutoff frequency	Fixed at 30 kHz
Image atten.	> 96 dB
Pass band ripple	Within ±0.15 dB
Digital	
Cutoff frequency	Variable
Stop band atten.	> 96 dB at 1.58 times cutoff frequency
Pass band ripple	Within ±0.07 dB
Output offset removal	
Type	Digitally controlled removal of internal and external offsets
Accuracy	Better than ±0.5 % of full scale
Output impedance	60 Ohms
Unatten. output level	1 Volt peak, generated after analog smoothing filter
Output type	Pseudo-differential, 10 Ohms to system ground low side return
Output cable	Designed to drive up to 50 feet (15 m) of 50 ohms coaxial cable
Calibration	Automatic Internal digital calibration, NIST referenced
Calibration constants	Digital calibration constants stored in ASCII file

In keeping with our commitment to continuous product improvement, the information herein is subject to change.
Rev_C_US, Spectral Dynamics Inc. All rights reserved.