

Advancing Multi-exciter Dynamic Testing since 1961



Classical Applications with LynxTM 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

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 LynxTM 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 $Lynx^{TM}$ 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 LynxTM

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 $Lynx^{TM}$ 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.





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.



Waveform Generation and SRS Control

Shock testing with $Lynx^{TM}$

Specific licenses

LynxTM 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 LynxTM system.

you can expect with your Lynx	system.			
TECHNICAL SPECIFICATIONS				
	Random application	Sine application	Shock application	
PERFORMANCE Dynamic range Output	> 90 dB True Gaussian noise	> 90 dB Analog-quality digital sine	> 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	Less than 5 msec for single channel control	-	
Other parameters	Customization of Sigma and Kurtosis parameters Ajustable control signal loss feature	Harmonic Distortion < - 75dB Compress. rate: Up to 3,500dB/sec with unconditionally stable feedback control loop	Repetitive pulse mode (from 1 to 1M of pulses / delay and pulse polarity change)	
REFERENCE PROFILE Definition Frequency range Resolution Specific parameters	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	Up to all channels RMS, arithmetic average, min, max	Any one channel selectable as control Drive update off/on (equalization function	
Mode of operation Specific parameters	weighting for each control channel Manual, automatic, automatic only DOF: from 8 to 30000	Manual, automatic RMS processing or tracking filter (1 to 200% of drive freq. or fixed bandwidth)	updated after pulse) - output polarity +/- Manual, semi-automatic, automatic Equalization with transfer function Weighting for averaging: user selectable	
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	-	

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.

Sine Resonance Track and Dwell

Stepped Sine Vibration Control