Lynx™ Shock software employs a patented adaptive equalization technique. Not a "Once per test", amplitude only correction, but "adapts amplitude and phase" on every shock pulse to correct for non-linear conditions on both hydraulic and electrodynamic exciters. **The ability to employ true random energy** for FRF Calculations provides excellent system identification. Lynx™ Shock provides the ability to use pulse, broadband random, or band limited random for the best system identification and accuracy.

• Pulse Types: Half-sine, sawtooth, trapezoidal, rectangular, and imported waveforms
• Belcore VERTQII seismic waveforms
• Output frames up to 16,384 samples
• SRS analysis to 10 kHz on all active measurement channels
• SRS calculation (Maxi-Max, Primary+, Primary-, Residual+, Residual-)
• Manual or automatic operation with level scheduling
•Sophisticated drive compensation management to decrease equalization time for repetitive tests

Lynx™ SRS Synthesis provides a robust capability to generate a nearly unlimited number of waveforms that will match your specified SRS. **Transients may be manually or** automatically generated from either damped sine or wavelet components with user specified optimization. **Adaptive Control** allows Lynx™ to learn your structure and rapidly resolve its unique dynamic characteristics (including phase changes during the test), producing very accurate tests. **Exceptionally powerful Digital Signal** Processing permits many parallel computations so all channels and resultant data may be viewed instantly and simultaneously.

• SRS analysis capability from 1/1 octave to 1/24 octave
• Automatic wavelet synthesis and convergence from SRS reference
•Optimization for time, displacement or acceleration
• Extensive wavelet editing capabilities
• Patented adaptive control technique for control of non-linear dynamics Not "Once per Test System ID"
• Sophisticated drive compensation management to decrease equalization time for repetitive tests

Lynx™ Shock - Technical Specifications

Control Methods

Control loop — Patented adaptive control algorithm with transfer function updating and coherence smoothing to accurately and quickly compensate for non-linearity or time varying changes in the dynamic load

Control Performance

Dynamic range — > 90 dB

Pulse Definition

Types — Half-sine, initial peak sawtooth, terminal peak sawtooth, trapezoidal, rectangular, import reference (UFF)

UFF Scale Factor — - 40 to + 40 dB

Pulse duration — 0.1 to 32000 ms

Buffer duration — 10 ms to 64 sec

Pulse amplitude — 0.01 to 500 g

Rise time (trapezoidal) — 0.1 to 10,000 ms

Peak time (trapezoidal) — 0.1 to 10,000 ms

Fall time (trapezoidal) — 0.1 to 10,000 ms

Units — g-in/s-in; g-m/s-mm, m/s^2-m/s-mm EU for Measurement Channels

Frequency range — from 50 Hz to 10 kHz; dependent on the pulse duration and type of compensation,

Frame size — Automatic selection of 512 - 8192 samples, in powers of 2 steps

Pulse dynamic limits — Maximum input voltage, max/min acceleration, max/min velocity, max/min displacement, calculated and displayed

Pulse Compensation

Type — Pre- and post-pulse, pre-pulse only, post- pulse only

Displacement optimization — (Pre- and post-pulse) Single sided, double sided

Compensation method — (Double sided) Displacement, symmetrical acceleration, non-symmetrical acceleration

Pre-pulse amplitude — 5 to 100%

Post-pulse amplitude — 5 to 100%

Symmetrical Compensation — 5 to 100%

Display Tolerances

Type — None, MIL-STD-810, user-specified

Specified segments — + pre-pulse, - pre-pulse, + main pulse, -main pulse, + post-pulse, - post-pulse

Specified tolerance — 1 to 99%; independent for each segment

SRS Reference

Definition — Can be easily defined with up to 100 frequency breakpoints

Reference SRS type — Primary +, Primary -, Maxi-max

Reference tolerance bands — Automatically generated, defined in % or dB

Frequency range — 25 Hz to 10 kHz; dependent on pulse duration and over-sample ratio

Over-sample ratio — User selectable, 5.12, 10.24, 20.48 times the control frequency range

Number of decades — Up to 3

Analysis octave spacing — 1/1, 1/3, 1/6, 1/12, 1/24 Octave (ANSI standard)

Shock filter definition — Absolute Acceleration, Relative Displacement

SRS damping — User selectable from 0.1 to 99% (% of critical)

Units — g-in/s-in; g-m/s-mm, m/s^2-m/s-mm

Shock Synthesis

Reference pulse synthesis — Automatic synthesis from user-defined SRS with selectable average and peak error

Reference pulses — Wavelets of damped Sines

Wavelet parameters — Polarity, frequency, amplitude, number of half Sines, delay; automatically generated, user selectable or both; automatic convergence to reference SRS

Damped sine parameters — Polarity, frequency, amplitude, damping, delay; automatically generated, user selectable or both; automatic convergence to reference SRS

Pulse optimization — Time, displacement, peak acceleration

SRS convergence criteria — Average error, peak error

Pulse duration — Minimum 0.4 ms

Buffer Duration — 10 ms to 64 seconds

Pulse dynamic limits — Maximum input voltage, max/min acceleration, max/min velocity, max/min displacement, calculated and displayed

Initial test level — Equalization level to 0 dB

Level increment — 1 to 20 dB

Equalization delay — 0.0 to 8,000 ms

Safety Features

Shaker limits — Pretest verification that spectrum dynamic limits are within shaker operational limits(acceleration, velocity, displacement and voltage)

Loop check max. drive — User-selectable, 1 to 5,000 mVrms

Loop check max. noise — User-selectable, 1 to 1,000 mVrms

Max average error alarm — 0.01 to 100 %

Max average error abort — 0.01 to 100 %

Max peak error alarm — 0.01 to 100 %

Max peak error abort — 0.01 to 100 %

Control signal loss — Continuous automatic detection

Maximum drive signal — 0.01 to 12V peak

Test Automation

Automatic level increase — User-selectable initial level, level increment, delay between pulses; re-equalization between each pulse

Multiple pulse — User-selectable full level pulses and delay

Print Automation — Ability to create reports Automatically with Customized displays

Office Links — **Direct Office links and PDF Creation permits fast and complete report generation**

Channel Setup

Channel type — Control, auxiliary, inactive

Sensitivity — 0.001 to 999,999 mV/g EU for Measurement Channels

Channel loop check — Enabled, disabled

Channel label — Up to 20 characters for each channel

Transducer serial number — Up to 10 characters for each channel

Transducer Database — Table Driven Archival Database

Transducer Power — Constant current source On or Off

Base Engineering Units — Label(EU), Conversion(EU/Transducer Units)

Engineering Units — Integrated (Label and Scale Factor), Double

Calculations — Integrated(Label and Scale Factor), Differentiated (Label and Scale Factor), Double Differentiated (Label and Scale Factor)

On-Line Analysis

Real-time analysis — Pulses and spectra for 1 to all available channels simultaneously displayed

Time functions — Control, drive, error, and auxiliary waveforms

Display units — Acceleration, Velocity, and Displacement

SRS displays — Maxi-max; Primary & Residual + or -

SRS Resolution — 1/1, 1/3, 1/6, 1/12, 1/24, 1/48 Octave

SRS damping — 0.1 to 99 %, user selectable

Lynx™ Shock - Technical Specifications

SRS definition	Absolute Acceleration, Relative Displacement
Cursors	X and Y value readout, peak search, trace tagging, multi-window locked positioning
Scaling of display	Log/linear, auto-scaled/fixed, full control

Data Storage

Data storage setup	Every pulse, last pulse, off
Playback	Scan through the entire test data file, with adjustable delay
Record annotation	Complete Tagging of each record with either static or dynamically changing info
Test summary	Fully documented post-test summary, easily printed or incorporated into any document using standard word processing software
Run message log	Text file records all system status messages displayed during test run

Repetitive Pulse Mode

Number of Pulses	1 to 1,000,000
Pulse Delay	0 to 1,000,000
Pulse Polarity	Positive, Alternating, Negative

CATS ™
Computer Aided Test Suite