

Powerful Vibration Controller, Analysis and Measurement System.



Jaguar™

- From 8 to 588 input channels
- Up to 98 control channels
- Spectral Dynamics adaptative 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.