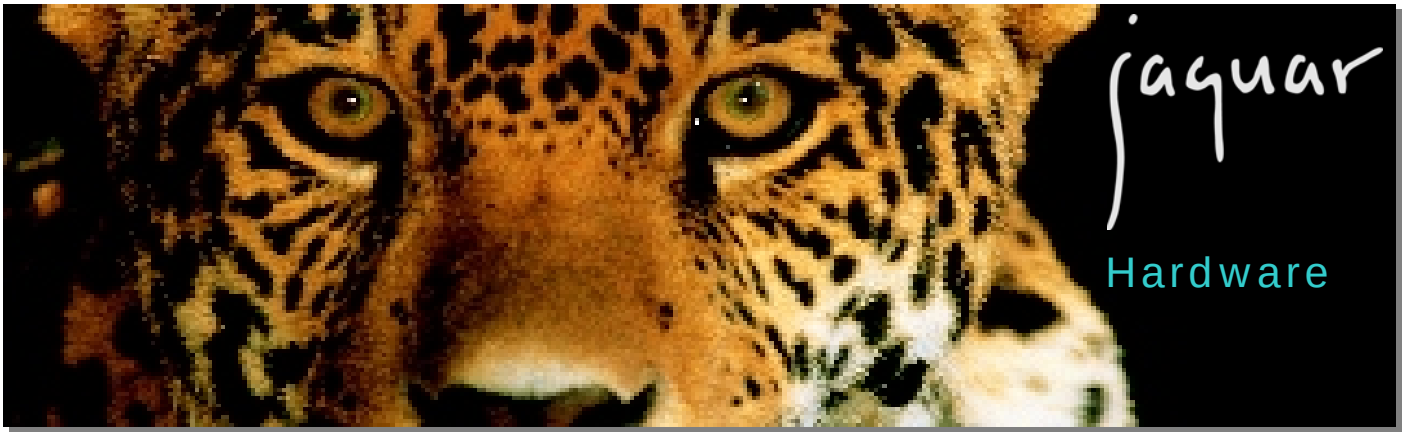


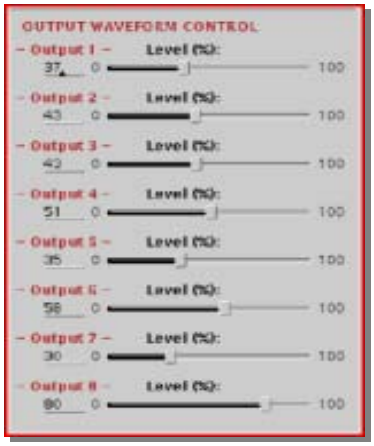

**Acquisition Control Peripherals:** Enclosure housing an extremely powerful RISC processor to perform real-time calculations and control TPD operation. ACP may house as few as one measurement card or as many as 10. Communicates with Host Via 100 Base T Ethernet

**Measurement Channels:** Each channel pair shares a 32 bit DSP. The DSP is automatically loaded with code based upon application. Each channel includes 4 overlapping Programmable Gain Amplifiers to permit extraordinary measurement accuracy for each unique application. Each channel may be calibrated, permitting channel transportability. User may select One to 30 DAC Systems

**Digital to Analog Systems:** Each DAC system includes a 16 bit converter sampled at 204.8KS/sec. All DAC systems include smoothing and anti-imaging filters to insure true analog quality signal generation free of harmonic content and distortion. Sine step increment is .00001 Hz.

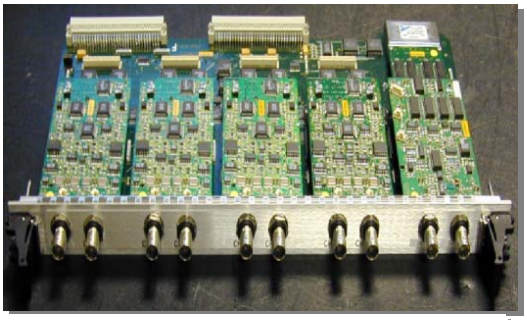
**Expansion – Monitors & Channels:** Start with 8 chs. Grow to 588, all simultaneously captured and displayed with virtually no phase shift. Add additional monitors to provide instant simultaneous access to hundreds of real-time data displays.

**Speed:** All JAGUARs are capable of sampling all measurement channels at 102.4KS.sec. All channels are always simultaneous. Each data array produced always starts at the same exact data point. This is critical in time series analysis. SIGMA/DELTA converters do not intrinsicly perform this way.




**Accuracy:** Summing junctions are designed into the signal path that permit calibration constants to be employed for each of 18 input ranges. The software may then properly set 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 for measurement accuracy. JAGUAR is the only system in the world capable of changing the input ranges during a sine test with no adverse affects to the data.

**Throughput Disk:** May be included inside the ACP and/or external to the ACP. As many as 6ea. 70Gbyte drives are permitted per ACP. Time histories are streamed through the MDSP3 Risc processor, resident in each ACP, in parallel to the stream of data to the host. Storage is continuous and contiguous even across disk boundaries. Gap free operation assures data have no discontinuities.



**Example of measurement card with 8 Input and 2 Output capabilities**

**Time Stream Data:** The application software determines sample rate of TPD data. Maximum rate is 102.4KS/sec.Sample to TPD may be started and stopped at user discretion. This feature is driven by the individual applications. Data stored to TPD is always gap free.

**Design Responsibility:** All measurement and signal generation hardware is designed and manufactured by Spectral Dynamics in San Jose CA. **Six pole analog filters precede each digital filter with set cutoff at 225KHz.**

**Optional H/W:** Remote Communications Interface to connect your JAGUAR to your chamber controllers, Sampling Synchronization Card to connect ACPs together on a single host, Over-Test Protection Unit for additional test article safety.

jaguar

## Acquisition & Control Peripheral (ACP)

| | |
|---|---|
| Output channels | 1 to 12+. Compatible with electro-hydraulic and electro-dynamic exciters. |
| Input channels | |
| Small ACP chassis | 8 to 18 (depends on number of outputs). |
| Standard ACP chassis | 8 to 38 (depends on number of outputs). |
| Large ACP chassis | 8 to 98 (depends on number of outputs). |
| Up to 6 ACPs | Up to 588 simultaneous input channels. |
| Synchronization board | Sample rate clock and critical timing signals shared via phase-locked loop for multiple ACP. |
| Connector type | Standard BNC for input and output channels. |
| ACP controller | 400 MHz RISC processor / 512 MB RAM. |
| Host interface | 100 Base-T Ethernet. |
| Throughput disk (optional) | 70GB or greater, up to 6 drives per ACP. |

## Input Channel Performance

| | |
|---|---|
| Dynamic range | Greater than 92 dB. |
| Amplitude accuracy | Within ±0.2% of measured value or ±0.03% of the selected full scale range. |
| Voltage ranges | Programmable/application dependent; 55mV to 10V full scale, in 3 dB steps for Random, Shock and Signal Analysis; 27mV to 10V full scale, in 1 dB steps for Swept Sine. |
| Overload detection | Full scale on all channels, analog and digital. |
| Maximum input signal | ±35 Volts without input component damage. |
| Sampling rate | 51.2K samples/sec with selectable reduction; 102.4K samples/sec with advanced option. |
| Sample rate multiplier | 2.56 to 81.92 selectable over-sampling. |
| Sampling interval | None; simultaneous on all channels. |
| Frequency range reduction | Decimation and filtering using on-board DSPs. |
| Frequency accuracy | ±5 ppm. |
| Anti-aliasing filters | |
| Analog filter | 6 pole elliptic matches 64x over-sampling ADC |
| Cutoff frequency | Fixed at 225 KHz. |
| Alias attenuation | Greater than 36 dB/octave. |
| Pass-band ripple | Within ±0.10 dB. |
| Digital filters | |
| Cutoff frequency | Variable (50 to 10,000 Hz). |
| Stop-band attenuation | Greater than 96 dB at 1.56x cutoff frequency. |
| Pass-band ripple | Within ±0.15 dB. |
| Channel-to-channel match | |
| Amplitude (calibrated) | Within ±0.5 dB (typically within ±0.25 dB). |
| Phase | Within ±2.5 degrees to 20 KHz; within ±5.0 degrees to 40 KHz (typical within ±1.0 degree). |
| Cross-talk | Less than –90 dB below full scale. |
| Offset removal | |
| Type | Digitally controlled offset rejection. |
| Accuracy (calibrated) | Within ±0.5% of full scale or ±0.6 mV for each input range. |
| Input impedance | 1 Meg Ohm shunted by less than 120 pf; pseudo-differential with 10 Ohms to system ground, low side return. |
| Calibration | Internal digital calibration, NIST referenced. |
| Calibration constants | Digital calibration constants stored in non-volatile RAM on each board. |
| Coupling/ICP | AC, DC, ICP constant current source (4ma). |

## Output Channel Performance

| | |
|---|---|
| Dynamic range | Greater than 90 dB. |
| Maximum amplitude | Application dependent; at least ±10V peak. |
| Maximum output current | 16 mA. |
| Attenuator range | 0 to -96 dB using 48-bit programmable device. |
| Attenuator resolution | 0.05 dB steps. |
| Output sample rate | 204,800 samples/sec. |
| Image attenuation | Greater than 96 dB. |
| Frequency accuracy | ±5 ppm. |
| Frequency range reduction | Digital interpolation and smoothing filters. |
| Smoothing filters | |
| Analog filter | |
| Cutoff frequency | Fixed at 30 KHz. |
| mage attenuation | Greater than 96 dB. |
| Pass-band ripple | Within ±0.35 dB. |
| Digital filters | |
| Cutoff frequency | Variable. |
| Stop-band attenuation | Greater than 96 dB at 1.56x cutoff frequency. |
| Pass-band ripple | Within ±0.07 dB. |
| Output offset removal | |
| Type | Digitally controlled rejection of internal and external offsets. |
| Accuracy (calibrated) | Within ±0.1% of full scale. |
| Output impedance | 60 ohms, pseudo-differential, 10 Ohms to system ground, low side return. |
| Constant amplitude output | 1 Volt peak (COLA); generated after analog smoothing filter; available from utility BNC. |
| Output cabling | Designed to drive up to 50 feet of shielded 50 ohm coaxial cable. |
| Calibration | Automatic internal digital calibration, NIST referenced. |
| Calibration constants | Digital calibration constants stored in nonvolatile RAM on each board. |
| Total harmonic distortion | Less than -80dB; 0 - 20 KHz. |

## Sun Solaris Hosts

| | |
|---|---|
| Processors | 64-bit, SPARC RISC, 1MB L2 cache. |
| Processor clock rate | 1.3 GHz to dual 1.6 GHz CPUs. |
| System Memory | 512 MB – 8 GB (optional). |
| Hard disk | 80 GB or greater. |
| Cartridge tape drive | 12 - 24GB 4mm DAT (optional). |
| StarOffice (optional) | Standard office applications. |

## PC Linux Host

| | |
|---|---|
| Tower | Intel 3.0+ GHz or dual Xeon. |
| Laptop | Intel 2.0+ GHz; 17” screen. |
| System Memory | 1 GB or greater. |
| Hard disk | 120 GB or greater. |
| WindowsXP (optional) | Dual boot for Linux or Windows. |

## Peripherals & Interfaces

| | |
|---|---|
| DVD-RW / CD-RW drive | Combination drive on most models. |
| Floppy disk | 1.44 MB; available on some tower PC hosts. |
| Networking | Auto-sensing 10/100/1000 Base-T Ethernet. |
| LCD monitors | 19,21, or 24 inch color. |
| Printers | PostScript monochrome or color. |
| Parallel digital I/O | 16 command lines and 16 status lines for common chamber interfaces. |
| Remote control panel | Hand-held terminal for controlling basic test functions (15m serial cable); only Sun Solaris. |
| Over-test protection unit | Serial interface to external unit for independent shutdown of output signals; only Sun Solaris. |
| Serial port expansion | Adds 4 or 8 serial ports. |

## General

| | |
|---|---|
| Voltage | 100 to 125 Volts or 200 to 240 Volts. |
| Frequency | 50 or 60 Hz. |
| Typical power usage | 200 watts (standard 38 channel chassis).<br>500 watts (large 98 channel chassis). |
| Temperature (operating) | 50° F to 104° F (10° C to 40° C). |
| Temperature (non-operating) | -13° F to 140° F (-25° C to 60° C). |
| Humidity | 20% to 80% non-condensing. |
| Maximum thermal gradient | 15° F (8.3° C) per hour. |

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