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.

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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.

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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		