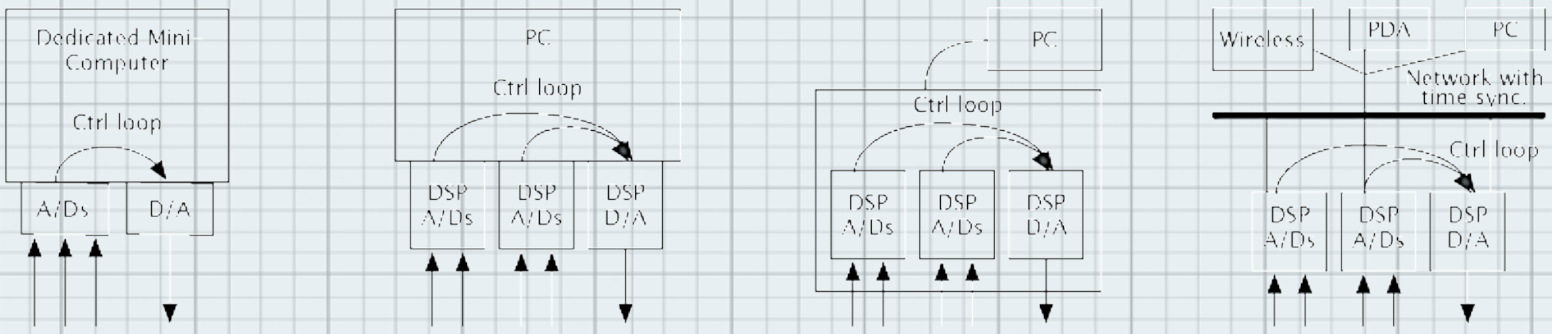
SPIDER-81

THE FOURTH GENERATION VIBRATION CONTROL SYSTEM



1st generation Standalone | 2nd generation PC-based | 3rd generation PC-tethered | 4th generation Networked

Architecture of four generations of VCS

...control system. First controller that directly integrates time-synchronized Ethernet connectivity with embedded DSP technology.

INCLUDES A COMPLETE SUITE OF VIBRATION CONTROL MODULES

INTEGRATES TIME SYNCHRONIZED ETHERNET CONNECTIVITY WITH EMBEDDED DSP TECHNOLOGY

HIGHLY MODULAR, DISTRIBUTED, SCALABLE VIBRATION CONTROL SYSTEM

CRYSTAL instruments

www.crystalinstruments.com

THE SPIDER-81
VIBRATION CONTROLLER

SPIDER-81

The Spider-81 is a highly modular, distributed, scalable vibration control system developed by Crystal Instruments. It represents the fourth generation of vibration control systems because of its advanced technology not seen in the current generation.

DSP CENTRALIZED ARCHITECTURE

Unlike traditional controllers that rely heavily on an external computer for real-time operation, the Spider-81 is the first controller that directly integrates time-synchronized Ethernet connectivity with embedded DSP technology. This strategy greatly increases the control performance, system reliability and failure protection of the controller. It also allows a large number of channels to be configured without sacrificing system performance.

SIMPLE NETWORK CONNECTION

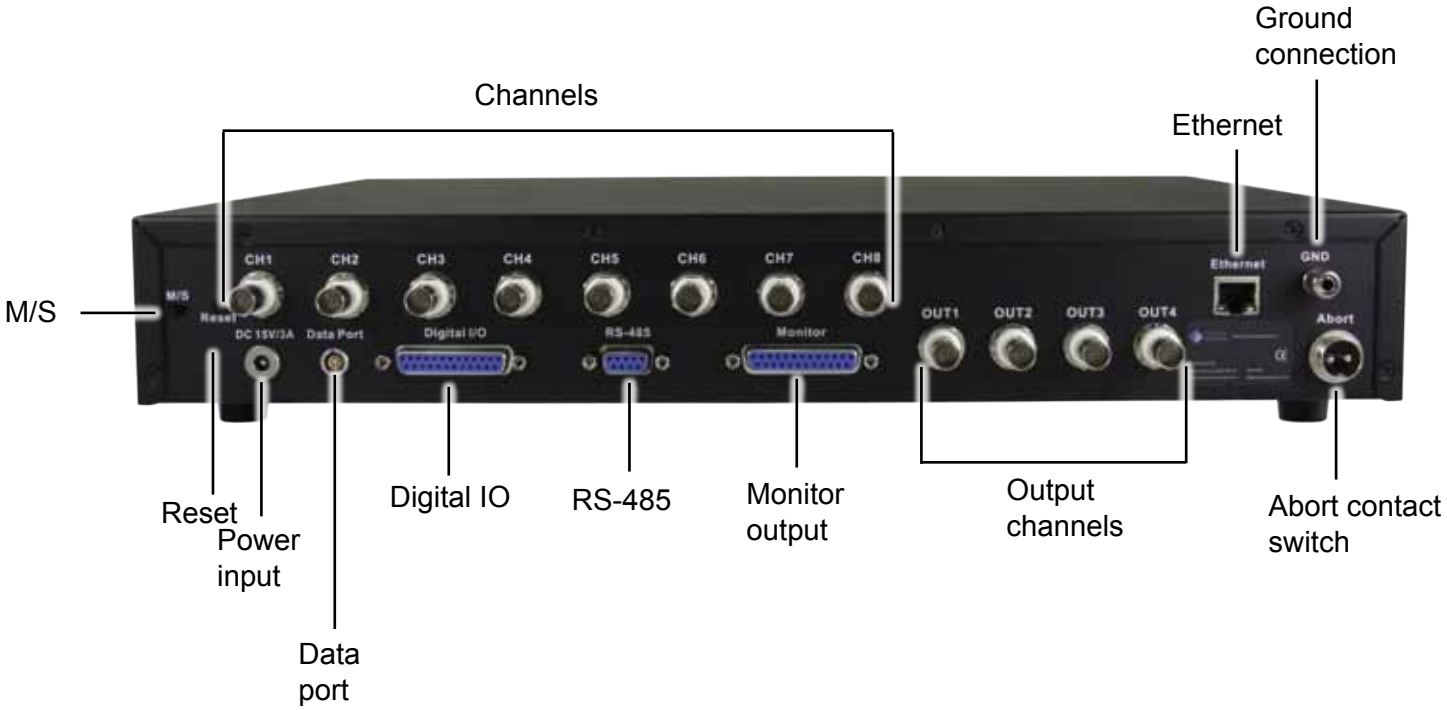
Ethernet connectivity allows the Spider-81 to be physically located far from the host PC. This distributed structure greatly reduces the noise and electrical interference in the system. One PC can monitor and control multiple controllers over the network. Since all the control processing and data recording are executed locally inside the controller, the network connection won't affect the control reliability. With wireless network routers, the PC can easily connect to the Spider remotely via Wi-Fi.

TIME SYNCHRONIZATION BETWEEN MULTIPLE MODULES

The Spider-81 is built on IEEE 1588 time synchronization technology. Spider modules on the same network can be synchronized with up to 50ns accuracy, which guarantees ±1 degree cross channel phase match up to 20 kHz. With such unique technology and high-speed Ethernet data transfer, the distributed components on the network truly act as one integrated system.

SPIDER-81 FRONT DIAGRAM

SPIDER-81 BACK DIAGRAM



LATEST HARDWARE DESIGN

Spider-81 modules have voltage, charge, TEDS, and IEPE inputs which are ideal for shock, vibration and acoustic measurement or general purpose voltage measurement. The internal flash memory stores test configuration data for controlling up to 64 channels simultaneously in addition to storing real-time analysis data. Multiple output channels provide various signal output waveforms that are synchronized with the input sampling rate. A bright LCD screen displays testing status information. Ten monitoring connections on each unit are used to read signals of analog inputs and outputs. Built-in isolated digital I/O and RS-485 serial ports enable interfacing with other hardware.

VIBRATION CONTROLLERS
DIFFERENT VERSIONS FOR DIFFERENT NEEDS

SPIDER-81B BASIC VERSION

The Spider-81B is developed to meet the requirements of basic vibration testing applications. It has 4 inputs, 1 output, and 4 pairs of digital I/O. The software includes the Random, Sine, Shock, and RSTD testing suites.

SPIDER-81C (Wi-Fi VERSION)

The Spider-81C is designed with a built-in wireless router. This allows the user to connect the Spider-81C directly to an iPad when performing vibration tests with the EDM App for iPad. It has 2 inputs, 1 output, and 4 pairs of digital I/O.

SPIDER-81 (16 CHANNEL VERSION)

The Spider-81 vibration controller is available in a 16 channel version. This 16 channel version features all the same capabilities of the 8 channel Spider-81 module. It also has a built-in Spider-HUB industrial switch, which features IEEE 1588 time syncing technology of 50 ns or less.

BUILD A SYSTEM
ACCESSORIES FOR THE SPIDER-81

SPIDER-HUB INDUSTRIAL NETWORK SWITCH

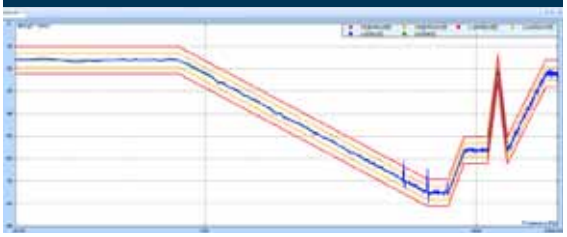
Pair the Spider-HUB with the Spider-81 to create a high powered, precisely synced network. The Spider-HUB is built with IEEE 1588 technology, the most advanced time syncing available in the market today. Multiple Spider-81 front-ends can be connected to a Spider-HUB switch to create a high channel count system.

SPIDER-NAS NETWORK ATTACHED STORAGE DEVICE

Connect the Spider-81 to the Spider-NAS for high speed data recording from all input channels at a rate of 102.4 kHz per channel. The Spider-NAS features a high-performance 2.5 inch removable Serial ATA (SATA) hard disk as storage media. Each Spider-NAS is shipped with a solid state hard-drive of 250GB. Users have the option of attaching a second disk for additional storage.

SOFTWARE OPTIONS

RANDOM

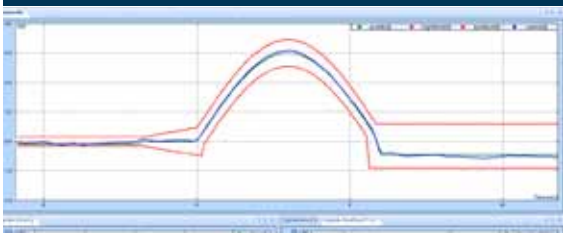


The Random Vibration Control System provides precise, real-time, multi-channel control and analysis. Up to 64 channels can be enabled for control, notching, monitoring and time data recording. The recording option records time stream data at the full sample rate on all input channels. A unique hardware design provides a fast loop time of less than 15 ms. Optional Kurtosis control can create a non-Gaussian random signal.

SINE

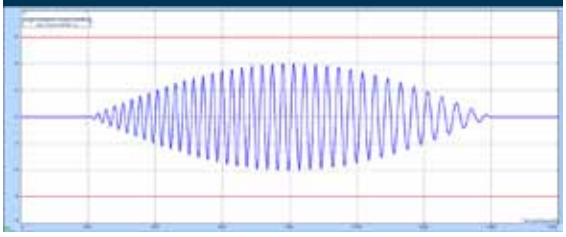
The Spider Swept Sine Vibration Control System provides precise, real-time, multi-channel control and analysis. Up to 64 channels can be enabled for control, notching, monitoring and time data recording. The recording option records time stream data at the full sample rate on all input channels, regardless of the total channel number. A unique hardware design provides a fast loop time of less than 10 ms. Black Box mode allows a user to run the controller without a PC.

SHOCK

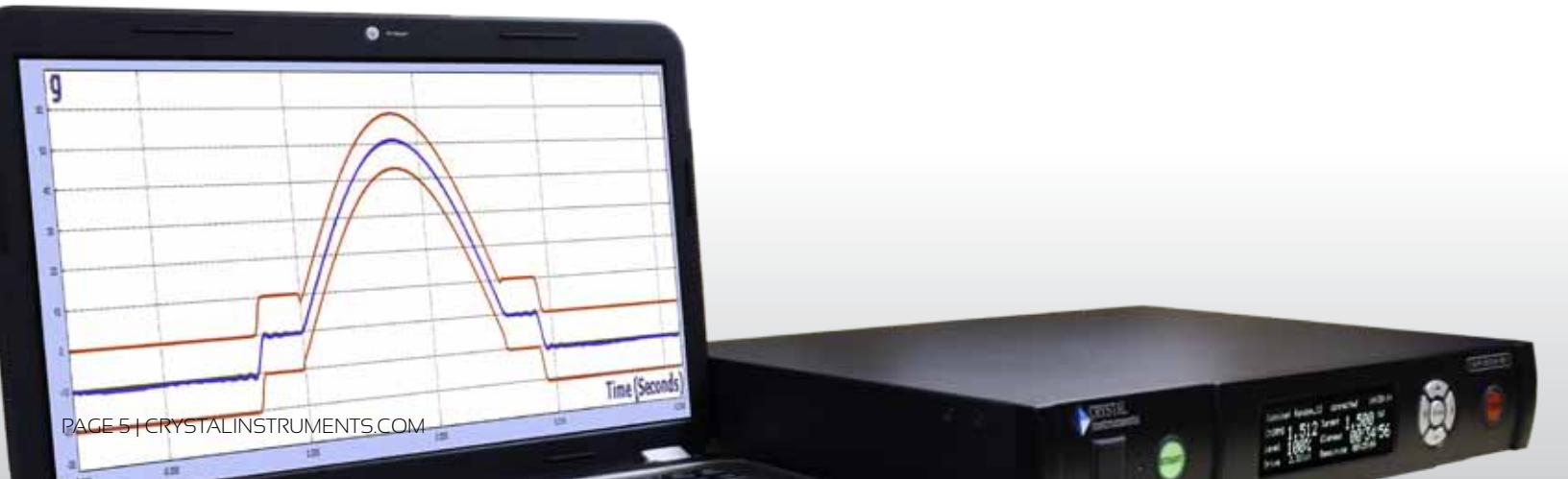


The Spider Classic Shock Vibration Control System provides precise, real-time, multi-channel control and analysis for transient time domain control. Up to 64 channels can be enabled for control, alarm checking, monitoring and time data recording.. Classical pulse types include half-sine, haver-sine, terminal-peak sawtooth, initial-peak saw tooth, triangle, rectangle, and trapezoid.

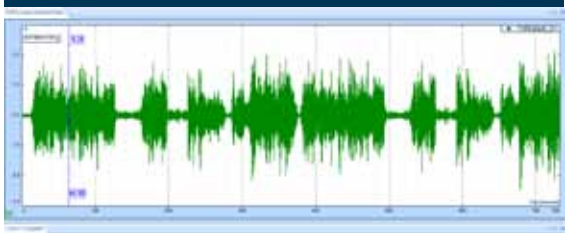
TRANSIENT TIME HISTORY



The Transient Time History Control option is typically used for low frequency seismic testing. The recording option records time stream data at the full sample rate on all input channels. Shock response spectrum analysis can be applied to any input signals. Black Box mode allows a user to run the controller without a PC.

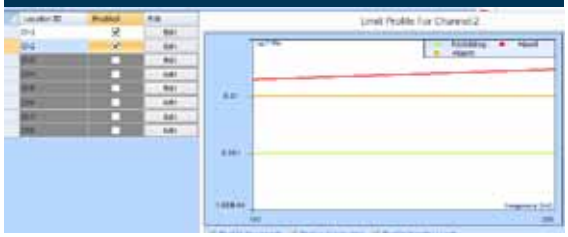


TIME WAVEFORM REPLICATION



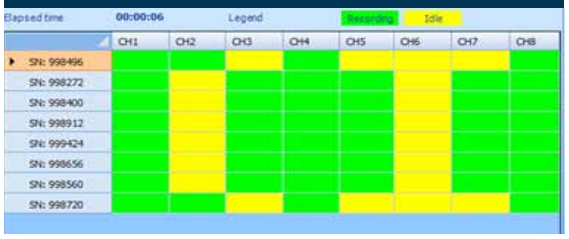
Time Waveform Replication (TWR) provides precise, real-time, multi-channel control for long waveform duplication. TWR is capable of running an unlimited number of time profiles in a defined schedule. Multiple long waveforms can be duplicated precisely on the shaker just as they were recorded. It includes Waveform Editor, a flexible importing and editing tools for long waveform signals. Recording option allows recording time stream data at the full sample rate on all input channels.

LIMITING & NOTCHING



Limiting can be applied to control or monitor channels. Available limiting types are notching limit and abort limit. Limiting profiles may be edited by amplitudes and frequencies of breakpoints or imported from saved spectra. The max expected peak acceleration, velocity, and displacement of profile is calculated.

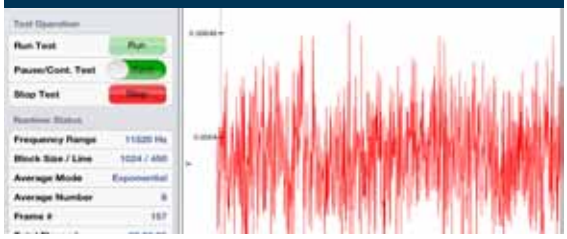
DATA RECORDING & SIGNAL ANALYSIS



Record long waveform signals from all input channels during all types of tests. Data is recorded to the internal flash memory.

Typical Continuous Recording Time: 4 hours for 4 input channels with frequency range 2,000 Hz with 4 GB flash memory installed.

EDM APP FOR iPAD



The EDM (Engineering Data Management) App for iPad is a software program designed for vibration control and real time data processing on the Apple iPad. It supports FFT, Random, and Sine tests uploaded by EDM PC software. The EDM App also creates tests directly on the iPad.

PRODUCT SPECIFICATIONS

Analog Inputs
8 BNC connectors per Spider-81 module. Spider-81 and Spider-80X units can be networked to form up to 512 inputs; charge, voltage or IEPE, single-ended or differential, AC or DC coupling, 150 dBFS dynamic range, dual 24 bit A/D converters, range ±20 volts, up to 102.4 kHz fs per channel. Supports TEDS.

Analog Outputs
2 BNC connectors per unit, 100 dB dynamic range, 24 bit A/D converters. ±10 volts

Channel Phase Match
Better than ±1.0 degree up to 20 kHz among all channels

Dimensions
440 x 66 x 330 mm (WxHxD)

Weight
4.2 kg

Power
Up to 18 watts during operation.

PC Connections
100base-T, RJ-45 female connector supports connection to PC or network switch

Internal Memory
Flash memory for data storage: 4 GB per unit

Working Mode
PC Tethered or Black Box

* Continuous product development and innovation is Crystal Instruments policy. Therefore, we reserve the right to change product specifications without prior notice.

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