CRYSTAL INSTRUMENTS

Spider-81 Vibration Controller

www.crystalinstruments.com

Power Button

Start Button
Operate in Black Box mode without a connected PC

LCD DIsplay
Indicates test status

Navigation buttons for ease of use

Stop Button
Shutdown Protection System available

Abort
Emergency Stop

Data Port
High speed for scaled up data storage

Digital I/O
External equipment integration

4 Output Channels

Power
(15V / 3A)

Ethernet
Scale up and synchronize with one combined connection

8 Input Channels
Dual 24-bit A/D converter, 102.4 kHz max sampling rate
High dynamic range input channels can combine systems to scale up to 512 channels

Ground Pin
Removes electric noise with isolated chassis ground

DSP Centralized Architecture

Unlike traditional controllers that rely heavily on an external computer for real-time operations, the Spider-81 is the first controller that directly integrates time-synchronized Ethernet connectivity with embedded DSP technology. This 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.

Latest Hardware Design

The Spider-81 hardware modules have voltage, charge, and IEPE inputs which are ideal for shock, vibration, and acoustic measurement or general purpose voltage measurement. The internal flash memory stores real-time analysis data and test configuration data for simultaneous control of up to hundreds of channels. Multiple output channels provide various signal output waveforms that are synchronized with the input sampling rate. A bright LCD displays testing status information. Ten monitoring connections on each unit are used to read analog input and output signals. The front panel provides intuitive buttons. A built-in isolated digital I/O interfaces with other hardware.

Vibration Testing Software

	Random Vibration Control
	Sine-On-Random (SoR)
	Random-On-Random (RoR)
	Swept Sine Vibration Control
	Resonance Search Track & Dwell (RSTD)
	Multi-Sine
	Sine Oscillator
	Classical Shock Control
	Transient Time History (TTH)
	Shock Response Spectrum (SRS) Synthesis
	Transient Random Control
	Earthquake Testing Control
	Time Waveform Replication
	Sine Reduction
	Acoustic Control
	Blade Fatigue Testing
	Stockbridge Damper Testing

Simple Network Connection

Ethernet connectivity allows the Spider-81 to be located far from the host computer. This distributed structure greatly reduces noise and electrical interference in the system. One computer monitors and controls multiple controllers over the network. Since the control processing and data recording are executed locally inside the controller, the network connection does not affect control reliability.

Spider-81 can be network-connected with other Spider modules, including Spider-80X, Spider-80Xi, Spider-80SG and Spider-80SGi.

Synchronize Multiple Units

The Spider-81 is built on IEEE 1588 PTP time synchronization technology (PTP-Precision Time Protocol). Spider-81 modules on the same network can be synchronized with up to 100 ns accuracy, which guarantees ±1 degree cross channel phase match of up to 20 kHz. The implementation of such unique technology and high-speed Ethernet data transfer allows the distributed components on a network to operate as one integrated system.

Product Specifications

Analog Inputs: 8 BNC connectors per Spider-81 vibration test controller. Spider-81 and Spider-80X front-ends can be networked to form a 512 channel count system. Charge, voltage or IEPE, single-ended or differential, AC or DC coupling, 160 dBFS dynamic range, 24-bit A/D converters, range ±20 volts, up to 102.4 kHz fs per channel, 8 BNC connectors per Spider-81 front-end.

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

Channel Phase Match: better than ±1.0 degree, up to 20 kHz

Peripherals: 8 isolated DIO; LCD display with navigation buttons, ground connection, abort contact switch, start and abort buttons

Dimensions: 440 x 66 x 330 mm (WxHxD)

Weight: 4.2 kg

Power: Up to 18 watts during operation.

Computer Connections: 100Base-T, RJ45 female connector supports connection to computer or network switch

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

Operation Modes: Connected to computer or stand alone Black Box mode.