Spider-80X

The Spider-80X is a highly modular, truly distributed, scalable dynamic measurement system introduced by Crystal Instruments. The Spider-80X is ideal for a wide range of industries including automotive, aviation, aerospace, electronics, and military; industries requiring vibration testing and condition monitoring. The Spider-80X excels in industries that demand quick and accurate data recording in addition to real-time signal processing.

The Spider-80X, a compact package, is designed for application in three fields: dynamic data acquisition, vibration control, and machine monitoring. It features eight analog input channels and two channels that may be software selected as analog outputs for vibration control or tachometer inputs for the analysis of rotating machinery. A single Spider-80X front-end is a complete two-output controller with the same high quality patented dual ADC input technology as the Spider-81 series. The Spider-80X inputs provide absolute/differential and AC / DC / IEPE coupling choices; charge mode is an available option. The Spider-80X provides the same time sync Ethernet connectivity and 4 GB flash memory for data and program storage. Multiple Spider-80X front-ends may be linked together using the (eight-into-one) Spider-HUB module and storage can be increased to 250 GB by adding a Spider-NAS mass storage module.

Multiple Spider front-ends can be combined to form a single high channel system. The Spider system can be arranged with various Spider front-ends and network switches to form different configurations. With multiple Spider-80X front-ends, a Spider system can have up to 64 input channels in a chassis and chained up to hundreds of channels, all sampled simultaneously. Even higher channel systems are possible. Multiple Spider front-ends are accurately synchronized through the IEEE 1588v2 protocol, making sure all measurement channels are on the same time base. Accurate time synchronization results in excellent phase match in the frequency domain between all channels, either on the same Spider front-end or across different front-ends. Channel phase match, even between separate Spider front-ends, is within 1.0 degree at 20 kHz which is suitable for high quality structural and acoustics applications requiring cross-channel measurement.

Spider-80X front-ends have voltage, IEPE, and optional charge types of input, which are ideal for shock, vibration, acoustic, or general-purpose voltage measurements. Each Spider-80X front-end is equipped with 8 input channels and can accurately measure and record both dynamic and static signals. The mass flash memory can record 8 channels of streaming signals simultaneously at up to 102.4 kHz while computing real-time time and frequency-based functions. Two output channels provide various signal output waveforms that are synchronized with the input sampling rate. Two tachometers sharing the connectors with outputs allow the system to measure the rotating pulse signals and conduct order tracking.

The Spider-80X front-ends can be controlled by a host PC or run in Black Box mode where a preprogrammed schedule is uploaded to the unit and started manually or based on event triggers.

The ability to use any front-end in Black Box mode or in a distributed network system means that the user can place front-ends close to the measurement object, minimizing cable length and decreasing setup time. There is a built-in isolated digital I/O to interface with other hardware.

The Spider-80X-A35 is a dedicated eight-bay frame that houses up to eight Spider-80X front-ends. It has built-in Spider-HUB circuitry and built-in Spider-NAS mass storage capability. The Spider-80X-A35 includes a line-powered power supply and internal cables to integrate all the front-ends installed. You

can build systems with 8 to 64 input channels and 2 to 16 outputs. Up to eight Spider-80X-A35 boxes may be integrated using a single Spider-HUB to achieve a system with 512 inputs and 128 outputs or tachometer channels. This system provides the ultimate in flexibility. It may be used as one large system or separated into eight smaller systems.

The entire system or any of its component Spider-80X front-ends may be used to run controlled vibration tests or to execute signal analysis functions.

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