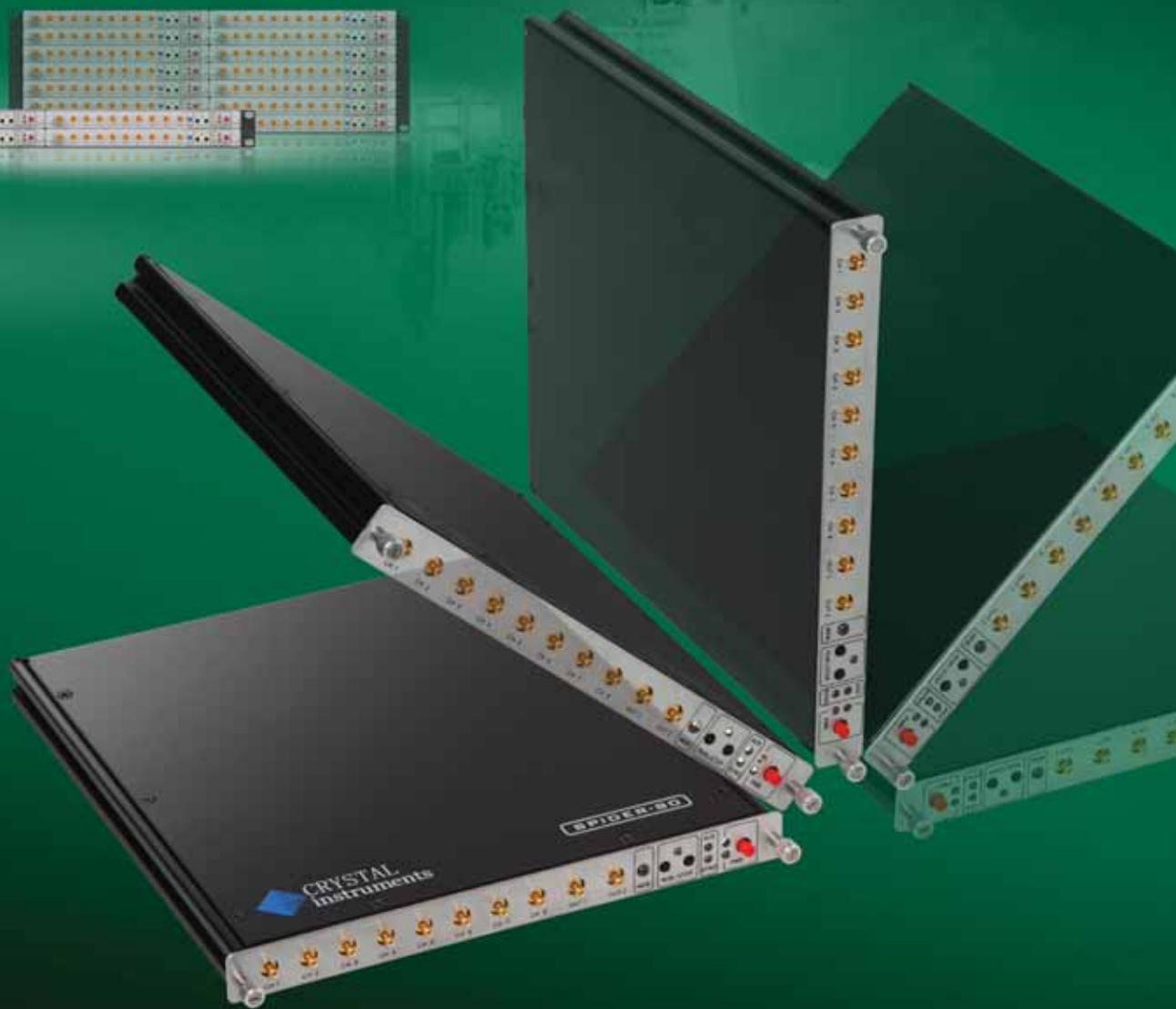


SPIDER-80

Field Data Recorder
Dynamic Measurement System
Remote Monitoring Device



SPIDER-80

◆ Highlights

- Highly modular, distributed, networkable dynamic measurement system
- 4~1024 input channels
- Time synchronization accuracy up to 100 ns for all channels
- PC tethered mode or standalone "black box" mode
- All input channels sampled simultaneously up to 102.4 kHz
- 24 bit A/D and D/A ,130 dB dynamic range
- Voltage, IEPE, charge, AC/DC coupling, TEDS
- Continuous recording for all channels at full speed
- Power over Ethernet, AC/DC power and backup battery
- Signal source, digital I/O and hardware control panel
- Extremely compact and rugged design
- Configurable Signal Analysis: Digital filters, transient capture, FFT, PSD, FRF and phase
- RPM spectrum, waterfall, octave filters, modal data acquisition

◆ Typical Applications

- Aerospace and Defense
- Automotive
- Electronics
- Wind Energy
- Power Generation
- Paper Processing
- Structural Testing
- Modal Testing
- Rotor Balancing
- Machine Conditioning Monitoring
- Construction Seismic Monitoring
- Acoustic Measurement
- Automated Production Test
- Shaker Vibration Control



SPIDER-80

◆ Performance

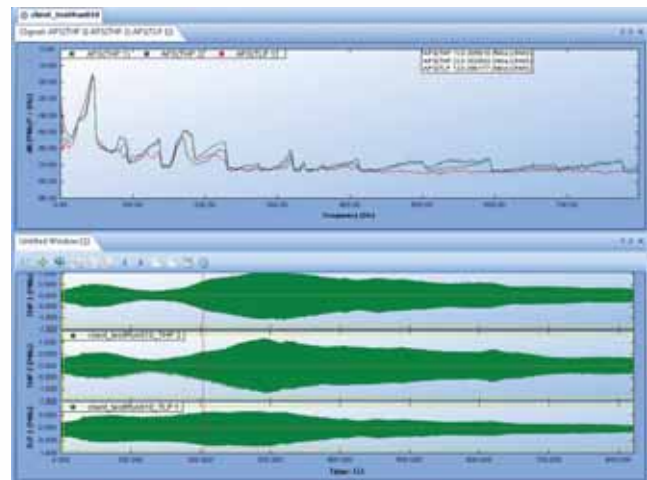
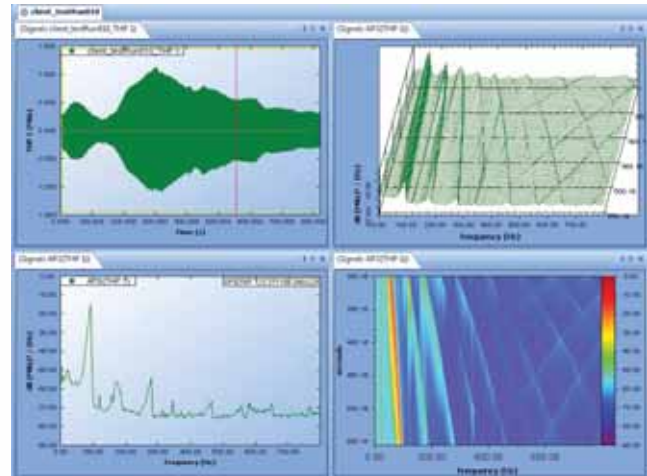
The Spider performance is the best in class with the highest dynamic range of any similar product and ample memory and durability design to be used in most environments.

With patented technology, Spider-80 achieves 130 dB input dynamic range. Such high dynamic range eliminates the need for input range/gain settings of traditional data acquisition systems.

A high-speed floating point DSP manages the data input/output and real-time processing. Spider-80 is also configured with RAM and onboard flash memory for mass data storage. Special thermal and low power design eliminates the need for a cooling fan reducing power consumption and noise.

◆ Reliability

The Spider is designed to manage any connection failure without loss of data. An internal battery prevents power disruption or electrical interference. The software can safely recover normal running status in the event that the connection to the host is lost. Sensor failure detection and input overload is continuously monitored.



SPIDER-80

◆ Introducing Spider-80

Spider is a highly modular, truly distributed, scalable dynamic measurement system introduced by Crystal Instruments. It is ideal for a wide range of industries including machine condition monitoring, automotive, aviation, aerospace, electronics and military that demand easy, quick and accurate data recording, real-time signal processing and vibration control.

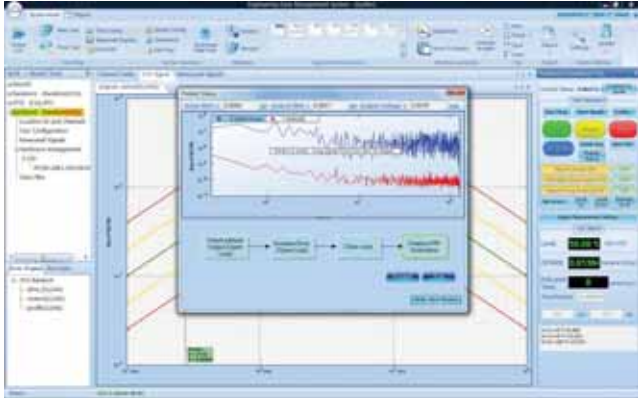
The Spider hardware is state of the art, best in class performance and flexible enough to meet all your needs. The Spider-80 module with SMB connectors is a small package designed for dynamic signal measurement and remote monitoring. It comes in an extremely compact form factor. Four Spider-80 modules can fit into a single 1-U 19 inch rack-mount slot.

Multiple Spider modules can be combined to form a single high channel system. The Spider system can be arranged with various Spider modules and switches to form different configurations. With multiple Spider-80 units, a Spider system can have 4 to 1024 input channels, all sampled simultaneously. Multiple Spider modules are accurately synchronized through the IEEE 1588 protocol. The data acquired by all the measurement channels is synchronized 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 module or across different modules.

The Spider-80 modules have voltage, charge and IEPE inputs which are ideal for shock, vibration and acoustic measurement or general purpose voltage measurement. Each Spider-80 module 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 up to 102.4 kHz while simultaneously computing real-time time and frequency based functions. An embedded signal source channel provides various signal output waveforms that are synchronized with the input sampling rate.



SPIDER-80



The Spider can be powered by either external AC/DC power, Power-over-Ethernet (PoE) or internal backup battery. PoE provides power to the module from the switch through the Ethernet cable so that no additional power cables are required.

For system configured with more than one Spider module, one or multiple network connector switches with PoE (Power-Over-Ethernet) can be used. CI produces the Spider-M5 and Spider-M9 switches. The switches are equipped with either five or nine Ethernet ports. Switches can be cascaded to support hundreds of input channels. With PoE, all you need between the modules and the PC are shielded LAN cables. This minimizes the number of cables required and results in lower cost, less downtime, easier maintenance and greater flexibility and speed of installation.

The Spider-80 modules can be controlled by a host PC or run in "black box mode" where a preprogrammed schedule is downloaded to the unit and started manually or based on an event trigger. The ability to use any module in black box mode or in a network distributed system means that you can place your modules close to the measurement object.

Each Spider module has its own mass storage media that keeps the operating software and takes measurement data. This truly distributed structure guarantees signal recording at full speed without network speed limitations.

Spider hardware is subjected to environmental tests including EMI, temperature, drop shock, sine and random vibration. The testing proven design is robust for long range transportation damage and promises longer operating life.

SPIDER-80

◆ Typical System Configurations

The figure below illustrates some of the different configurations that are possible with the Spider system.

Configuration 1: PC Tethered with One Spider Module

One Spider module can be directly connected to a PC or to a LAN network through Ethernet. No switch is needed. The PC is used as a control and monitoring terminal via the EDM software.



○ PC Tethered Single Module

Configuration 3: Black-Box Mode with One Spider Module

This is the same as Configuration 1 except that the PC is not required during run time. A PC is required to install the Spider Black-Box Engine to the Spider module so it can run without a PC during run time. The PC is only used to configure the Spider before and download data files after run time.



○ Single Black Box

Configuration 2: PC Tethered with Multiple Spider Modules

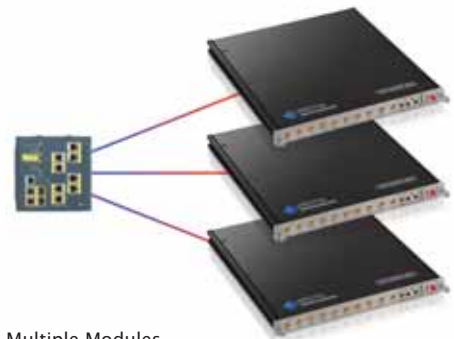
Multiple Spider modules can be connected to make a high channel count system. Multiple switches can be used in cascade to extend the number of modules. The PC is used as a control and monitoring terminal via the EDM software.



○ PC Tethered Multiple Modules

Configuration 4: Black-Box Mode with Network Switches and Multiple Spider Modules

This is the same as Configuration 2 except that the PC is not required during run time. A PC is required to install the Spider Black-Box Engine to the Spider module so it can run without a PC during run time. The PC is only used to configure the Spider before and download data files after run time.

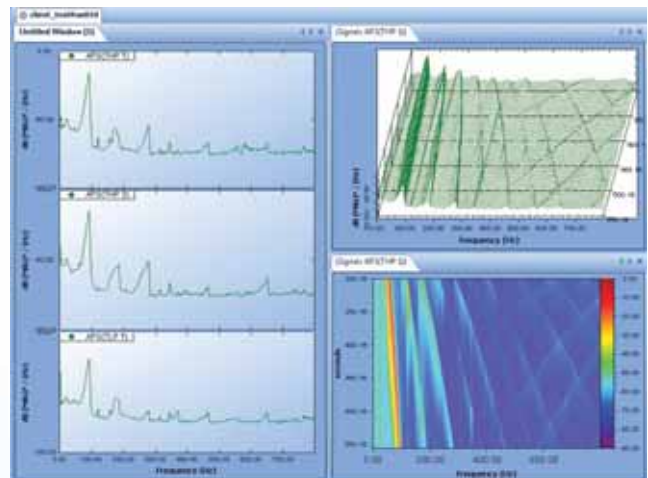
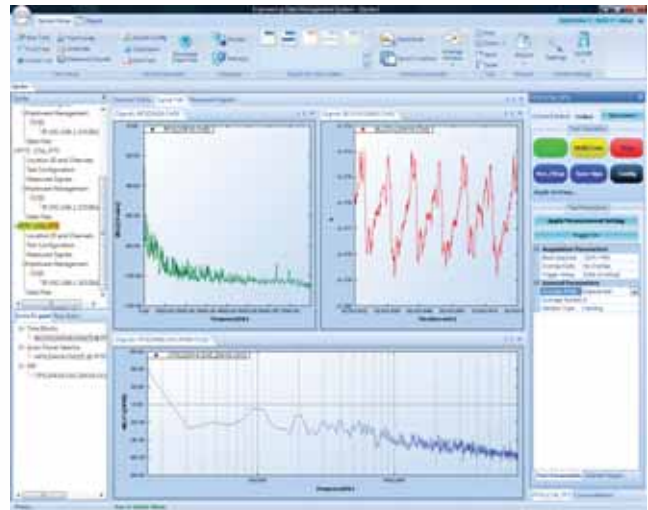


○ Black Box Multiple Modules

◆ Application Software

The Engineering Data Management Software, EDM is the interface between the Spider and other data analysis applications. This simple to use, Windows native software manages the communication between the PC and the Spider, downloads the data to the PC, displays the data in any format required and exports the data in the standard formats including ASAM-ODS, UFF, BUFF and user-defined ASCII. EDM lets you browse through data and quickly find the record you are looking for based on file attributes, keywords, or a thumbnail display of the data. Time traces can be played back or post-processed. The cursors and zoom features let you measure signal properties. Template-based report system allows you to customize the form and content of the final report.

Whether you are conducting structural testing, vibration monitoring in a plant, monitoring noise at an airport, or monitoring a wind turbine performance a thousand miles from the nearest internet connection, the Crystal Instruments Spider can meet all your needs today and grow as your future plans grow.



◆ Summary of Specifications

Inputs	8 SMB connectors per unit, units can be networked to form up to 1024 inputs, voltage or IEPE, single-ended or differential, AC or DC coupling, 130 dB dynamic range, 24 bit A/D converters, range +/- 20 volts, up to 102.4kHz fs per channel
Outputs	2 SMB 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	238.8 mm x 215.7 mm x20 mm, four Spider-80 modules fit into one 1U 19" rack-mount slot
Weight	1.3 Kg
Power	Powered from external DC Power, Ethernet (PoE) or internal backup battery source
PC Connections	100 BaseT, RJ45 female connector supports connection to PC or network switch
Internal Memory	Flash memory for data storage: 4 GB per unit
LEDs	Power status, run/stop status, flash capacity status, power, LAN status
Real-Time Analysis Functions	Data recording, Math (+, -, *, /), integration ,differentiation, FFT, average, window, auto-power spectra, cross-spectra, FRF, coherence, real-time filters, RMS, octave, order tracking, swept sine, limiting, alarm/abort and many more.
Working Mode	PC networked mode or black box mode without PC

