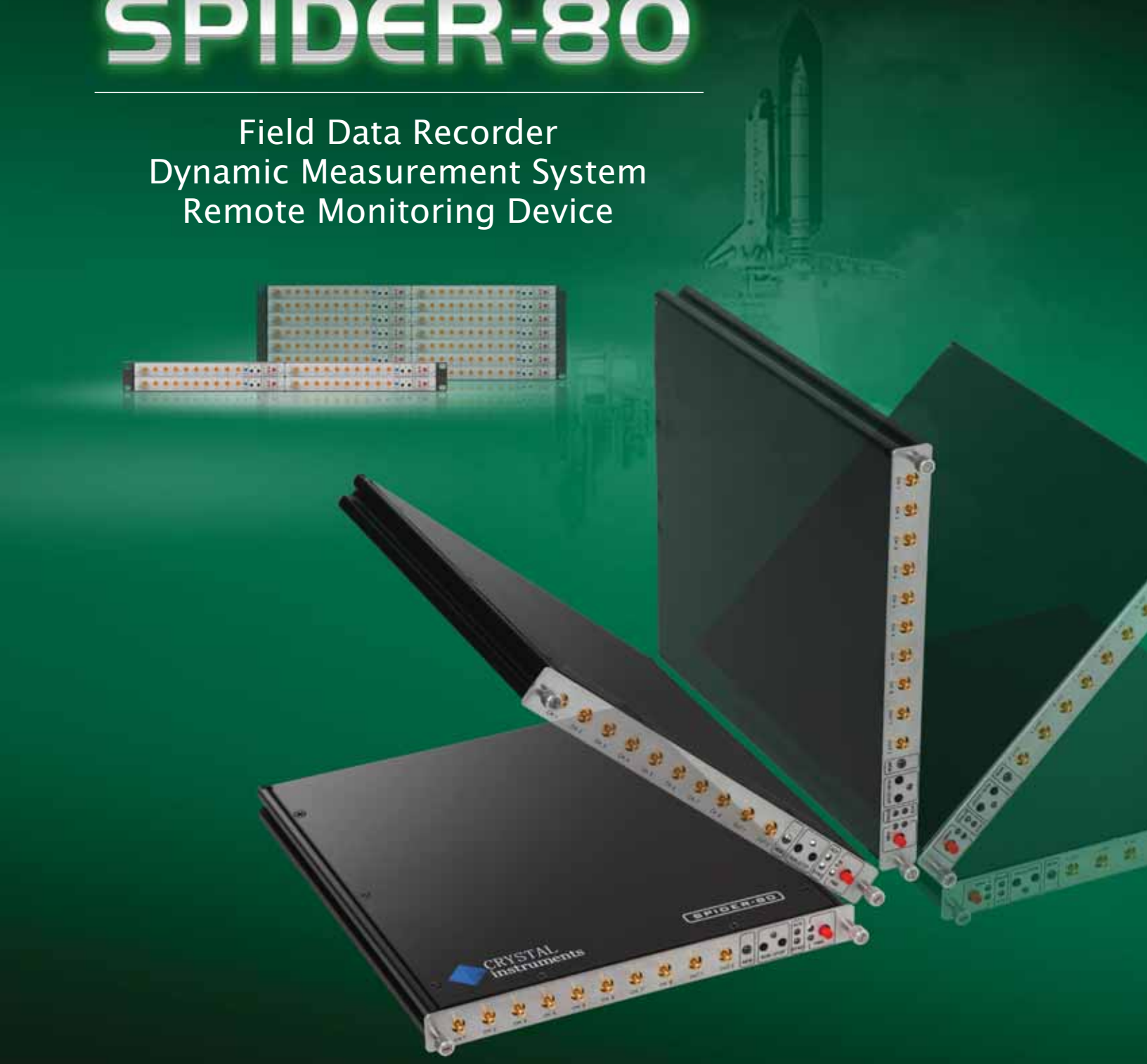
CRYSTAL instruments

SPIDER-80

Field Data Recorder
Dynamic Measurement System
Remote Monitoring Device



www.go-ci.com

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, 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
- 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 Monitoring
- Seismic Monitoring
- Acoustic Measurement
- Automated Production Test

CRYSTAL instruments

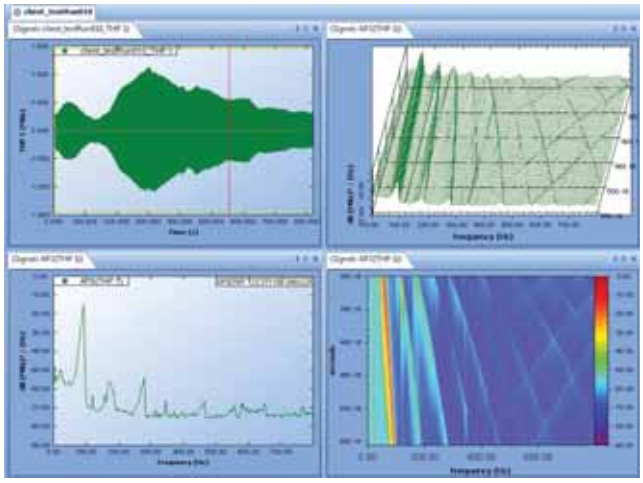
◇ 4699 Old Ironsides Dr., Suite 100, Santa Clara, CA 95054, USA ◇ Phone: 408-986-8880 ◇ E-Mail: sales@go-ci.com ◇ Http: www.go-ci.com

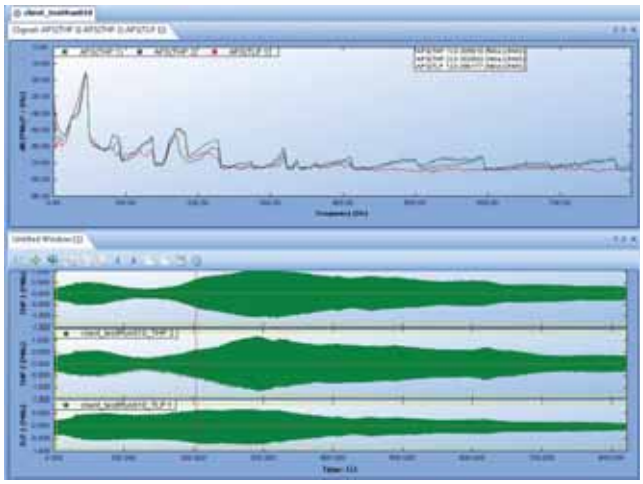
◆ Performance

The Spider-80 offers best-in-class performance with the highest dynamic range of any similar product. It's durable designs means it can 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. The 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-80 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. It continuously monitors for input overloads and sensor failures.

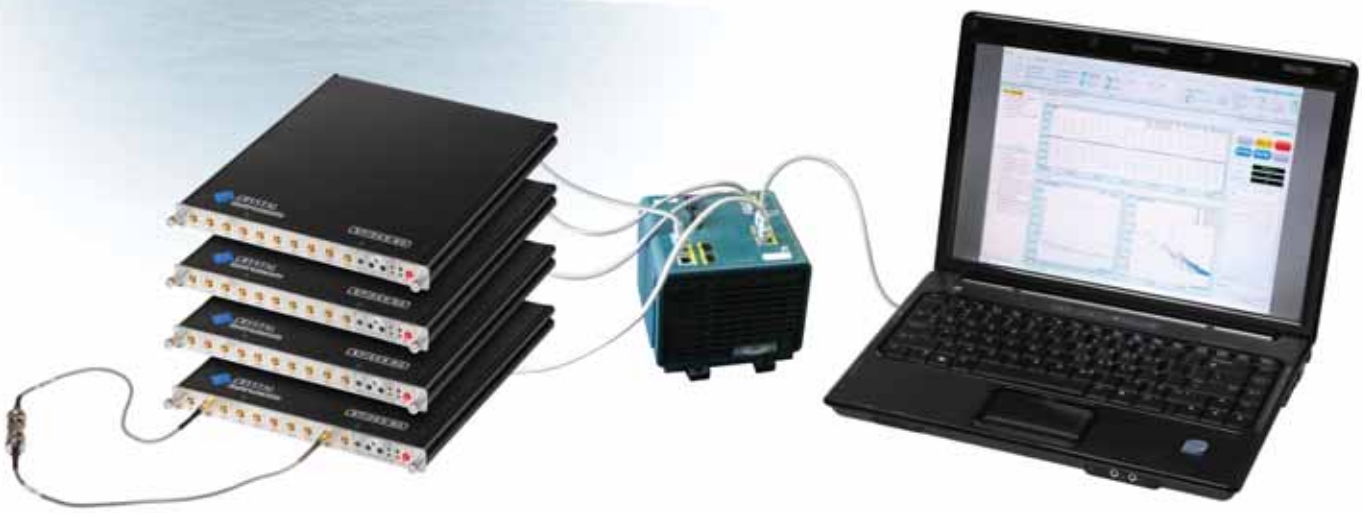
SPIDER-80

The Spider-80 is a highly modular, distributed, scalable dynamic measurement system. It is ideal for a wide range of industries including manufacturing, automotive, aviation, aerospace, electronics, and military that demand easy, quick, and accurate data recording, real-time signal processing, and vibration control.

The Spider-80's hardware is state of the art and flexible, delivering best in class performance 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-80 modules can be combined to form a single high-channel count system. The Spider-80 system can then be arranged with various Spider modules and switches to form different configurations. With multiple Spider-80 units, a Spider system can have anywhere from 4 to 1024 input channels, all sampled simultaneously. Multiple Spider-80 modules are precisely 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.

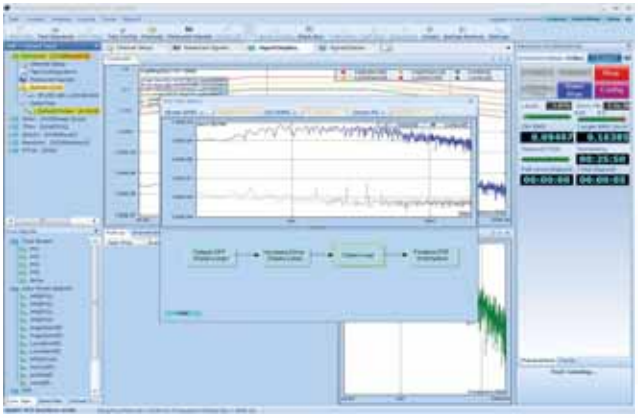
The Spider-80 modules have voltage and IEPE inputs which are ideal for shock, vibration, and acoustic measurements or general purpose voltage measurements. Each Spider-80 module is equipped with 8 input channels and can accurately measure and record both dynamic and static signals. The mass flash memory can record 8 channels of streaming signals simultaneously up to 102.4 kHz while continually computing real-time time and frequency based functions. Two embedded signal source channels provide various signal output waveforms that are synchronized with the input sampling rate.



CRYSTAL instruments

◇4699 Old Ironsides Dr., Suite 100, Santa Clara, CA 95054, USA ◇ Phone: 408-986-8880 ◇ E-Mail: sales@go-ci.com ◇ Http: www.go-ci.com

SPIDER-80



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

For systems configured with more than one Spider module, one or multiple network connector switches with PoE (Power over Ethernet) can be used. In this instance, 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. The installation speed is also greatly increased.

The Spider-80 modules 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 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-80 module has its own mass storage media that runs the operating software and stores 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.

◆ 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 desktop 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, and is used to configure the Spider and to download data files.

○ Single Black Box

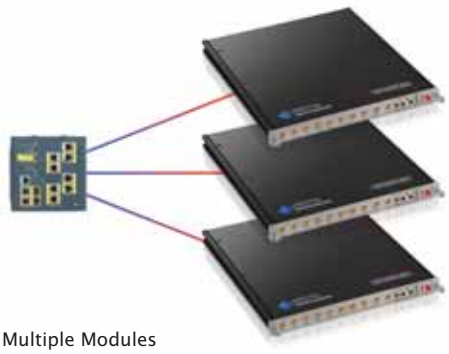
Configuration 2:
PC Tethered with Multiple Spider Modules

Multiple Spider modules can be connected to form a high channel count system. Multiple switches can be cascaded to extend the number of modules. For example, to make a 64 channel system, 8 Spider-80s can be used. The PC is used as a control and monitoring terminal via the EDM

○ 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, and is used to configure the Spider and to download data files.

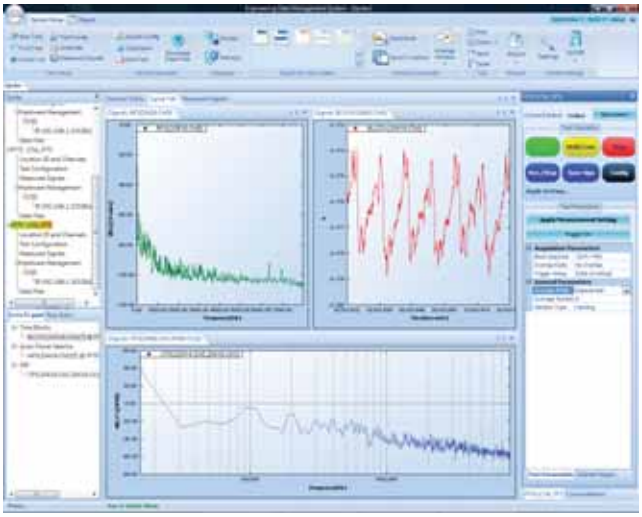


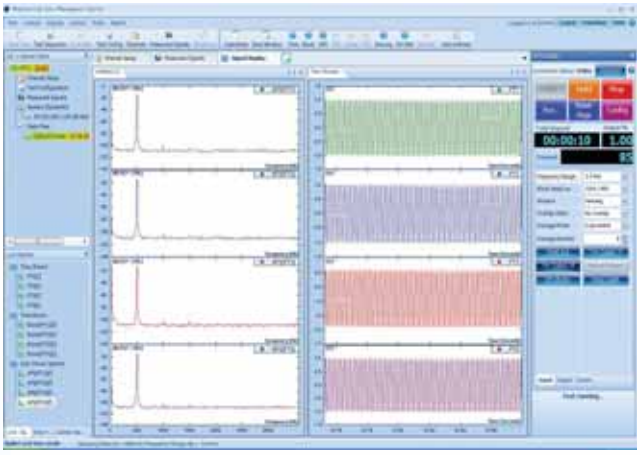
○ Black Box Multiple Modules

◆ Application Software

The Engineering Data Management software, or EDM, is the desktop interface to the Spider-80 hardware. This simple to use, Windows native software controls the Spider operation, downloads and displays data, and can export in many formats including ASAM-ODS, UFF, BUFF and user-defined ASCII. EDM lets you browse through large collections of data and quickly find the record you are looking for based on file attributes, keywords, and thumbnail displays. Data can be viewed with cursors and markers or post-processed. A template-based report system can quickly generate customized reports in MS Word.

Whether you are doing structural testing, vibration monitoring in a factory, monitoring noise at an airport, or monitoring the performance of a remote wind turbine thousands of miles away, the Spider-80 can meet all your needs today and grow with your future plans.





CRYSTAL instruments

◇4699 Old Ironsides Dr., Suite 100, Santa Clara, CA 95054, USA ◇ Phone: 408-986-8880 ◇ E-Mail: sales@go-ci.com ◇ Http: www.go-ci.com

◆ Specifications

Inputs	8 SMB connectors per unit. Can be networked to form up to 1024 inputs. Built-in IEPE current source, single-ended or differential, AC or DC coupling, 130 dB dynamic range, 24 bit A/D converters, range ±20 volts, up to 102.4kHz 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 x 215.7 x 20 mm, four Spider-80 modules fit into one 1U 19” rack-mount slot
Weight	1.3 kg
Power	External DC Power, Ethernet (PoE), or internal backup battery source
PC Connections	100Base-T, RJ45 female connector supports connection to PC or network switch
Internal Memory	4 GB Flash data storage
LEDs	Power, run/stop, flash capacity, LAN
Real-Time Analysis Functions	Data recording, Math (+,-,*,/), integration, differentiation, FFT, averaging, windowing, auto power spectra, cross spectra, FRF, coherence, real-time filters, RMS, octave, order tracking, swept sine, limiting, and more.
Working Mode	PC Tethered mode or Black Box mode

CRYSTAL instruments

◇ 4699 Old Ironsides Dr., Suite 100, Santa Clara, CA 95054, USA
◇ Phone: 408-986-8880
◇ E-Mail: sales@go-ci.com