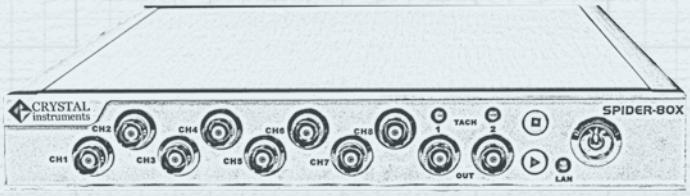
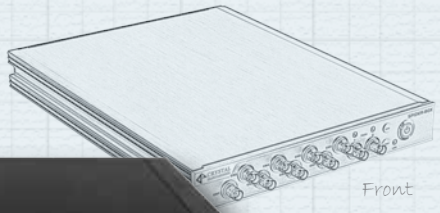
SPIDER-80X

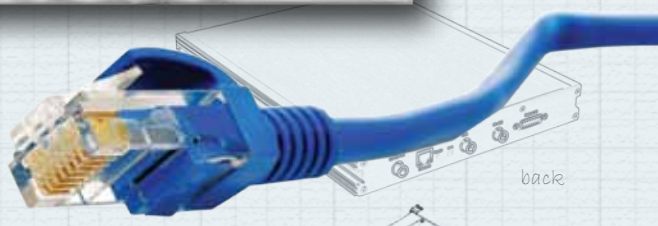
SCALABLE DYNAMIC MEASUREMENT SYSTEM





Front

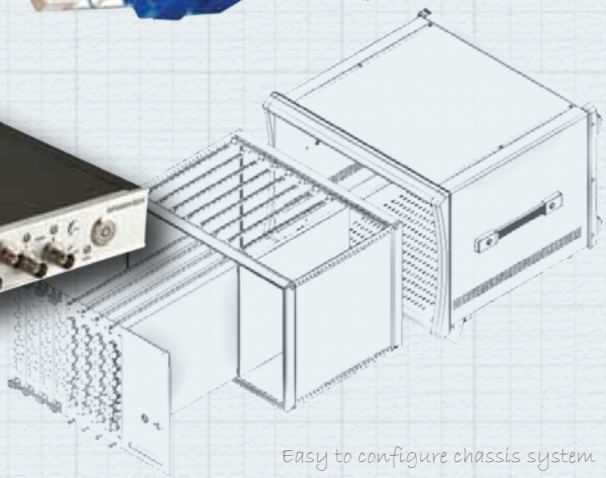
Spider-80X
Highly modular and scalable dynamic measurement system from Crystal Instruments. Performs modal analysis, vibration control testing, data acquisition, et



back

NETWORKED MODULES ACCURATE TO 50ns AT A DISTANCE OF 300 METERS

Chassis fits eight Spider-80X units



Easy to configure chassis system

ACCURATELY SYNCHRONIZE MULTIPLE UNITS THROUGH THE IEEE 1588 PROTOCOL

IDEAL FOR SHOCK, VIBRATION, ACOUSTIC, OR GENERAL PURPOSE VOLTAGE MEASUREMENTS

ACHEIVES 150 dBFS INPUT DYNAMIC RANGE

CRYSTAL instruments

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PRODUCT FEATURES

SPIDER-80X

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

Multiple Spider modules can be combined to form a high channel count system and are accurately synchronized through the IEEE 1588 protocol. Data acquired through all measurement channels are synchronized on the same time base. Accurate time synchronization results in excellent phase matching in the frequency domain between all channels, either on the same Spider module or across different modules.

PERFORMANCE

The Spider's performance is the best in class with the highest dynamic range of any similar product. With patented technology, the Spider-80X achieves 150 dBFS input dynamic range (defined in the time domain). Each measurement channel can detect signals as small as 6 μV and as large as ±20 V. Such high dynamic range eliminates the need for input range and or gain settings of traditional data acquisition systems.

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

RELIABILITY

The Spider-80X is designed to prevent any connection failure without loss of data. The software can safely recover to a normal running status in the event that the connection to the host is lost. Sensor failure detection and input overload is also continuously monitored.

SOFTWARE OPTIONS

DATA RECORDER

In addition to saving spectral data, the Spider-80X has the ability record time wave form data. Raw time wave form data from an array of different sensors is displayed and recorded at sampling rates of up to 102.4 kHz. On the fly processing is also available with different data conditioning modules applied to the raw incoming time streams. Data conditioning includes algebraic functions (addition, subtraction, multiplication, and division), digital filtering, integration, differentiation, calibration, and other math operations applied to the continuous incoming time streams.

FREQUENCY RESPONSE FUNCTION (FRF)

The Spider-80X performs FRF analysis, a function which computes the structural response to steady-state osciliatory excitation. An important application of Dynamic Signal Analysis is characterizing the input-output behavior of physical systems. This is the domain of network analysis. With linear systems, the output can be predicted from a known input if the Frequency Response Function of the system is known.

FULL VIBRATION SOFTWARE AVAILABLE

Contact Crystal Instruments for more details.

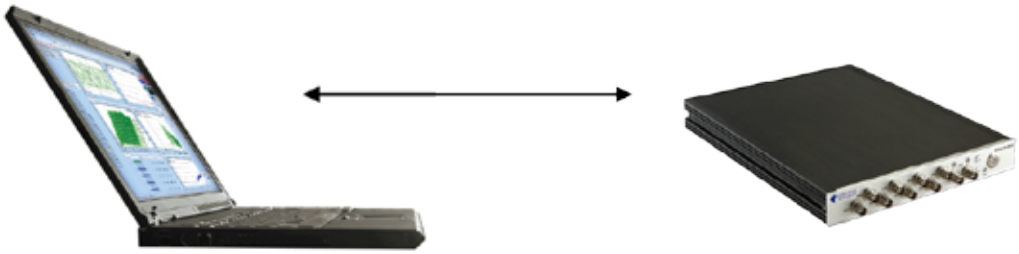
FOR MORE SOFTWARE OPTIONS, CONTACT SALES@GO-CI.COM

TYPICAL SYSTEM CONFIGURATIONS

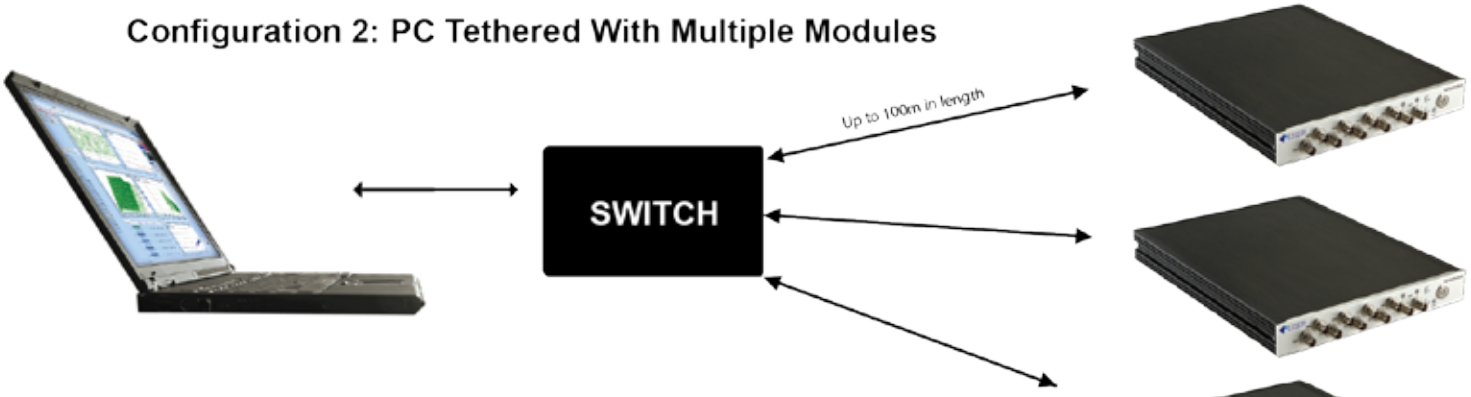
The Spider hardware platform supports two different software working modes: Black Box and PC Tethered mode. In Black Box mode, preset projects are executed based on a user-defined schedule. In PC Tethered mode, the PC is used as a control terminal to access the Spider directly or through an Ethernet network. The Spider can be switched between the two modes.

The figures below illustrates different configurations with the Spider system:

Configuration 1: PC Tethered Single Module

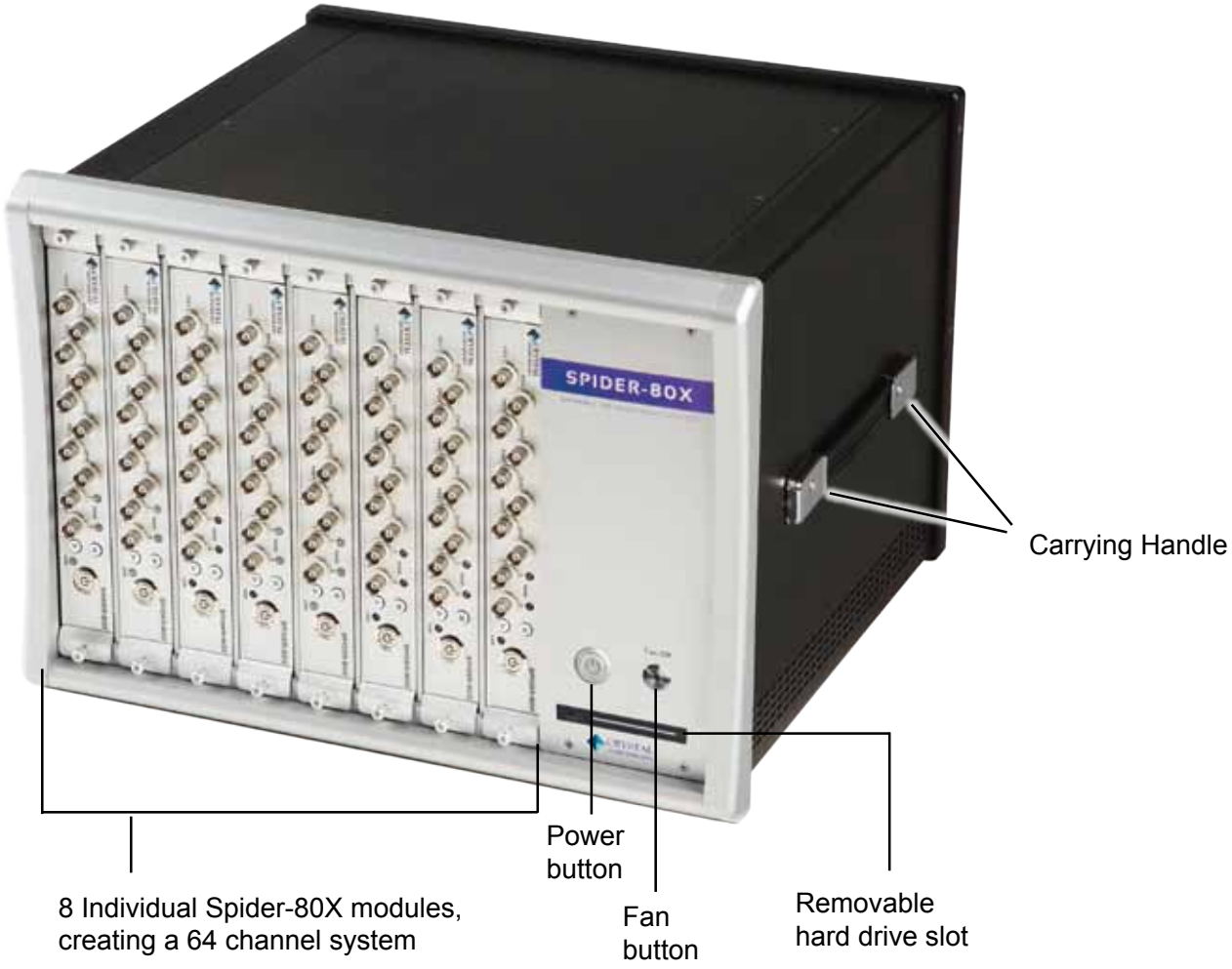


Configuration 2: PC Tethered With Multiple Modules



Configuration 3: Single Black Box

SPIDER-80X HIGH CHANNEL COUNT CHASSIS DIAGRAM



SPIDER-80X SINGLE UNIT DIAGRAM

OPTIONAL ACCESSORIES

Pair the Spider-80X dynamic measurement system with accessories. Crystal Instruments has developed these accessories to address the high performance needs of accurate data acquisition.

SPIDER-HUB

The Spider-HUB Ethernet switch supports the latest IEEE 1588v2 technology. The Spider-HUB guarantees time-stamping accuracy within 50 nanoseconds and can be configured for 1588v2 Master, Boundary Clock, and Transparent Clock functionality.

With a total of ten Ethernet ports, the modular design of the Spider-HUB provides users with greater flexibility and quick expansion of multiple switches. A choice between front or rear wiring, the small footprint, and low energy consumption make the Spider-HUB suitable for a variety of industrial applications.

IEEE 1588 can be used together with Synchronous Ethernet (SyncE) to ensure the high quality transport of timing information across the network. The IEEE 1588v2 and SyncE implementation on the Spider-HUB allow network devices to accurately time synchronize up to 20 ns with locked phase.

SPIDER-NAS

The Spider-NAS (Network Attached Storage) is a dedicated storage device designed to work with Crystal Instruments front-end Spider modules, including the Spider-80X and the Spider-81. Each Spider-NAS unit supports up to eight front-end Spider modules to collect both streaming time waveform data and spectral data. An Ethernet connection in back connects to a computer for data download and configuration.

At the center of the Spider-NAS, sits a removable 250GB serial ATA (SATA) Solid State Disk (SSD). This SSD not only provides greater shock protection than a classic hard drive but it is also features a faster boot up time (less than 15 seconds) and is particularly energy efficient.

PRODUCT SPECIFICATIONS

Inputs
4 – 8 input channels per Spider module for Spider-80X; expandable to 64 channels by synchronizing up to 8 modules, expandable to 512 channels by synchronizing 8 chassis.

Outputs
1 or 2 output channels or shared with tachometer input channels

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

Dimensions
240 x 35 x 310 mm (w x h x l)

Weight
2 kg

Power
External DC Power: AC adaptor accepts 100 – 240 VAC (47 – 440 Hz), 15 VDC (±10%), DC-DC isolated adapter capable

PC Connections
Ethernet: 100Base-T, RJ45 female connector

Internal Memory
4 GB flash memory used for data storage

LEDs
Battery Status Indicator: Charging light red, charged light green
RUN/STOP Status Indicator: Run light green, stop lightless
Flash Capacity Status Indicator: Less than 60% green, between 60% and 90% yellow, between 90% and 100%, red.
Power Indicator: Power on/off
LAN Indicator: Communication active/inactive

Real-Time Analysis Functions
Data recording, Math (+,-,*,/), integration, differentiation, FFT, average, window, auto power spectra, cross-spectra, FRF, coherence, real-time filters, RMS, swept sine, limiting, alarm/abort and many more.

Working Mode
PC Tethered or Black Box

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