

EDM 7.0

ENGINEERING DATA MANAGEMENT SOFTWARE

EDM 7.0 RELEASE NOTES | SPIDER VIBRATION CONTROL, EXPERIMENTAL MODAL ANALYSIS, DYNAMIC SIGNAL ANALYSIS



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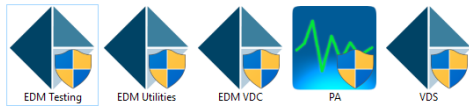
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RELEASE HIGHLIGHTS

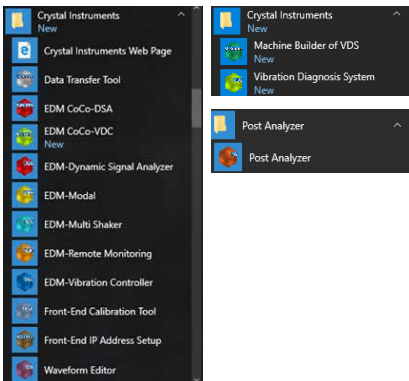
Revamped EDM Software Structure

In EDM 7.0, users can now run multiple EDM applications in parallel on the same computer. For example, while one EDM instance is activated to run a 64 channel Spider controller, another EDM instance can run in dynamic analyzer mode to acquire real-time data using the Spider-20, while a third instance can be activated to conduct post analysis. Running multiple instances of EDM on one PC will allow users to conduct sophisticated tests with greater efficiency.

- Installation separated as: EDM-Testing, EDM-Utilities, EDM VDC, VDS and PA



- **EDM Testing** includes: EDM-VCS, EDM-DSA, EDM CoCo-DSA, EDM-Modal, EDM-Multi Shaker Control, EDM-Remote Monitoring, Waveform Editor, IP address setup
- **EDM Utilities** includes: FECT, Data Transfer Tool
- **EDM VDC** includes: EDM CoCo-VDC
- **PA** includes: Post Analyzer, File Converter
- **VDS** includes: Vibration Diagnosis System, Machine Builder



Introducing Contemporary Icons for Each Application



VCS: Vibration Control System. This application controls vibration shakers based on the Spider hardware platform. It can control either single axis or multi-axis shakers with phase control capability.



DSA: Dynamic Signal Analyzer mode. The application for real time FFT spectral analysis, recording, octave analysis, order tracking and more.



EMA: Experimental Modal Analysis. The EDM Modal package with MIMO testing capability.



RCM: Remote Condition Monitoring. Simultaneously monitor multiple Spider systems running remotely across the world



MSC: Multi-Shaker Control. With MSC, a dozen independently running shakers can be controlled from the same EDM application.



IP Config: IP Configuration Tool, a tool to configure the IP address of the Spider front-ends.



WE: Waveform Editor, a tool for editing waveforms that can be duplicated on a shaker.



CoCo DSA: EDM for CoCo Dynamic Signal Analyzer mode, companion software for the CoCo-80X.



TRANSFER: Data Transfer Tool, a utility program for transferring the data and settings from one computer to another.



FECT: Front-End Calibration Tool, a utility program for Front-End Calibration



PA: Post Analyzer, a post processing software program for recorded time data.



CoCo VDC: EDM for CoCo VDC mode, companion software for the CoCo-80x running in Vibration Data Collector mode.



VDS: Vibration Diagnostics System, a brand-new product with artificial intelligence technology for machine vibration analysis



M-Builder: Machine Builder, a utility companion program for VDS

Introducing EDM MIMO Control Software

Crystal Instruments' EDM MIMO Control software supports multiple DOF shaker system testing requirements. With the 7.0 release, several new MIMO control types are supported. This release includes MIMO Random Control, MIMO Sine Control and MIMO Time Waveform Replication.

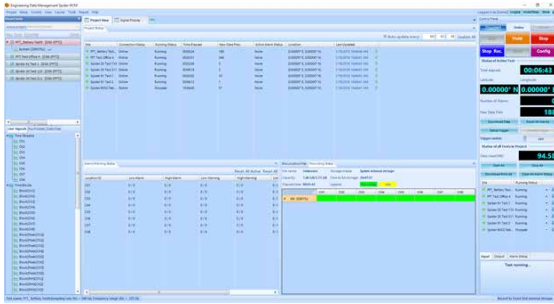


Introducing EDM Modal SIMO Sine and OMA Test for Experimental Modal Analysis (EMA)

EDM Modal is a complete Modal Testing and Modal Analysis suite for Experimental Modal Analysis (EMA). With the 7.0 release, several new modal testing types and a multitude of new features have been implemented. Single Input Multiple Output (SIMO) Swept Sine, SIMO Stepped Sine, and Operational Modal testing are new test types implemented in this release. Furthermore, many bugs have been fixed to ensure stability.

Introducing Remote Condition Monitoring (RCM) for the Spider Platform

The Remote Condition Monitoring Tool (RCM) for EDM simultaneously monitors multiple Spider systems in different locations. The Spider systems operate in Black Box mode and a specifically designed EDM-RCM mode which monitors statuses and alarms. Users can communicate with remotely located Spider systems that are connected through a wireless gateway on a mobile data network with a public IP. EDM-RCM mode can be configured to connect to multiple public IPs to simultaneously monitor multiple Spider front-ends.



EDM-RCM software can be configured to simultaneously monitor up to 64 Spider systems. A Spider system can consist of single or multiple Spider front-ends.

Key Features

- **Remote Installation and Operation:** Spider front-ends can be installed at any location without a PC. With EDM-RCM mode and an internet connection, users can access the Spider front-end from anywhere in the world to configure the Spider, check the status continuously or periodically, and to download data as needed.
- **Project Status:** Overview of the status for all Spider front-ends in operation. Updates the running status, running time, and location of each Spider front-end in the project.



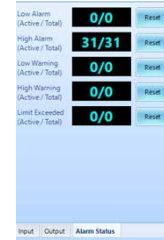
- **Alarm Status:** Overview of the number of alarms triggered on each of the Spider front-ends in the project.

LocationID	Low Alarm	High Alarm	Low Warning	High Warning	Limit Exceeded
CH1	0/0	7/7	0/0	0/0	0/0
CH2	0/0	0/0	0/0	0/0	0/0
CH3	0/0	0/0	0/0	0/0	0/0
CH4	0/0	0/0	0/0	0/0	0/0
CH5	0/0	0/0	0/0	0/0	0/0
CH6	0/0	0/0	0/0	0/0	0/0
CH7	0/0	0/0	0/0	0/0	0/0
CH8	0/0	0/0	0/0	0/0	0/0

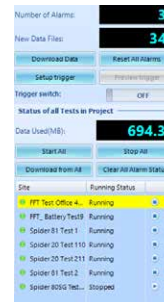
- **Real Time FFT Analysis:** All analysis functions available in FFT mode can be applied, such as spectrum or FRF analysis.
- **Live Data:** Live data, including live time streams, processed time streams (Peak and RMS) and spectral data can be viewed for any one of the Spider front-ends in the project.
- **Continuous Waveform/Processed Waveform Recording:** Continuous recording of raw time data or the processed data (Peak/RMS) can be performed on the Spider front-ends. The

recordings are stored in the Spider internal flash memory.

- **Alarm and Limiting/Trigger:** Multiple alarms can be set on each Spider system based on user specific event(s). Multiple actions can be defined to capture and deliver notifications of events. EDM keeps track of all the alarms and alerts the user defines for each Spider system.



- **Remote Downloads:** Saved spectral data or recorded time data for one specific Spider system or all systems can be conveniently downloaded from a remote location without having to halt the test.



- **Email:** Emails can be configured for each Spider front-end to send alerts based on specific events.

Introducing EDM Multi-Shaker Control (MSC)

The EDM MSC function enables user to view and monitor multiple shaker tests from one PC station. The user can observe the testing status, view individual signals from different shaker systems, and send commands to each controller from using the EDM – MSC on a single PC. Up to 12 controllers can be accessed simultaneously.

Key Features

- **Run Different Types of Tests:** Any combination of Sine, Random, SOR or ROR tests can be set on the individual controllers.



- **Custom Tests Display:** EDM MSC offers the flexibility to customize the status display for each shaker controller. Users can choose to display different parameters or different testing commands for each test. Composite view, status only view, or a combination of both can be viewed on one screen.



- **Shared Commands:** Use shared commands such as Connect All, Run All, Stop All, etc. to control the controllers.

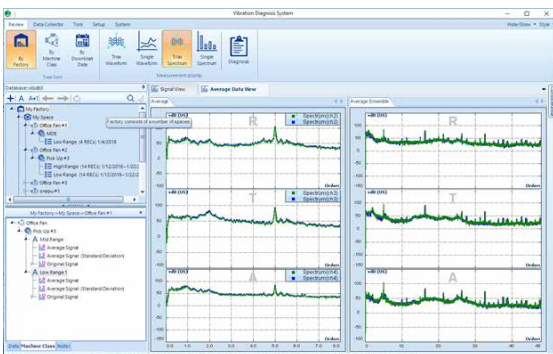
Introducing Vibration Diagnostic System (VDS) 1.0 for CoCo-80X

Vibration Diagnostic System (VDS) is the upgraded version of Crystal Instruments Vibration Data Collector (VDC) software. In addition to route collection, the following new features are introduced:

- **Expert System** - An Expert system is built for VDS and it produces diagnostic results. The results are viewed in a new window called the Diagnosis window. The information in that window can be edited and a full history of the changes are retained.

Severity	Confidence (%)	Fault	Comp #	Comp Name
133.3483	83.6	MOTOR ROTOR BALANCE FAULT	1	MOTOR-IRG...

One or more average signals are needed for automated analysis. The average signals represent the vibration spectrums of classes of machines for each of their pickup points. VDS offers a way for users create and manage the average data.

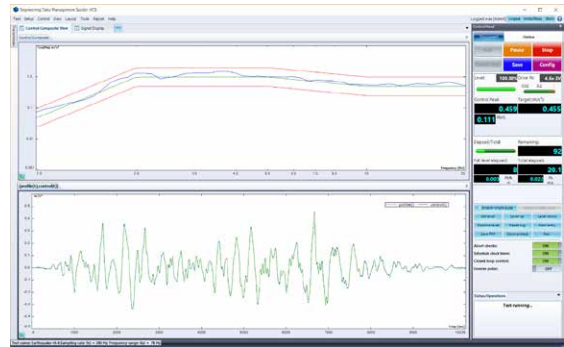


- **Machine Modeling System** - This feature set is implemented in a stand-alone application but operates on the same database that VDS is connected to. The application is used to model any element of rotating machinery. Users can use their own drawings to build machine elements. Elements are used to build Components, such as motors, couplings, and pumps. Components can then be used to build Machine Classes. Machines in the VDS database are based on Machine Classes determined by the automatic diagnostic analysis performed.



Introducing Earthquake Testing Control

Earthquake Testing Control is a new testing method added to the Shock family, which includes Classical Shock, TTH, SRS, Transient Random, and Earthquake Testing.



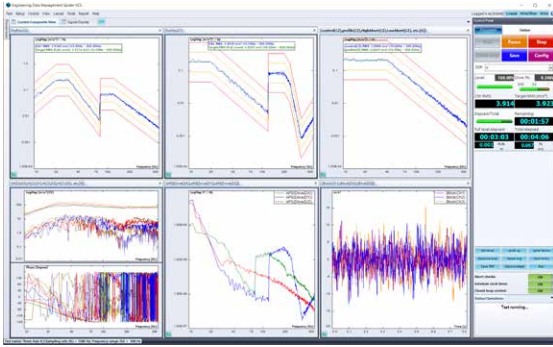
The Earthquake Testing Control package complies with IEEE 344-2013. It provides controls to meet a target Required Response Spectrum (RRS). Waveforms are automatically synthesized from a user-specified SRS reference profile using random types of wavelets; uniform or shaped. Alarm and Abort tolerances may be applied to any active channel to provide an extra degree of safety for delicate test articles.

NEW FEATURES

New Features in EDM Vibration Control Software

MIMO Random Control
EDM MIMO random control is one of the most commonly used methods of multiple shaker control, which provides precise control in real time. The device under test is subjected to true random noise with a precisely shaped spectrum and Gaussian amplitude statistics. The recording option records time-stream data at the full sample rate on all input channels.

For MIMO random control, multiple random profiles will be defined for each control channel. The user can choose to define and control the relationship among these controls. This is achieved through different MIMO Random control modes: Magnitude only, Mag and Phase, and the Advanced.



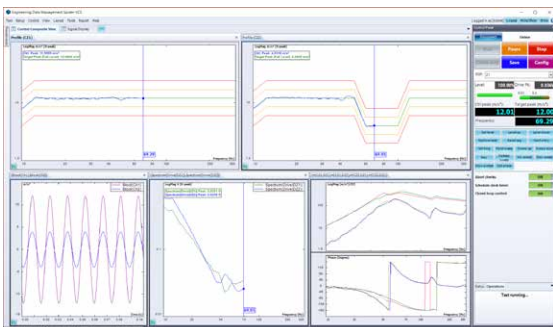
Features:

- Ease of use testing process
- Supports up to 8 output channels
- Shaker Configuration with user defined drive DOF and shaker
- User defined H update rate
- Non-linear control to correct error
- User selected Ramp-up Ramp-down rate
- Run pretest or use saved FRF
- Pretest with Uniform or Shaped Random, user specified Average #
- Control mode of Magnitude only, Mag and Phase, or Advanced
- Profile library, Import/Export
- Run Schedule with user defined level/duration, loop
- Safety check of open loop channel, RMS abort, alarm/abort, Max Drive, etc.
- Default report, fully customizable report

MIMO Sine Control

EDM MIMO Sine control is another commonly used type of multiple shaker control; it provides precise control in real time. It controls multiple sine waves with a control dynamic range of up to 100 dB. With MIMO Sine control, linear spectrum profiles of Mag or Mag/Phase are defined and assigned to multiple control channels. With the sweep type and sweep rate defined, the sine waveform in the time domain is determined.

Uniform or Shaped random signals can be applied during pretest to identify the system FRF matrix. During control, the closed loop control corrects errors from all control channels. Tracking filters are commonly used to control channels as well as measurement channels to calculate the sine signal amplitude and phase.



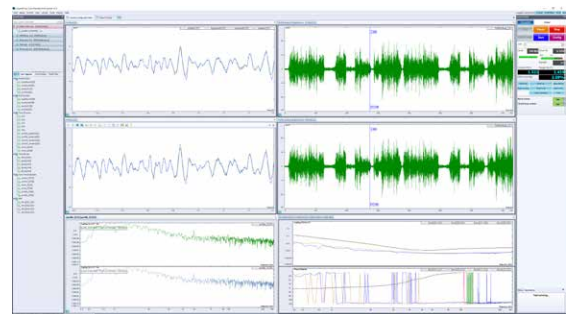
Features:

- Ease of use testing process
- Supports up to 8 output channels
- Shaker configuration with user defined drive DOF and shaker
- User defined # of signal plot points
- User selected sweep type of Log or Linear
- User selected measurement strategy of Filter, RMS, Mean, or Peak
- Filter type of Proportional or Fixed
- User selected Compression rate, Ramp rate, and Abort ramp down rate
- Run pretest or use saved FRF
- Pretest with Uniform or Shaped Random, user specified Average #
- Control mode of Magnitude only, Mag and Phase
- Profile library, Import/Export
- Run schedule with user defined left/right/start frequency, initial sweep direction, level, sweep speed, sweep #
- Safety check of open loop channel, RMS abort, alarm/abort, max Drive, etc.
- Default report, fully customizable report

MIMO Time Waveform Replication (TWR) Control

EDM MIMO Time Waveform Replication (TWR) is very popular when the field recorded data needs to be reproduced on multiple DOF shaker tables in the lab. With MIMO TWR control, a time waveform profile containing multiple channels of data can be imported, pre-processed (such as bandpass filtered, etc.), and selected as control profile.

All channels of time waveform in the profile are of the same sample rate and length. The MIMO TWR control is carried out based on block by block of data. There are two control algorithms to choose, one is to keep the system FRF matrix measured from the pretest stage and updated from one block to the next. The other control algorithm is used to update the system FRF Matrix in real time as test goes.



Features:

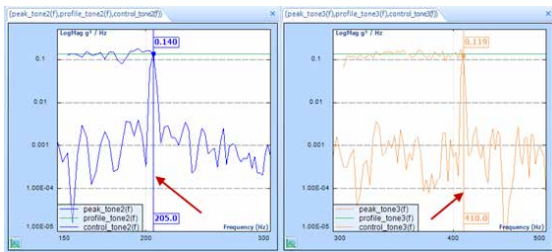
- Ease of use testing process
- Supports up to 8 output channels
- Shaker Configuration with user defined drive DOF and shaker
- Control strategy of Reference/FRF, or Real Time
- User defined H update rate (with real time control strategy)
- User defined low pass filter
- User selected Ramp-up Ramp-down rate

- Run pretest or use saved FRF
- Pretest with Uniform or Shaped Random, user defined # of average
- Profile addition/removal/uploading/downloading
- Run Schedule with user selected profile, level, and repeat times
- Safety check of open loop channel, RMS abort, alarm/abort, Max Drive, etc.
- Default report, fully customizable report

Random

- Tracking Cursor on Sine tones in SoR.

Vertical tracking cursor of a sine tone provides a clearer view of the current tone frequency and peak value.



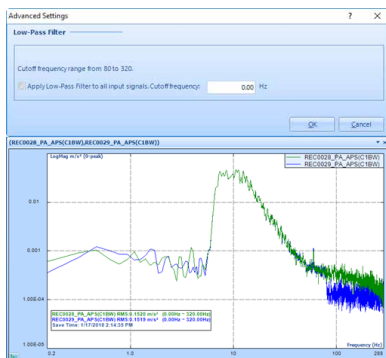
- Add tone display in Random broadband profile (SoR)

Peak and sweeping range of sine tones can be displayed with the broadband profile to provide an overall picture of both sine tones and broadband.



TWR

- Add low pass filter to all input channels in TWR

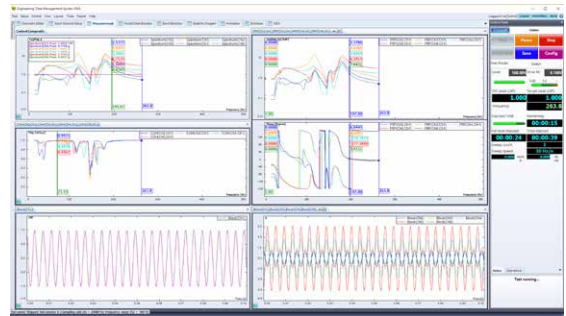


- When control quantity is in displacement, the profile in acceleration or displacement can be imported.

New Features in Experimental Modal Analysis

SIMO Swept Sine Testing

EDM Modal SIMO Swept Sine Testing includes a dedicated test setup and operation process flow using a single shaker outputting a sine wave to acquire FRF signals. The source output type is swept sine. The sweep mode can be linear or logarithmic. The FRF signals of each measurement DOFs with respect to the defined reference DOF will be constructed. The output drive level can be defined to run the test under no control strategy, or the response of a control channel can be specified to run the test in a closed loop.



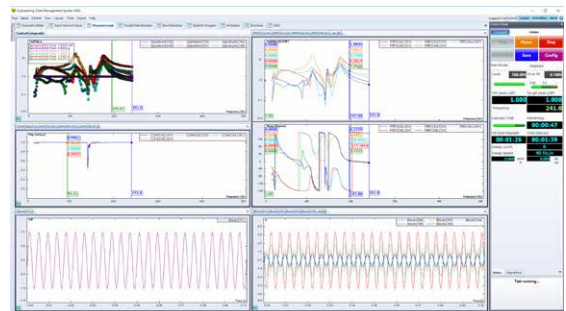
The modal analysis process is seamlessly integrated with SIMO Swept Sine testing.

Features:

- Ease of use testing process
- Point/direction auto/manual increment
- One swept sine excitation (reference)
- Specify source output level; or control the amplitude of one input channel
- Linear, Logarithmic sweep mode
- Filter, RMS, Mean or Peak for measurement strategy
- Fixed or proportional tracking filter, with user defined bandwidth
- User defined left/start/end frequency; sweep speed

SIMO Stepped Sine Testing

EDM Modal SIMO Stepped Sine Testing includes a dedicated test setup and operation process flow using a single shaker outputting a sine wave to acquire FRF signals. The source output type is either swept sine or stepped sine. The sweep or step mode can be linear or logarithmic. The FRF signals of each measurement DOFs with respect to a defined reference channel will be constructed. The output drive level can be defined to run the test in the open loop or the response of a control channel can be specified to run the test in a closed loop.



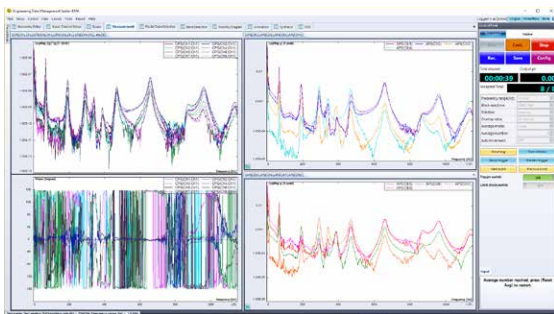
The modal analysis process is seamlessly integrated with the SIMO Sine Stepped Sine testing.

Features:

- Ease of use testing process
- Point/direction auto/manual increment
- One sine excitation with single tone (reference)
- Specify source output level; or control the amplitude of one input channel
- Linear, Logarithmic sweep mode
- Filter, RMS, Mean or Peak for measurement strategy
- Fixed or proportional tracking filter, with user defined bandwidth
- User defined Start/end frequency; Number of points; Delta F (or Points/Oct); Transition speed

Operational Modal Testing

EDM Modal Operational Modal Testing includes a dedicated test setup and operation process flow using ambient vibration data. Using a large channel count data acquisition system (e.g., Spider-80X or Spider-80Xi), this shaker excitation method provides much higher efficiency and accuracy for FRF measurements while minimizing local stresses on the test article.



Typical modal analysis methods and procedures are based on forced excitation tests carried out in the laboratory. Frequency Response Functions (FRFs) are measured as input to modal parameter identification. However, the real loading conditions to which a structure is subjected often differs considerably from those used in a laboratory testing. In many cases, (i.e., excitation of off-shore platforms or traffic/wind excitation of a bridge,) forced excitation tests are very difficult, if not impossible to conduct; at least when using standard testing equipment. In such cases, operational vibration data is often the only resource available.

Operational modal testing is designed to measure and process ambient vibration response data, which will be ready for parameter identification. The resulting cross power spectrum vector(s) can be further smoothed by using the de-convolution method. The modal analysis process is seamlessly integrated with the Operational Modal testing.

Features:

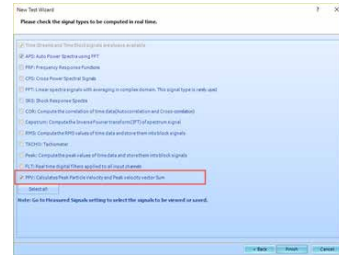
- Ease of use testing process
- Point/direction auto/manual increment
- User defined reference channel
- Scope tab to view channel data before measurement
- Expanded cross power spectrum for all input channel vs. reference channel

- Cross power spectrum vector(S) smoothing, multiple times or cancel

New Features in EDM Dynamic Signal Analysis

Introduced Peak Particle Velocity (PPV) Calculations

Peak Particle Velocity (PPV) can be calculated using a tri-axial accelerometer on any of the Spider devices in Spider DSA mode.



Measured Signals Setup

Time Streams Time Blocks **PPV** Auto-Power Spectra (APS) 3D Signal PC Frequency Response (FRF) PC Math Signals All Signals

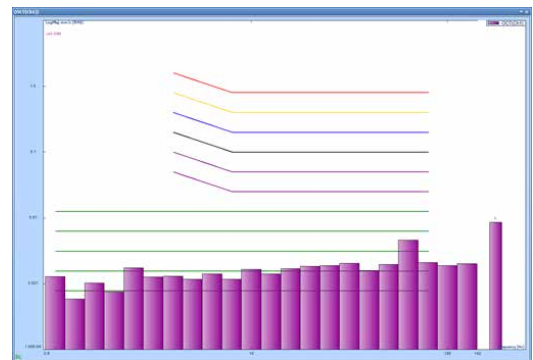
Peak is a continuous Time Stream data. It is extracted from each time block and plots it as a function of time. The size of the peak signal by getting the record option, Peak data can be recorded to either internal flash or PC.

Measure all signals Record all signals Save and recording options

Signal name	Measure	Record list	Signal color
001 PPV(Ch-1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Blue
002 PPV(Ch-2)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Green
003 PPV(Ch-3)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Yellow
004 PVS(Ch-4)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Red

PPV calculations are calculated on Ch1, Ch2 and Ch3 and the Peak Vector Sum (PVS) results are displayed in Channel 4.

Introducing VC (Vibration Criteria) Curves in EDM DSA



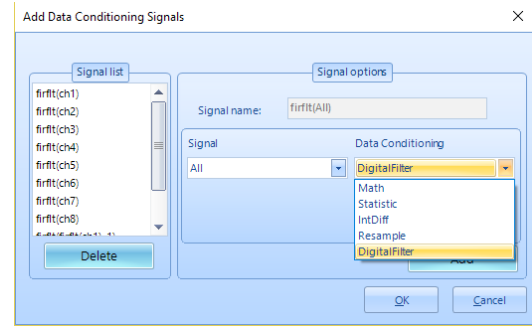
VC Curves are introduced into Spider DSA mode. Vibration sensitive precision equipment that are affected by vibrations of low magnitudes can now be detected and compared using this feature on Spider DSA.

VC Curves can be displayed on a 1/3rd Octave measurement plot. ISO standard VC Curves in addition to VC-A to VC-G can now be displayed. Any channel can be compared to ensure vibrations are within desired limits.

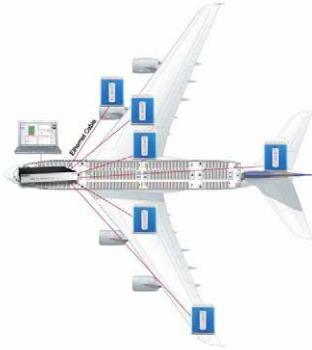
High Channel Count DSA System Using the Spider-20E

The palm-sized Spider-20E can now be scaled to perform synchronous data acquisition. Being the smallest Spider front-end, it fits easily into tiny spaces around machines. Multiples of these front-ends can be conveniently placed in areas of interest to synchronously acquire data.

Name	Serial number	IP address	Module type	Detected	Connected	IsMaster
(M) SN: 5780576	5780576	192.168.1.132	Spider-20E	Yes	No	<input checked="" type="checkbox"/> Yes
SN: 5780832	5780832	192.168.1.133	Spider-20E	Yes	No	<input type="checkbox"/> No
SN: 5781184	5781184	192.168.1.135	Spider-20E	Yes	No	<input type="checkbox"/> No



Locations from which the data needs to be acquired varies from the narrowest corner of the cockpit to the most inaccessible tip of the aircraft wing. Having a compact design with ability to run without external power is essential for such testing.



Synchronizing the data from all locations to access the impact of turbulence, take-off, and landing is a significant requirement for accurate analysis.

EDM DSA 7.0 is capable of such measurement and allows up to sixteen Spider-20E front-ends to be synchronized as a 64-channel system.

LabView Driver Support for Spiders Running FFT Test

LabView users can install the Spider LabView driver to connect the Spider and run FFT analysis. The Spider LabView driver communicates directly to front-end without the use of EDM. The following capabilities are implemented in the release.

1. Detect Spiders on the LAN and connect
2. Configure input channels
3. Generate output waveform types: Sine, Triangle, Square, White noise, DC, Chirp, Sweep sine.
4. Configure test parameters: frequency range, block size, window type, overlap ratio, average mode, and average number.
5. Test operations: start recording, stop recording, save signals, download signals from Spider
6. Display Test status and Channel status.
7. Display time streams/time block/APS signals of all input channels
8. Zoom in/out on signal display
9. Customizable display plot and display color, size, and type of signals
10. Signal data may be saved to clipboard or exported to Excel

New Features in Post Analyzer

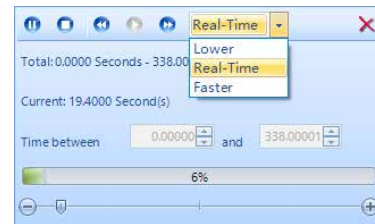
Apply Basic Signal Conditioning to All Channels

PA can now apply basic signal conditioning such as Filter operations, re-sampling, integration, differentiation or basic math operations to all channels simultaneously.

This greatly reduces efforts in configuring signal conditioning parameters for high channel count data acquisition.

Playback Via PC Speakers

Time signals can be used to playback using speakers in PA 7.0.



This feature is available for channels with any measurement quantity. Options to playback a selected duration at the real time sampling rate, faster, or slower are available.

New Features in Socket Message

- More messages supported in C# automate test configuration

New socket messages can perform functions:

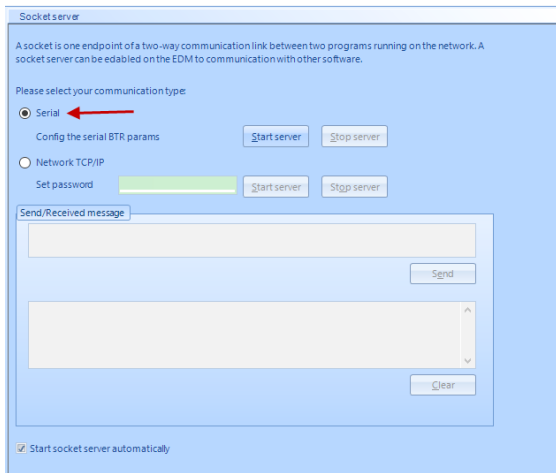
1. Create a Random, Sine On Random (SoR), or Sine test with a given name
2. For a Random test:
 - a. Configure the profile, overall grms, high abort/alarm, and low abort/alarm
 - b. Schedule to include Level and Run Duration
 - c. Configure test parameters: number of lines, sigma clipping, number of averages, overlap ratio, control strategy, enable auto save to CSV
 - d. Configure notch/alarm/abort limit profile
3. For a Sine test:
 - a. Configure profile, high abort/alarm, and low abort/alarm
 - b. Schedule to include Level, Sweep speed, Sweep range
 - c. Configure test parameters: signal plot points, control strategy, sweep type, enable auto save to CSV
 - d. Configure notch/alarm/abort limit profile
4. For a Sine On Random (SoR) test:
 - a. Configure broadband profile, overall grms, high abort/ alarm, and low abort/alarm
 - b. Configure each sine tone profile (peak, sweep frequency, sweep rate, sweep numbers)
 - c. Schedule to include Level and Run Duration for broadband
 - d. Schedule to turn on sine tones

- e. Configure test parameters: number of lines, sigma clipping, number of averages, overlap ratio, control strategy, enable auto save to CSV
- f. Configure notch/alarm/abort limit profile

5. Configure more attributes to an input channel: channel name, channel type (control/monitor), control channel weighting

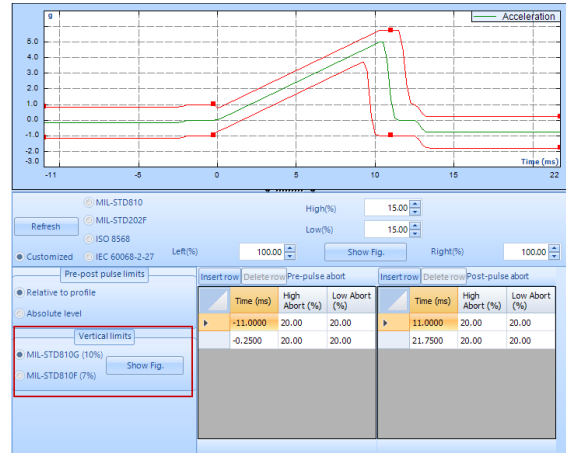
- Socket message over serial port

NEW: EDM supports socket messages received from a serial port. In the global setting, The socket server may be configured to listen to a serial port for receiving.

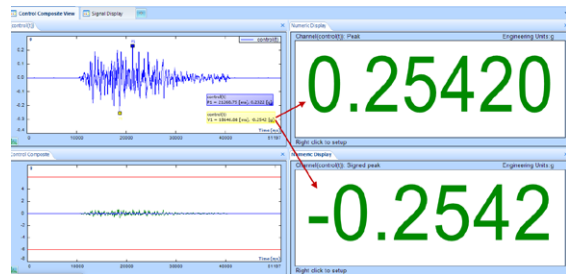


Shock/TTH/SRS

- Added vertical limits for terminal-peak sawtooth of MIL-STD810G, 810F



- Added signed PK value as a signal attribute in the numeric display

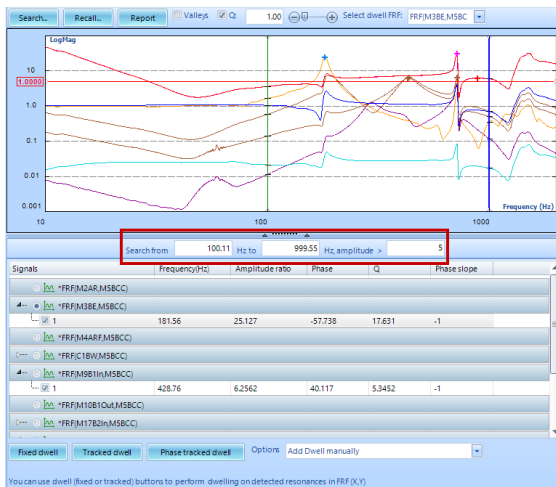


MAJOR IMPROVEMENTS

EDM Vibration Control Software

Sine/RSTD

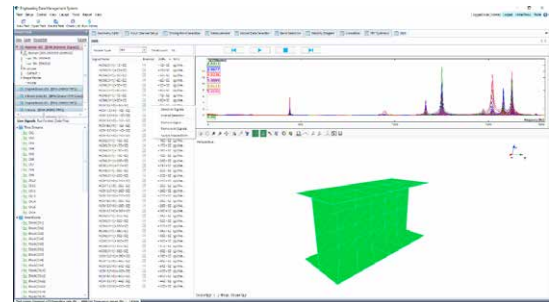
- Enter exact frequencies for cursors in the Search resonant frequencies window to find resonance.



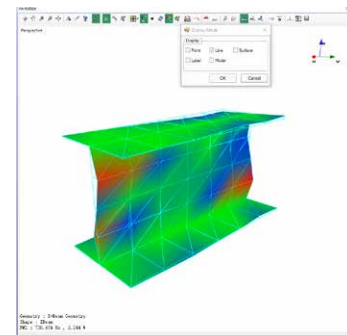
Experimental Modal Analysis

EDM Modal: operates on 512 channel Spider systems

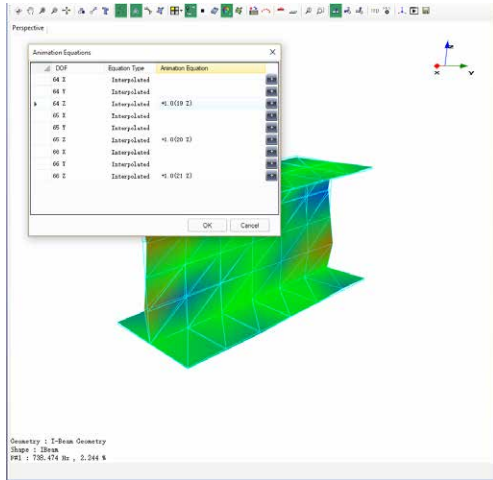
Hammer Impact Test: ODS supports roving hammer test data set



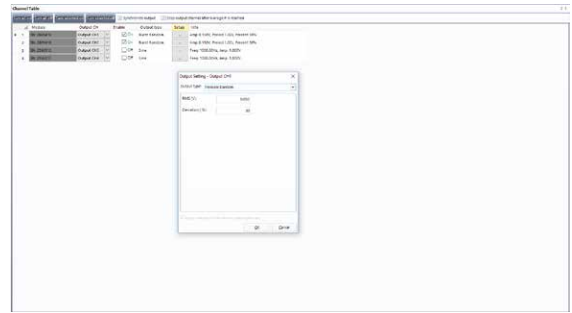
Un-deformed elements can be selected for Animation and ODS Analysis



Animation Equation Editor and Animation with Interpolation is available for Animation and ODS Analysis



MIMO FRF Test: output setting enhancements

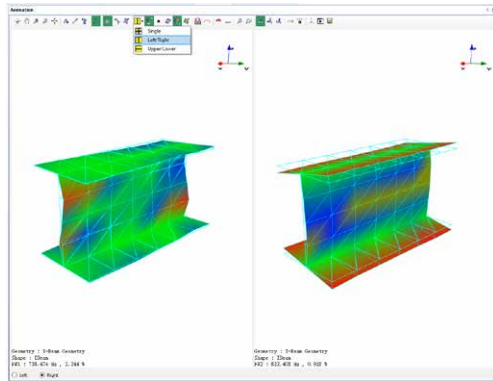


MIMO FRF Test: output setting can be changed without disconnecting Spider hardware

MIMO FRF Test: Scope tab added to check signals from all input channels prior to measurement



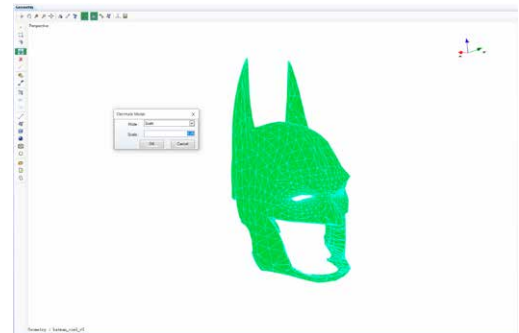
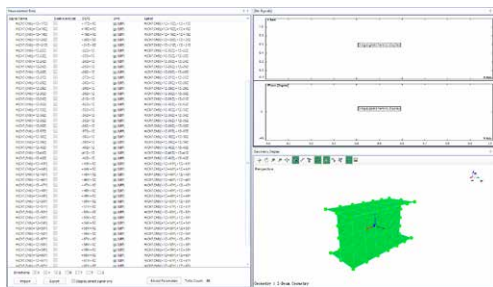
Animation, Left/Right and Upper/Down layouts are added to allow comparison of modes



Operational Deflection Shape enhancement to support recorded time data

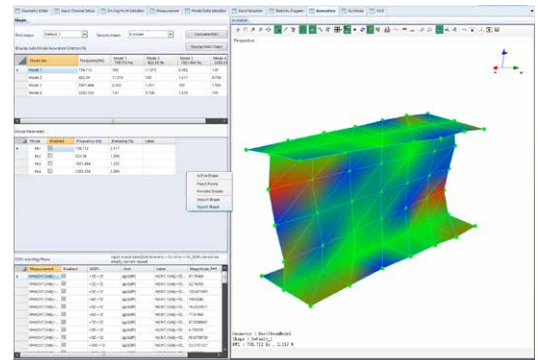
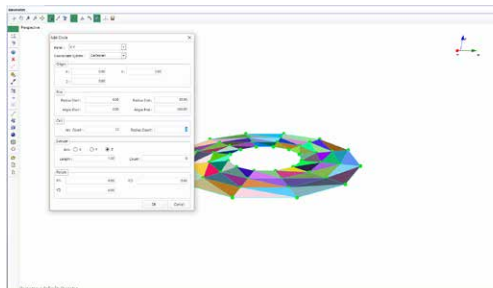
Decimation feature for imported geometry models

Modal Data Selection: added direction selection check boxes to filter FRF data

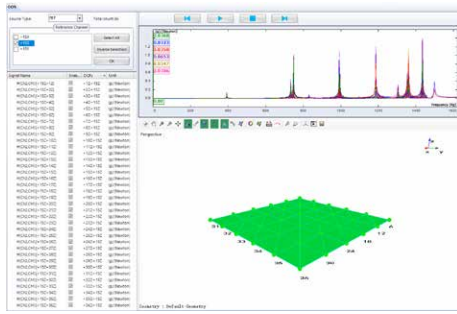


Export of mode shape table to UFF

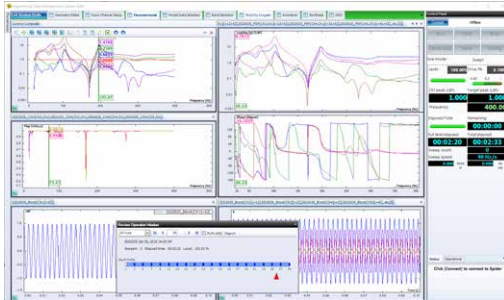
Geometry Editor: circle component added to library



Selection of reference DOF in case of multiple reference test for ODS

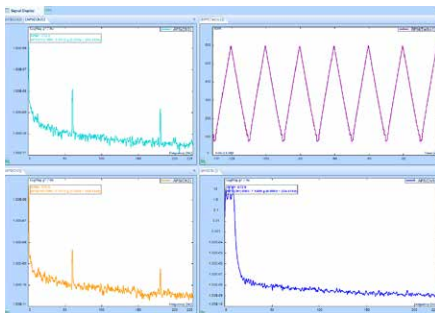


EDM Modal supports review mode for Measurement tab



EDM Dynamic Signal Analysis

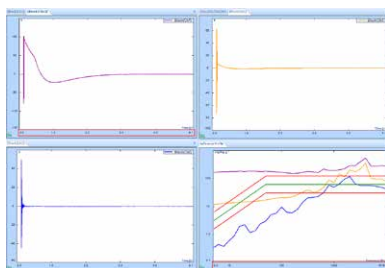
Sampling rate of tachometer can be different from the sampling rate of input channels



The tachometer is now sampled at the highest hardware sampling rate. This gives users an opportunity to acquire data at very low sampling rates for input channels enabling high resolution in the frequency domain and while measuring the RPM at high accuracy.

SRS supports up to 512K block size at 102.4 KHz sampling rate

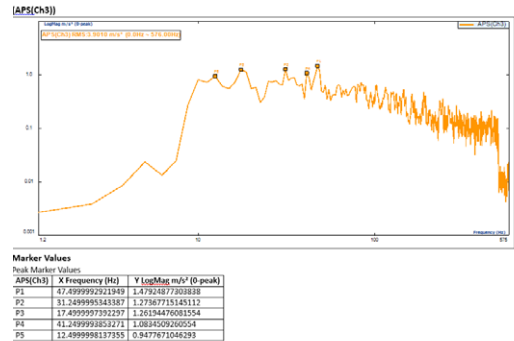
Shock response spectrum computation is essential for all drop shock tests and it is important to measure vibrations that may last up to several seconds in some cases. Obtaining a SRS for up to 10 KHz is typical with best results obtained when the sampling rate is 10 times higher than the highest frequency of interest.



This requires the hardware to be sampled at 102.4 KHz. Even at these sampling rates, the EDM 7.0 DSA software can perform SRS calculations for up to a 512K block size yielding analysis, and for up to 5 seconds after impact.

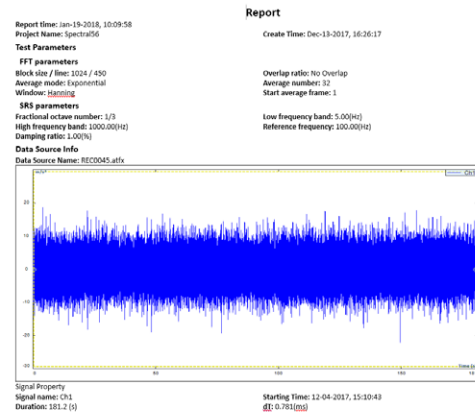
Post Analyzer

Display Cursor / Marker table below the graph on the report

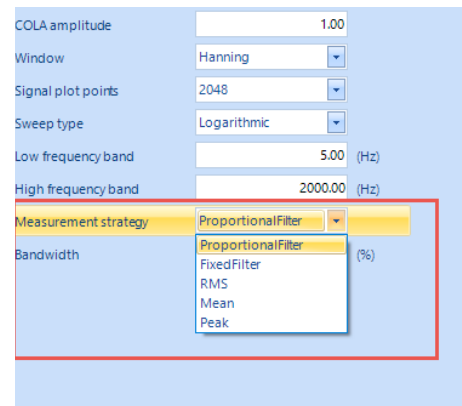


Peak marker on the plots may obscure the signal on the report. To enable a clean display of the signal data, the markers are moved to a spare table in the report.

Improvements to Report feature



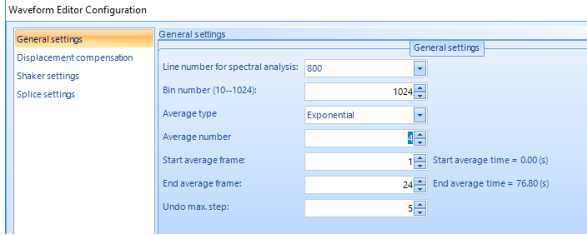
Measurement Strategies for Sine Reduction



Measurement strategy has been added to Sine Reduction in PA 7.0. Multiple options to select the measurement strategy similar to real time Sine control are available in PA Sine Reduction.

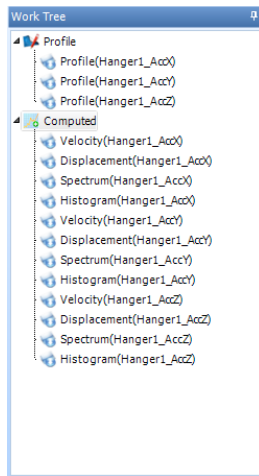
Waveform Editor

- Added average type (linear, exponential), average number, and average time for spectrum analysis



- Edit multiple signals in the same file

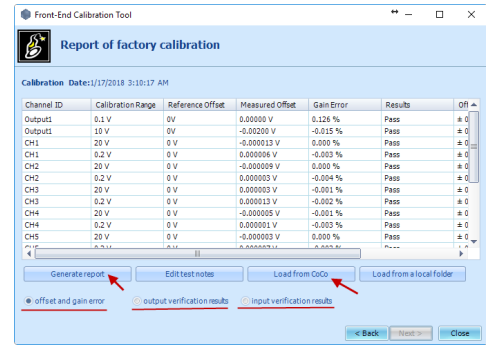
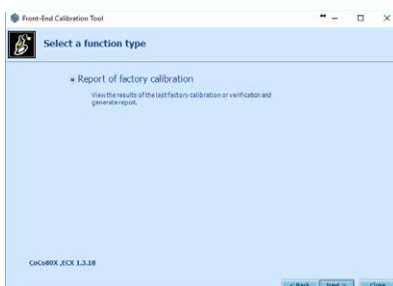
In this version, users have the convenience to import multiple signals in the same file and edit the signals in Waveform Editor.



EDM Utilities

FECT 2.1: Generate the CoCo-80X calibration report

FECT 2.1 is included in EDM Utilities 7.0. It provides a new feature to view calibration results on the CoCo-80X and generates calibration report from it.



Several enhancements to the Report feature are introduced in EDM PA. The improvements enhance the report templates in PA with a similar design of our most popular EDM report template.

Bug Fixes and Performance Enhancements

- Improved notching performance
- Added units to the sensor list table in report
- Improved the Measured Signals dialog for high-channel count systems (software reliability)
- Improved the reliability of saving pulses in Shock on a high channel count system
- Improved display for dwell sine tests
- Improved performance while sweeping at 20 and 80Hz
- Report Supports a graph with 512 channels
- Improved the picture quality in report
- Simplified naming scheme for naming data conditioned signals in PA.
- Improvements to Peak and RMS signals in Spider DSA.

SOFTWARE RELEASE HISTORY

Dates of software releases:

Type	Release	Exact Version	Release Date
Release	EDM 3.1	CI 3.1.3.2	11/28/2011
Release	EDM 3.2	CI 3.2.2.5	7/31/2012
Release	EDM 4.0	CI 4.0.2.7	11/11/2012
Release	EDM 4.1	CI 4.1.0.1	4/16/2013
Patch	EDM 4.1.5	CI 4.1.5.5	10/10/2013
Release	EDM 4.2	CI 4.2.0.3	2/28/2014
Patch	EDM 4.2.0	CI 4.2.0.14	7/2/2014
Release	EDM 5.0	CI 5.0.0.2	11/27/2014
Patch	EDM 5.0.1	CI 5.0.1.3	2/27/2015
Release	EDM 5.1	CI 5.1.0.6	8/12/2015
Release	EDM 6.0	CI 6.0.0.1	5/19/2016
Patch	EDM 6.0.2	CI 6.0.2.9	8/9/2016
Release	EDM 6.1	CI 6.1.0.4	2/7/2017
Patch	EDM 6.1	CI 6.1.0.27	8/22/2017
Release	EDM 7.0	CI 7.0.0.6	2/1/2018

VERSION COMPATIBILITY

Product and Software Version	Firmware Versions
Spider-80X/80Xi	
EDM Testing 7.0.0.6	7.0.0.6
Spider-81 (v7.x)	
EDM Testing 7.0.0.6	7.0.0.6
Spider-81B (v7.x)	
EDM Testing 7.0.0.6	7.0.0.6
Spider-80SG	
EDM Testing 7.0.0.6	7.0.0.6
Spider-20/20E	
EDM Testing 7.0.0.6	7.0.0.6

Product and Software Version	Firmware Versions
CoCo-80	
EDM 6.0.2.9	4.0.21
CoCo-80X	
EDM Testing 7.0.0.6 (EDM CoCo for DSA)	1.4.0

SYSTEM REQUIREMENTS

Minimum System Requirements:

- Operating System Support: Windows 7 SP1 or higher
- Operating System Type: 32-bit or 64-bit
- Processor Speed: 1.5 GHz Dual-Core x86
- RAM: 4 GB
- Available storage space: 10 GB

Recommended System Requirements (Minimum for Spider Systems Higher than 16 Channels):

- Operating System: Windows 10, 64-bit
- Processor: Intel Core i7, 2.0 GHz or Higher
- RAM: 8GB DDR3 1600 or higher
- Available storage space: 10 GB