Machinery Dynamics Analyzer

Dynamic Spectral Analysis for Machinery

Analog Inputs

Number of Channels:	2 to 40 in increments of 2
A/D Resolution:	24 Bits
Sampling:	All inputs simultaneous
Dynamic Range:	110 dB (typical)
SIgnal-to-Noise Ratio:	110 dB (typical)
Input Voltage:	-20 V to +20V
Input Impedance:	100 K Ohm
Frequency Range:	DC to 20 kHz
Amplitude Error:	<1%
Phase Accuracy:	± 1° between channels
Signal Group Delay:	0.7 ms
Connector Type:	BNC
Input Circuit:	Single ended / floating ground
Programmable Coupling:	AC, DC, and IEPE
Low-Pass Cut-Off:	0.01 Hz (Digital subtraction)
IEPE Power:	3.9 mA @ 22 VDC
Over-Voltage Protection:	±30 V pk
Overload Detection:	LED indication

Tachometer Inputs

Number of Tachometers:	2 to 4 (factory configured)
Speed Range:	24 to 1,000,000 RPM
Trigger Threshold:	-20 V to +20 V
Trigger Slope:	Rising and Falling
Pulses Per Revolution:	0.01 to 10,000
RPM Error:	<1%
Input Voltage:	-20 V to +20 V
Input Impedance:	100 K Ohm
Connector Type:	BNC
Programmable Coupling:	AC and DC

External Interfaces

Data Input:	Digital Inputs Modbus (Master and Slave) User Defined Tags
Data Output:	Electromechanical Relays Alarm (Event) Logging Time/Spectrum Logging Digital Recording (FIFO) Spreadsheet (Comma-Delimited) HTML Report E-Mail
External Interfaces:	TCP/IP Socket Protocol (full system control and data retrieval) Modbus (Master and Slave) OSI PI Historian
Export Formats:	ASCII - Comma-Delimited Matlab (Mathworks) MEScope (Vibrant Technology) WAV UFF (Universal File Format)

Physical Attributes

Voltage Requirements:	24 VDC (or 110 VAC using power transformer-supplied)	
Power Consumption:	8 W (typical for 10 channel)	
Size:	Width: Height: Depth:	205 mm (8.05") 43 mm (1.70") 181 mm (7.16")
Weight:	1 kg (2.2 lbs)	
Operating:	Temperature: Relative Humidity:	0 °C to 70 °C 10 to 85%
Storage:	Temperature:	-55 °C to 85 °C
Shock (half-sine wave):	500 G / 2 ms	
Vibration (sine wave):	5 G (5 - 500 Hz)	

Alta Solutions

AS-410 Machinery Dynamics Analyzer

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DATA VISUALIZATION

Plot Types:

Spectrum:	Magnitude, Phase, Real, Imaginery
Time:	Waveform, Orbit, Trend
Waterfall:	Cascade, Single, Spectragram, Profile, Order, Overall Amptiude
Transient:	Bode, Nyquist, Shaft Centerline
Transfer Function:	Magnitude, Phase, Coherence Real, Imaginery
Cursor:	Select Data with Mouse and Keyboard Tracking Cursor (Spectrum) Numerical Cursor Readout Multi-Plot Cursor Locking
Data Markers:	Peak, Harmonic, Sideband, Order, Delta Time, Delta Frequency,

ANALYSIS CRITERIA

Spectrum:	Overall Amplitude Spectrum Window, Order Window Spectrum Envelope, Energy Band, Order Band Phase, Order Phase Total Harmonic Distortion
Time:	Time Level Threshold, Overall Amplitude (peak to peak), Time Envelope, Pulse Width, Time Trigger, Time Crossings Crest Factor, K Factor, Form Factor,
Statistical:	Mean, Standard Deviation (sigma) Skew, Kurtosis
Modal:	Damping (Q), Resonant Frequency Transfer Function Window TF Magnitude, TF Phase
Other:	Hilbert Envelope, Speed, Delta RPM Sound Pressure Level (SPL)

DIGITAL RECORDER SPECIFICATIONS

Storage:	Up to 600 MB per recording
Speed:	Data streaming (all channels)
Controls:	Playback, Pause, Step Forward, Step Backward, Slider Position
Playback Speed:	1/4x to 4x speed
Triggering:	Manual or On Event
Pre-Trigger Samples:	400,000 per channel

ANALYSIS PARAMETERS

Data Analysis:	Live, Average, Waterfall
Math Operations:	Integration and Differentiation
Spectral Resolution:	100, 200, 400, 800, 1600, and 3200 lines
Window Functions:	Rectangular, Hamming, Hanning, Blackman-Harris, Flat-top
Overlap Processing:	0%, 25%, 50%, 75%, and 90%
Data Triggering:	Freerun, Channel, Delta RPM
Trending:	Any analog or process variable

AVERAGER SPECIFICATIONS

Types:	Linear or Exponential
Spectral Resolution:	100, 200, 400, 800, 1600, 3200 lines
Window Functions:	Rectangular, Hamming, Hanning, Blackman-Harris, Flat-top
Ensembles:	1 to 1000
Overlap Processing:	0%, 25%, 50%, 75%, and 90%
Triggering:	Freerun, Channel, Delta RPM
Stop Condition:	When Full, Continuous

WATERFALL SPECIFICATIONS

Storage:	Time, Spectrum, Synthetic Tachometer
Spectral Resolution:	100, 200, 400, 800, 1600, 3200 lines
Window Functions:	Rectangular, Hamming, Hanning, Blackman-Harris, Flat-top
Records:	10 to 1000
Overlap Processing:	0%, 25%, 50%, 75%, and 90%
Triggering:	Freerun, Channel, Delta RPM
Stop Condition:	When Full, Continuous

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