



Frank Bacon Machinery Sales Co.

4433 East Eight Mile Road

Warren, MI 48091

586-756-4280 www.frankbacon.com Email: sales@frankbacon.com

MI-5204	<p>Econ Shock Measurement Analyzer System with Four Analog Inputs, Transient Capture & Analysis Software</p> <p>Shock Measurement Analyzer</p> <p>4 voltage/IEPE analog input channels with 24-bit ADC and built-in IEPE constant power supply in each channel; 192 KHz synchronized sampling rate; 1 voltage analog output channel with 24-bit DAC; 32-bit floating DSP processing; Steel/aluminum case with shock guards with USB2.0 Connectivity and grounding terminal port; CE Compliance;</p> <p>Includes:</p> <p>Shock Data Capture, Shock Pulse Analysis, Offline Mode Shock Data Analysis, Self Calibration Software for MI-5204 Hardware with Permanent License</p>
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Guarantee:

Unless otherwise specified, every machine is offered with the standard **MDNA** (*MACHINERY DEALERS NATIONAL ASSOCIATION*) Return privilege to ensure your complete satisfaction. If the machine is un-satisfactory it may be returned to our warehouse, freight prepaid and in the original condition within 30 Days of shipment for a full refund less the cost of SPECIALIZED EQUIPMENT, NEW ITEMS AND RE-CERTIFICATION COSTS, When applicable. Care is taken to provide accurate specifications. However, Critical areas should be verified by Inspection.

MDNA | AMDA | MMA | ASTM | SAE | ASM

ECON

AVANT *series*

Shock Measurement Analyzer

Technical Specifications



Econ Technologies Co., Ltd.

Overview

AVANT series Shock Analyzer is a powerful and tailored instrument for shock events transient capture and analysis. AVANT can meet rigorous criteria in measuring and it is suitable for shock, drop and other kind of impact events. It is generally associated with shock testing machine, shock response spectrum testing machine and packaging drop test machine that used in conjunction to complete shock test or package drop test. It can meet GB, GJB, ISO, MIL-STD-810 and other testing standards. It is the professional tools of shock environmental testing and measurement analysis.

Features

- ✧ Compatible with ISO, MIL-STD-810 and user-defined standards
- ✧ Sampling rate up to 1MHz, acceleration range up to 100,000gn
- ✧ Powerful functions, include: shock measurement and analysis, shock response spectrum, damaged boundary testing, shock data recording and playback, tolerance analysis and Pass / Fail parity, with high and low pass filtering function
- ✧ Other functions: deformation analysis, time domain Shock Response calculation, FFT analysis
- ✧ Channel can directly connect Voltage, IEPE, charge, TEDS sensors
- ✧ USB 2.0 interface for easy connection with PC
- ✧ Automatic generation of professional test reports WORD or PDF format, and the report can also be printed directly

Applications

- ✧ Classic shock wave transient capturing and analysis, for example: half-sine, trapezoidal wave, sawtooth wave after the peak measurement and analysis
- ✧ Shock response spectrum analysis has a dedicated function for shock response spectrum testing analysis, as well as for any wave-shaped shock response spectrum analysis
- ✧ Pulse waveform recording and playback, enable pulse waveforms record, playback, and analyze offline
- ✧ Tolerance Analysis and Pass / Fail check, software interface real-time display of tolerance curve situation
- ✧ Referenced ASTM D3332-99 standard damaged boundary test function, used to find products critical speed change and the critical acceleration, to determine the product's shock friability, ultimately to avoid the products damaged in the long-distance transportation

System Specifications

Model	MI-5202 (Universal)	MI-5204/MI-5208 (Universal)	MI-5104/MI-5108 (High-impact)
Input Channel			
Input Channel	2 voltage input channels 2 electric charge input channels	4/8 voltage input channels	
Sampling Frequency	Up to 192kHz		Up to 1MHz
Voltage Range	±10 V _{PEAK}		
Coupling	AC, DC, IEPE(Internal IEPE Constant current source), TEDS, Electric charge	AC, DC, IEPE(Internal IEPE Constant current source)	AC, DC, IEPE(Internal IEPE Constant current source), TEDS
ADC Resolution	24-bit		16-bit
Pulse Width	Narrow to 0. 1ms		Narrow to 0. 02ms
Acceleration Range	Up to 100,000gn		
Dynamic Range	>110dB		>80dB
Harmonic Distortion	<-95dB		<-85dB
SNR	>95dB		>70dB
Width Precision	1%		
External Trigger	Support		
Output Channel			
Output Channel	1 voltage output channel, Only for instrument self-calibration		
Voltage Range	±10 V _{PEAK}		
Mechanical Dimensions			
Dimension (mm)	335x255x71		
Weight (kg)	About 2.8		
Electrical Parameters			
Power Supply	AC 88~264V		
Connectivity	USB2.0		
Operating System	Microsoft Windows XP/7		
Environmental Parameters			
Temperature	41 to 113 °F / -10 to 50 °C		
Humidity	20% to 90% RH non-condensing(40°C / 104°F)		

Measurement Applications

Main Applications

- Shock Measuring and Analysis
- SRS Analysis
- Damage Boundary

Other Options

- Playback Analysis
- Instrument Calibration
- Automatic Word or PDF Report Generation
- Data and File Management
- MATLAB Interface

Shock Measuring and Analysis

You can capture the shock pulses easily and simultaneously when shock or impact event happens. Besides time domain analysis, you can use shock response spectrum (SRS) to estimate the potential damage due to peak values on different natural frequencies in shock. ISO, MIL-STD-810 and user-defined criterions of tolerance are available.

Shock Measuring and Analysis (SMA) takes ideal time waveform as the standard, for example, ideal half-sine pulse, ideal saw tooth pulse and ideal trapezoidal pulse; it is used for shock equipment which can generate ideal pulse and require the pulse measured from UUT on the table of shock equipment to be in the tolerance band of the ideal pulse according to the test standard.

Detailed specifications are given below.

Other Analysis

SRS analysis, SR demo, rotation shock analysis, force & distortion analysis

Test Types

Based on classical shock; contains shock test and Impact test

Transient Capture

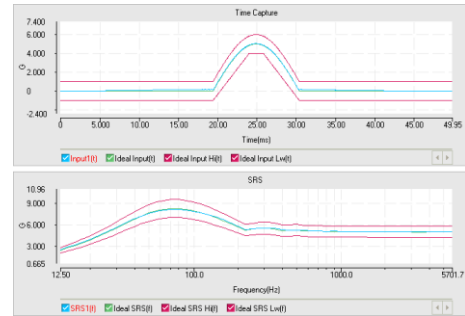
Sampling frequency Up to 192kHz(MI-52)
Up to 1MHz(MI-51)
Acceleration range Up to 100,000gn
Pulse duration 0.1 to 1000ms(MI-52)
0.02 to 1000ms(MI-51)
Sampling time 1, 2, 5, 10, 20, 50, 100, 200, 500, 1,000,
2000, 4000, 7000, 10000, 13000, 16000,
20000ms(MI-52)
0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200,
500, 1,000, 2000, 4000, 7000, 10000, 13000,
16000, 20000ms(MI-51)
Direction positive, reverse

Ideal waveform

Waveform Half-sine, trapezoid, terminal peak saw tooth
Standard GB, GJB, ISO, MIL810, User defined
Tolerance According to each standard
Auto-match the acquired data matches ideal waveform
Comparison compare acquired data with ideal waveform

RRS

SRS type Primary, Residual, Composite
Resolution 1/1, 1/2, 1/3, 1/6, 1/12, 1/24 octave analysis
Parameters Damp coefficients and Q,
lower/upper/reference frequency
SRS definition Calculate SRS automatically from
ideal waveform or set RRS manually,
and the tolerance can be set
Comparison compare measured SRS with RRS



Transient Capture and SRS analysis

Filtering

Filters

Low-pass and high-pass filters
Set different filters for each channel
Set cutoff frequency or filter rate
Enable or disable

Low-pass filters

High-pass filters

Triggering

Source

Input channel (Auto Trigger Every Frame)
no trigger(Free Run)
Exterior DIO
Positive, negative or bi-polar
1 to 99% of ideal waveform
Pre-trigger or post-trigger
Enable or disable
Enable or disable

Slopes

Level

Trigger mode

Remove DC

Remove noise

Measurement Controls

Controls

Status displays

Data saving

Save modes

Save contents

Signal file formats

Data export

Data recording

Playback

Test Report

Content

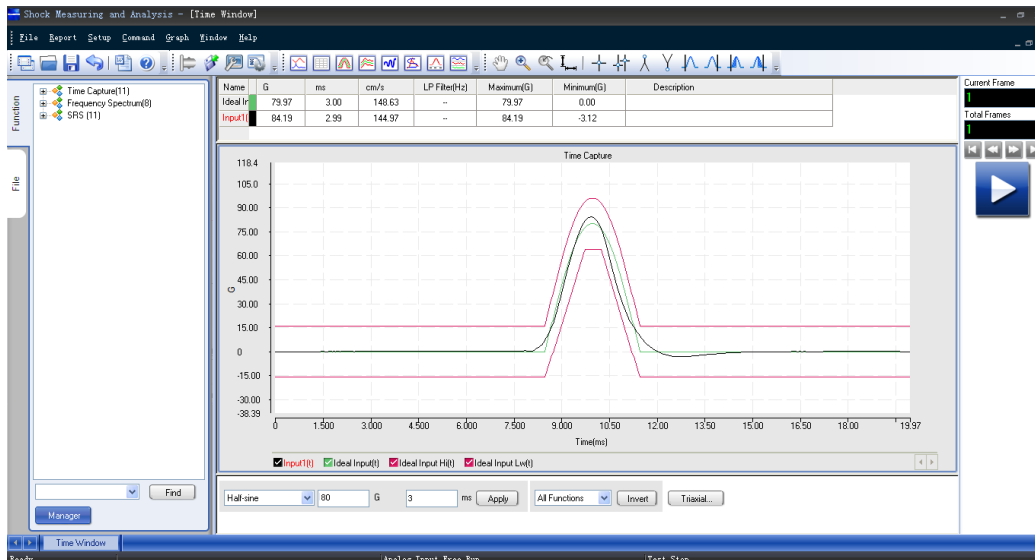
Report template

Report Format

Start/stop
Running time, frames, running status

On-line save and auto save
Signals and panes
ECON binary/ASCII, txt or UFF binary/ASCII
Excel, MATLAB
Used for offline analysis
Replay shock waves manually

Customized, contains parameters, panes etc.
Customized
Word, PDF or print



SRS

You can capture the shock pulses easily and simultaneously when shock or impact event happens. Besides time domain analysis, you can use Shock Response Spectrum (SRS) to estimate the potential damage due to peak values on different natural frequencies in shock.

SRS takes reference SRS as the standard; it is used for shock equipment that can generate pulse according to the reference SRS and requires the SRS measured from UUT on the table of shock equipment to be in the tolerance band of the reference SRS. Detailed specifications are given below.

Other Analysis

SR demo, rotation shock analysis, force & distortion analysis

SRS Profile

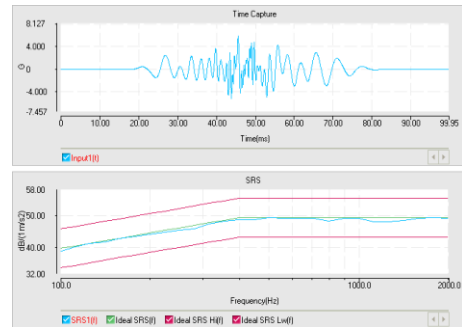
SRS type Composite SRS
 Resolution 1/1,1/2,1/3,1/6,1/12,1/24 octave analysis
 Parameters Damp coefficients and Q, lower/upper frequency
 Profile definition setup frequency, amplitude, lower/upper tolerance of breakpoints with unlimited in the profile table
 Comparison compare measured SRS with SRS profile

Transient Capture

Sampling frequency Up to 192kHz(MI-52)
 Up to 1MHz(MI-51)
 Acceleration range Up to 100,000gn
 Sampling time Customized, limited by SRS profile
 Sampling number Customized
 Direction positive, reverse

Filtering

Filters Low-pass and high-pass filters
 Set different filters for each channel
 Set cutoff frequency or filter rate
 Low-pass filters Enable or disable
 High-pass filters



Transient Capture and SRS analysis

Triggering

Source Input channel (Auto Trigger Every Frame)
 no trigger(Free Run)
 Slopes Bi-polar
 Level Acceleration level
 Trigger mode Pre-trigger or post-trigger
 Remove DC Enable or disable

Measurement Controls

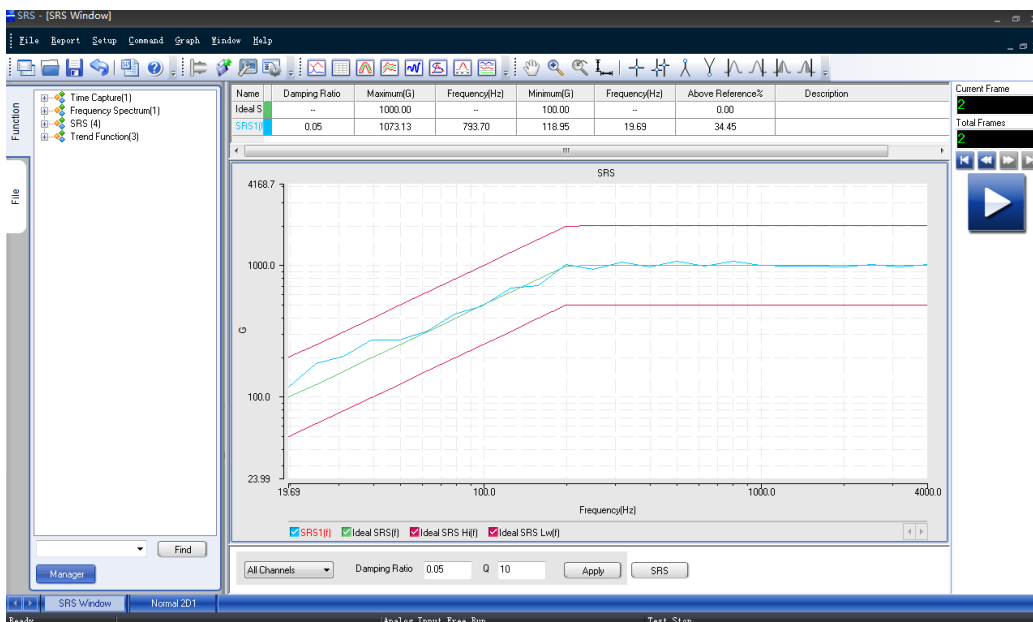
Controls Start/stop
 Status displays Running time, frames, running status

Data saving

Save modes On-line save and auto save
 Save contents Signals and panes
 Signal file formats ECON binary/ASCII, txt or UFF binary/ASCII
 Data export Excel, MATLAB
 Data recording Used for offline analysis
 Playback Replay shock waves manually

Test Report

Content Customized, contains parameters, panes etc.
 Report template Customized
 Report Format Word, PDF or Print



Damage Boundary

Damage Boundary test refers to ASTM D3332-99 standard and the program test critical velocity change shock and critical acceleration shock to determine the damage boundary of the products. Damage Boundary test can determine the shock fragility of the products. This fragility information may be used in designing shipping containers for transporting products and improving product ruggedness. Detailed specifications are given below.

Other Analysis

SRS analysis, SR demo, rotation shock analysis, force & distortion analysis

Transient Capture

Sampling frequency Up to 192kHz(MI-52)
Up to 1MHz(MI-51)
Acceleration range Up to 100,000gn
Sampling time auto-match with test pulse of Critical Velocity Change shock test and Critical Acceleration shock test

Triggering

Source Input channel (Auto Trigger Every Frame)
no trigger(Free Run)
Slopes Bi-polar
Level 1 to 99% of test pulse of Critical Velocity Change shock test and Critical Acceleration shock test
Trigger mode Pre-trigger or post-trigger
Remove DC Enable or disable

SRS Analysis

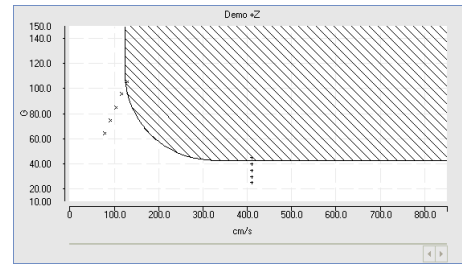
SRS type Primary, Residual, Composite
Resolution 1/1, 1/2, 1/3, 1/6, 1/12, 1/24 octave analysis
Parameters Damp coefficients

Damage Boundary

Test management New, Reset, Update
Damage Boundary Adjustable after the test ends

Critical Velocity Change

Test pulse Half-sine, trapezoid, saw tooth etc.
Pulse width Set accord with ASTM D3332-99 standard
Test program Setup the test starting and increment of Critical Velocity Change shock test
Vc calculation Setup the ratio of last shock



Damage Boundary

Critical Acceleration

Test pulse Half-sine, trapezoid, saw tooth etc.
Pulse width Set accord with ASTM D3332-99 standard
Test program Setup the test starting and increment of Critical Acceleration shock test
Setup the ratio of last shock

Ac calculation

Filtering

Filters Low-pass and high-pass filters
Set different filters for each channel
Low-pass filters Set cutoff frequency or filter rate
High-pass filters Enable or disable

Measurement Controls

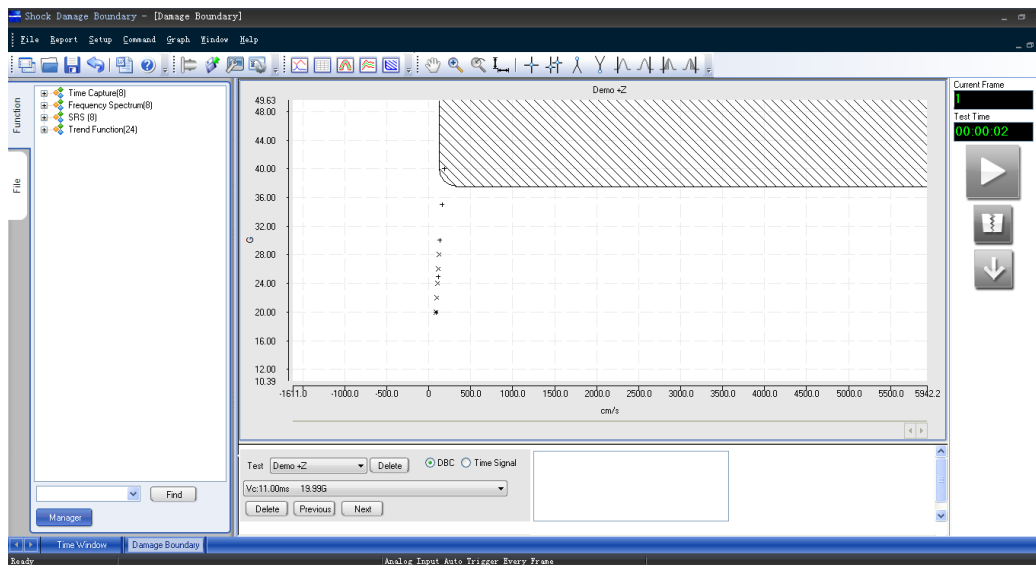
Controls Start/stop, next shock, damage
Status displays Running time, frames, running status

Data saving

Save modes On-line save and auto save
Save contents Signals and panes
Signal file formats ECON binary/ASCII, txt or UFF binary/ASCII
Data export Excel, MATLAB

Test Report

Content Customized, contains parameters, panes etc.
Report template Customized
Report Format Word, PDF or Print



Ordering Guide

AVANT Shock Measurement Analyzer Hardware

Item	Part No.	Description
1	MI-5104	4-chs High-G Shock Measurement Analyzer
2	MI-5108	Shock Measurement Analyzer 8 voltage/IEPE/TEDS analog input channels
3	MI-5202	Shock Measurement Analyzer 2 voltage/IEPE/TEDS/CHARGE analog input channels
4	MI-5204	Shock Measurement Analyzer 4 voltage/IEPE/TEDS analog input channels
5	MI-5208	Shock Measurement Analyzer 8 voltage/IEPE/TEDS analog input channels
6	MI-50EX01	Rechargeable lithium Battery
7	ACC-7000	Accessories

AVANT Shock Measurement Analyzer Application Software

Item	Part No.	Description
1	7752	Shock Response Spectrum (SRS)
2	7753	Damage Boundary Curve
3	7754	Shock Data Playback And Offline Analysis
4	70CAL	Self-Calibration Software

About Us

Frank Bacon Machinery Sales Co.

Tel: 586-756-4280 Fax: 586-756-8009

Email: sales@frankbacon.com Website: www.frankbacon.com