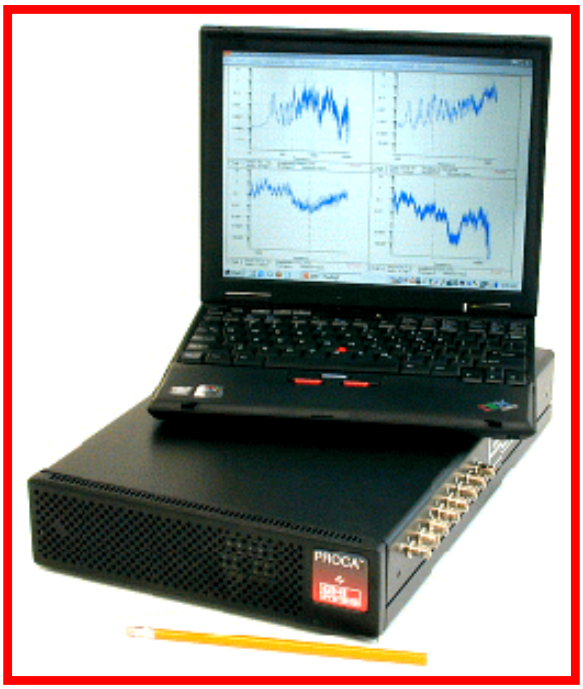
GHI SYSTEMS

The GHI ProCAT Analyzer



Portable Version, Optional Notebook Shown.

- Available in both Portable and Desktop Versions.
- 8 channels with Signal Conditioning.
- Tailored for 6DOF Chamber Monitoring. No Un-Needed Baggage.
- Highest Resolutions Available: 0.75 Hz Line width, 12,500 Line FFTs.
  1.54 Hz Line width, 12,500 Line PSDs.
  See Vibration Details Missed by Others.
- Complete Suite of Analytical Functions: FFTs, Averaged FFTs, PSDs, Transfer Functions w/Coherence, Waterfall Plots, Damage Potential Spectrum (Comparative Fatigue Accumulation vs Time).
- Single and Quad Spectrum Plots with Selectable Frequency Bandwidths, Variable Zoom Expansion, Overlays of New and Historical Data. Provides Machine “Health” Tracking, Proof of Test Duplication, etc.
- Flexible Acquisition Modes: Free Running, Single Capture, Streaming to Hard Disk, Post Recording Recall and Analysis, Streaming While Analyzing.
- Export Time Domain Files or Computed Spectrums in Engineering Units.
- Easiest Analyzer To Use, No Previous Training or Experience Needed.
- Increase Productivity of Your HALT and HASS Programs.

Options – Related Products

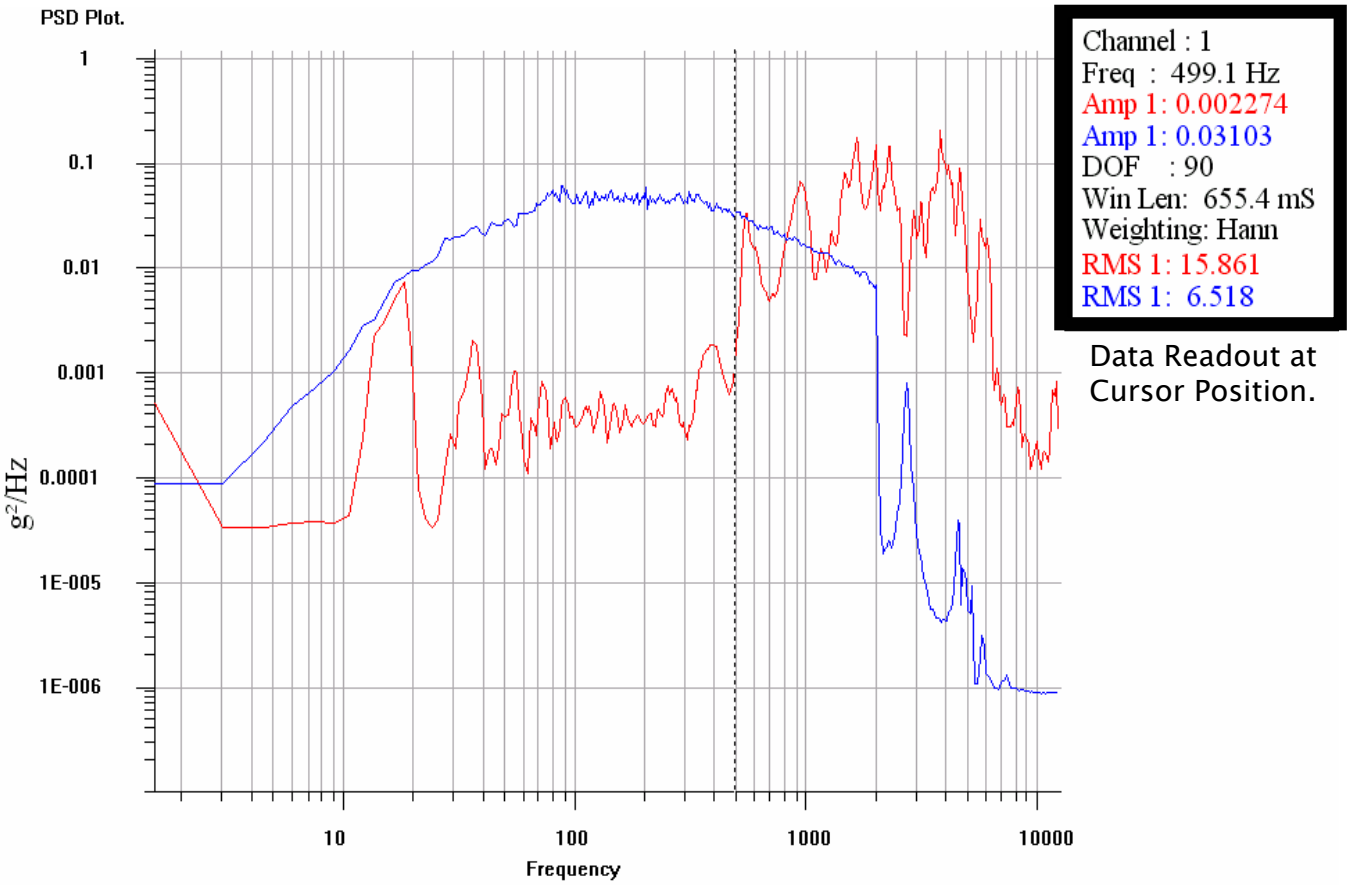
- Desktop Version Includes 1 PCI A/D Card, 1 PCI Signal Conditioning and Anti-Alias Filter Card, ProCAT S/W Auto Loader Disk, BNC Input Box, and Card Interconnection Cable.

- Portable Version Includes PCI Cards As Above, In 110-220 AC or Optional Battery Powered PCI Expansion Box, 8 BNC Inputs, PCI Bridge Card & Cable for Compatible Notebook PC.

PCI Card & Software Set For Desktop PCs.

Typical Overlaid Spectral Plot From GHI ProCAT

Example Shows Electro Dynamic NAVMAT & 6DOF Machine PSDs on Same Grid.

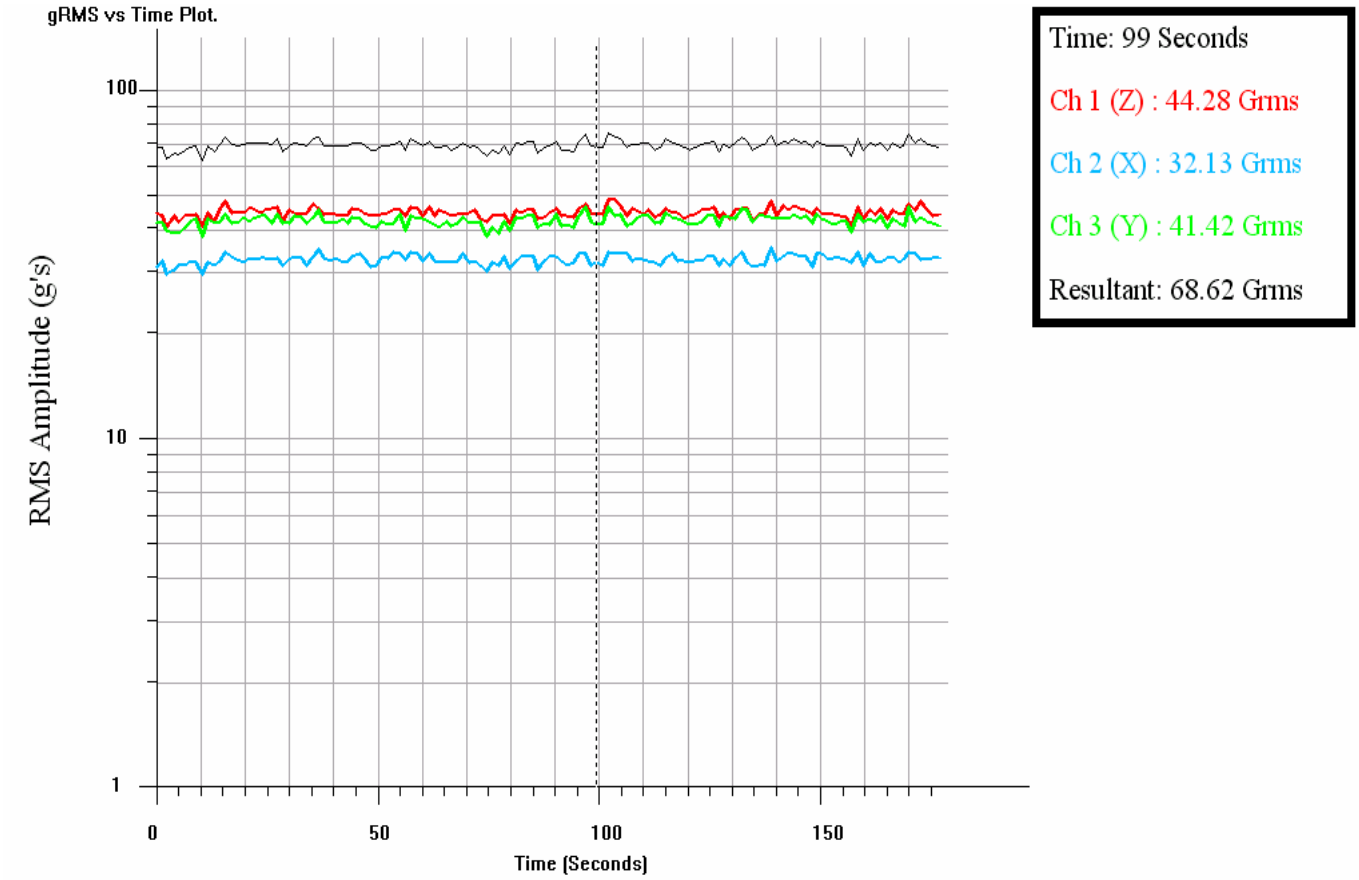


Data Readout at Cursor Position.

Triax Resultant Grms

The GHI ProCAT has the ability to save and recall long strings of raw data from both single or multiple channel accelerometers. For example: any of eight channels of vibration data can be captured for up to 10 minutes or more. This data can then be recalled and an analysis routine will solve for the resulting magnitude or root of the mean square sum from the three triax channels. This plot of Grms vs. Time for each of the three triax input channels plus the resultant can then be used to document true total Grms intensity of the applied stress. This is a truer estimate of total Grms power provided by the three linear degrees of freedom of the 6DOF machine than the single channel reading given by controllers or other analyzers.

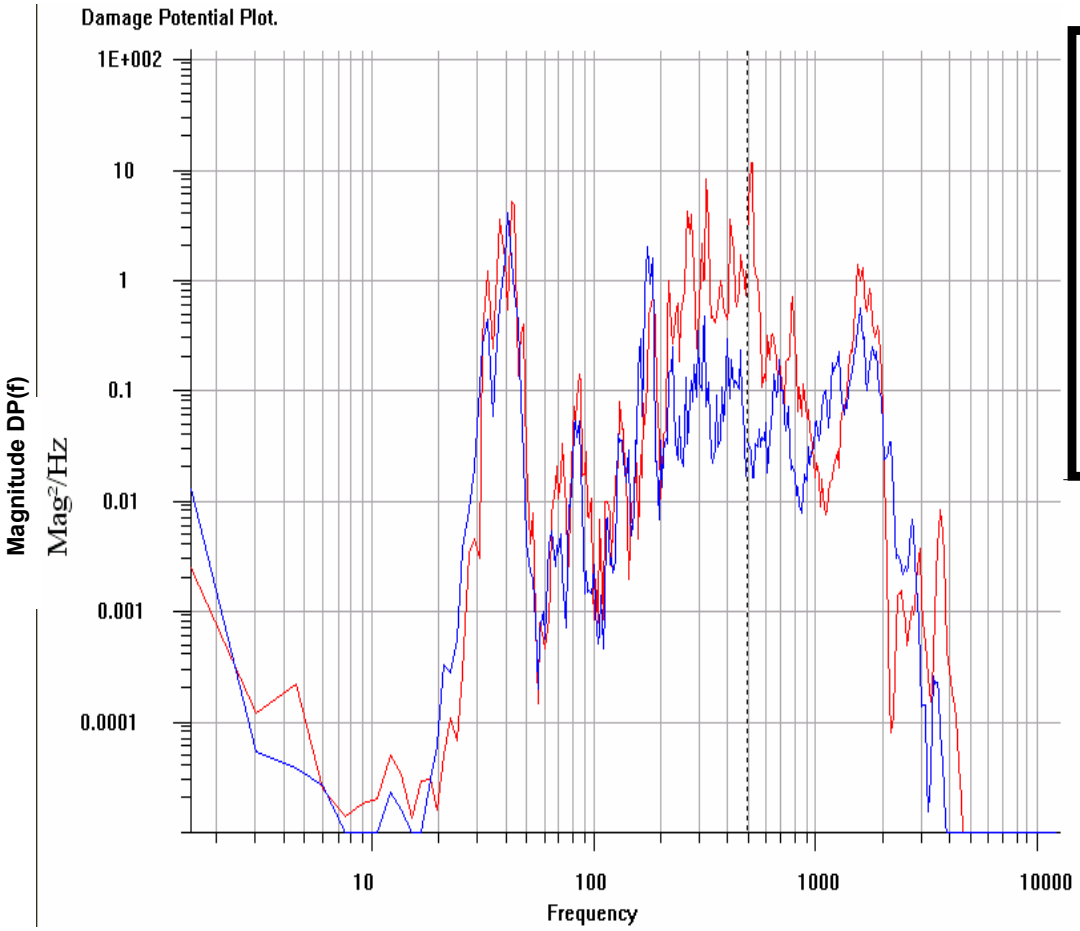
Example below shows triax channels and their resultant magnitude from a 6DOF machine. It can be seen that the resultant Grms is much greater than any of the three triaxial directions on the table. This should be taken into consideration during screens, since true Grms is not equal to indicated Grms.



Fatigue Damage Potential

An important feature of the GHI ProCAT is its ability to measure fatigue damage potential. The GHI Damage Potential Spectrum, DP(f), determines the relative fatigue accumulation at various resonance frequencies when a product is subjected to a broadband excitation. It does this by monitoring the power spectral density, PSD, of the excitation and converting this to a velocity spectrum. (Fatigue is related to the velocity of the first bending mode of a resonating member, not to its acceleration.) Once converted, fatigue modifiers are applied to this velocity spectrum. These modifiers are the component's damping ratio ζ, it's S/N fatigue rate β, and T, the duration of the excitation.

In the example below, fatigue DP(f) plots from two machines are overlaid. Machine #2 Indicates a higher fatigue over the frequencies of 200 Hz to 500 Hz than Machine #1. This overlaps the spectrum of most electronic parts. Machine #1 is lower over these frequencies and can be said to produce less fatigue per time of exposure than Machine #2. The exact relative ratios are read-out via cursor.



Channel	#2
Freq	= 499.1 Hz
Amp #2	= 4.37 DP(f)
Amp #1	= 0.04 DP(f)
DOF	= 0
WinLen	= 655.4 ms
Weighting	= Hann
DP(f) Avg	= 0.0369
DP(f) Avg	= 0.1788

The DP(f) of CH 1 is 109.25 times less than CH 2 fr.