HLS-01

Preliminary Data

The Worlds Standard of Measurement . . .
Blast, Construction, Structural
Vibration & Sound

Honglim Co., Ltd. introduces the HLS-01 seismograph and HLS-01 Vibration/Sound Analysis Tools software as the new standard in motion and sound measurement. Utilizing an entirely new architecture, the HLS-01 is designed to eliminate the inaccuracies associated with existing older seismograph designs. The HLS-01 system was created to measure, analyze, and document blast/construction/structural vibration and sound absolutely, easily and at a **very low cost**.

Design Concept Overview – The HLS-01 system is a data collection system that is designed to overcome the inherent weaknesses associated with traditional sampling seismographs. Honglim has created a new combined analog/digital concept that ensures that peak measurements are captured accurately, and are repeatable. All standard sampling seismographs have the same problem, repeatability. Specifically, when two seismographs are placed side by side in a field situation, the difference in the peak measurements can be as much as 100%, depending on the frequency at the peak. However, when placed on a shake table, seismographs will generally be within 5% of each other. The source of the problem is in two areas. The first is that the analog filters do not have a steep enough slope to eliminate high frequencies that should not be measured. The second is related to the nature of sampling. In general, a sampling seismograph measures the geophone output 1000 or 2000 times per second. That means that out of every 1000 microseconds, only about 5 microseconds are measured (10 microseconds if the sample rate is 2000 sps). The geophone is only measured 0.5% of the time (1% if the sample rate at 2000 sps). These are major sources of error.

Honglim has solved these problems using a unique combination of analog and digital electronics. The HLS-01 utilizes steep slope anti-aliasing filters to eliminate high frequencies that have no effect on structural damage. Secondly, Honglim's innovative analog/digital design allows the HLS-01 to provide 95% coverage (950 out of every 1000 microseconds). This provides an equivalent sampling rate of 190,000 samples per second, while maintaining low power operation, and keeping data storage to 1000 samples per second. This is truly an amazing feat! **Accuracy is not compromised.**

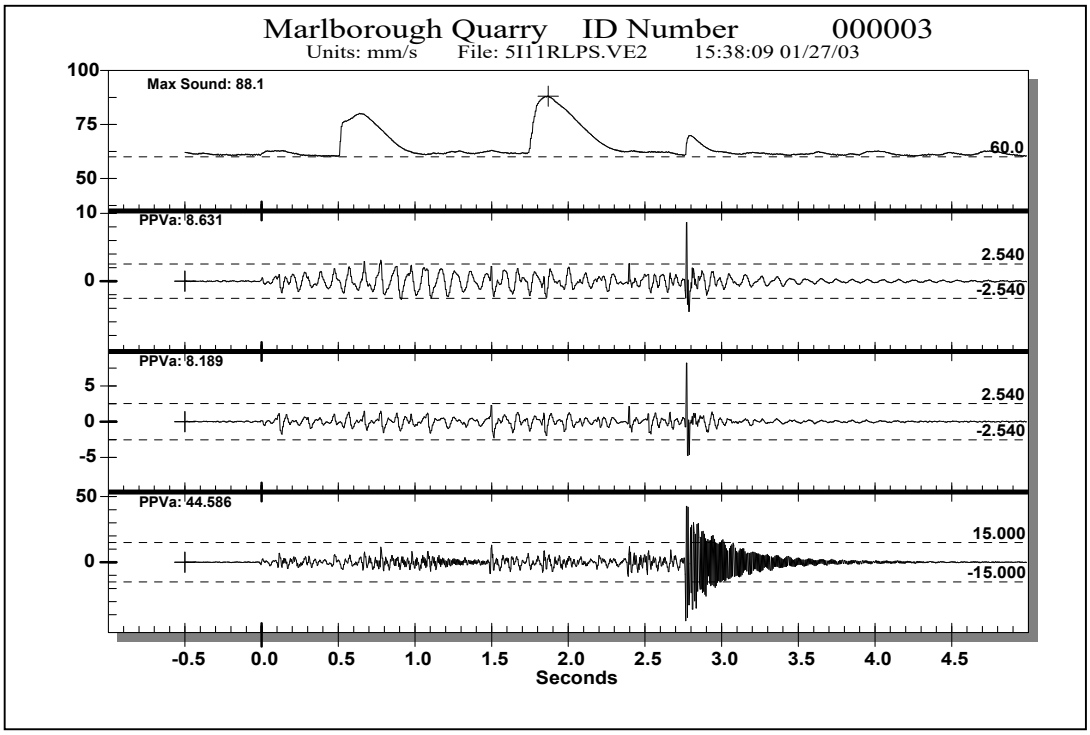
High Accuracy Vibration and Sound Measurement, at Low Cost - The HLS-01 system is designed to be highly accurate in the short and long term. The system architecture (Division of Data Collection & Analysis/Printing) ensures against obsolescence and reduces costs. By separating the data analysis from the instrument, software upgrades keep the system current, and on the leading edge of vibration analysis. Honglim is committed to continuous improvement. We therefore will provide **technical support and software upgrades at no charge!**

HONGLIM Co., Ltd.

World Standard in High Accuracy Vibration & Sound Measurement

Field Operations with a Field Tough Instrument - The HLS-01 system is particularly easy to operate, both in the field and in the office. About the size of a notebook computer, operation is simple and fast. The system can be configured for use on site, without having to carry a PC with you. Simply connect the geophone and microphone turn it on, and select monitor. The data is automatically stored in non-volatile memory with room for over 300 seconds of data. The HLS-01 is rugged enough so that it can go anywhere at anytime with few concerns. Shipping and field operations with a high accuracy instrument are no longer a worry. Geophone and microphone cables can be replaced in seconds.

HLS-01 Vibration Analysis Tools - Science in the Software - The included HLS-01 Vibration Analysis Tools software is a powerful suite of analytical tools for vibration and sound measurement in a fully integrated Windows™ based environment. It offers unmatched analysis of all motion and sound levels, yet is easily used by the engineering or non-technical staff. Analytical capabilities include time history zoom and expand with data measurement, comparison of data with respect to user imposed vibration limits, spectral analysis (FFT), and RMS vibration and sound level measurement (A-weighted, fast response). Of course, the HLS-01 software also prints standard reports on your office printer.



HLS-01 Specifications

Microprocessor: 8XC52 Family
Display: 4 Line by 20 Column Liquid Crystal
Keyboard: 1 X 4 Sealed Membrane
Communications: Serial RS232, 57600 Baud
Clock: Integrated Battery Backed Real Time Clock
Battery: 6 V, Rechargeable Lead Acid Cel, 200 Hrs per Charge
Battery Charger: Universal Voltage
Sensors: 3 Geophones (x,y,z Triaxial arrangement)
1 Condenser Microphone
A/D Converter: 13 Bit Self Calibrating
Anti-Aliasing Filters: (Velocity Channels)

Software Selectable Cutoff : 250 to 2500 Hz
Sample Storage Rate: 1024 SPS/Channel to 5000 Hz (Switchable)
Frequency Response: Velocity 3 to 250 Hz
Frequency Response: Mic. A-Weighted Fast Response 8 KHz
Type 2S True RMS Sound Level Measurement, or Linear 3 - 250
Range: Geophone +/-100mm/s, Mic: 50 to110db(A), 90 to 140dB (Linear)
Resolution: Vibration 0.02 mm/s, Mic: 0.1 dB
Repeatability: Vibration: +/-5% Impulsive Input, Sound: 1dB
Base Level Noise: 0.1 mm/s
Data Storage: Over 300 Events, 2MB memory standard
PC Requirements: Windows 9X, Windows 2000, Windows XP

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Global Standard For Accuracy in Measurement