

AVI-200S Inside An AEK-2002

HERZAN SOLUTIONS GUIDE FOR ATOMIC FORCE MICROSCOPY

OVERVIEW

Material science is advancing at an impressive rate, aided by breakthroughs in technology from atomic force microscopes (AFMs). Modern AFMs have the ability to understand nuanced features of materials on the nanoscale level. Maximizing the spatial resolution of AFMs requires the stability of the environment to be absolute.

Environmental stability is Herzan's speciality and has been so for over two decades. Delivering acoustic, vibration, and EMI isolation solutions for countless applications (especially AFMs), Herzan is prepared to partner with researchers worldwide and help the advancement of data acquisition.



AEK-2002 + TS-150 Supporting
An Asylum Research AFM

HERZAN SOLUTIONS

Solutions for Vibration Noise

- Modular Active Vibration Isolation Platforms
- Desktop Active Vibration Isolation Tables

Solutions for Acoustic Noise

- Desktop Acoustic Enclosures
- Workstation Acoustic Enclosures
- Acoustic Enclosure Upgrades

Solutions for Understanding Unknown Environmental Noise

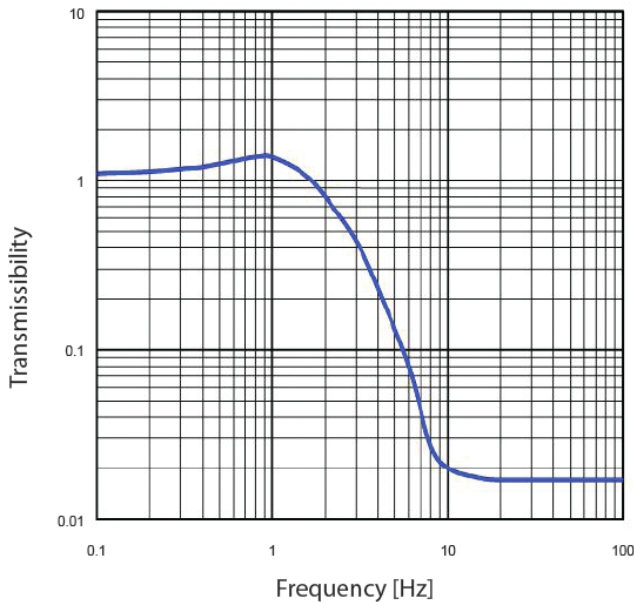
- Site Survey Analysis Tools
and Services





AVI-2005 Active Vibration Isolation Modules

TRANSMISSIBILITY



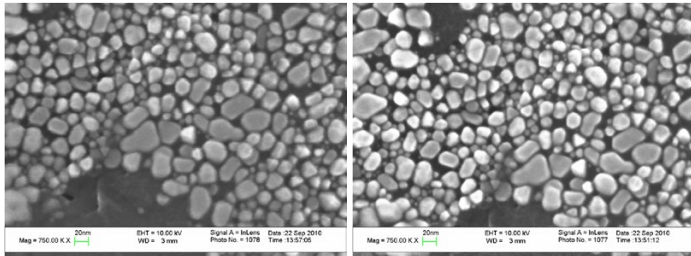
PROBLEM: Vibration Noise SOLUTION: Active Vibration Isolation Platforms (AVI Series)

The AVI Series is a modular, low-profile, active vibration isolation platform designed to support a wide range of AFM configurations and weight profiles. The underlying technology within the AVI Series consists of piezoelectric sensors, actuators, and control electronics, providing dynamic active vibration isolation using a constant feedback loop. Beginning vibration isolation at 0.5 Hz, the AVI Series delivers the best solution for AFMs needing to attenuate low-frequency vibration noise.

With a quick installation process and no persistent maintenance required, the AVI Series enables end users operating AFMs the opportunity to focus on their research and not their vibration isolation solution.

POPULAR UPGRADES:

- Top plate (i.e. aluminum, breadboard, etc.)
- LFS System
- Exciter box (turns platform into a shaker)
- And more!



Without AVI Platform

With AVI Platform



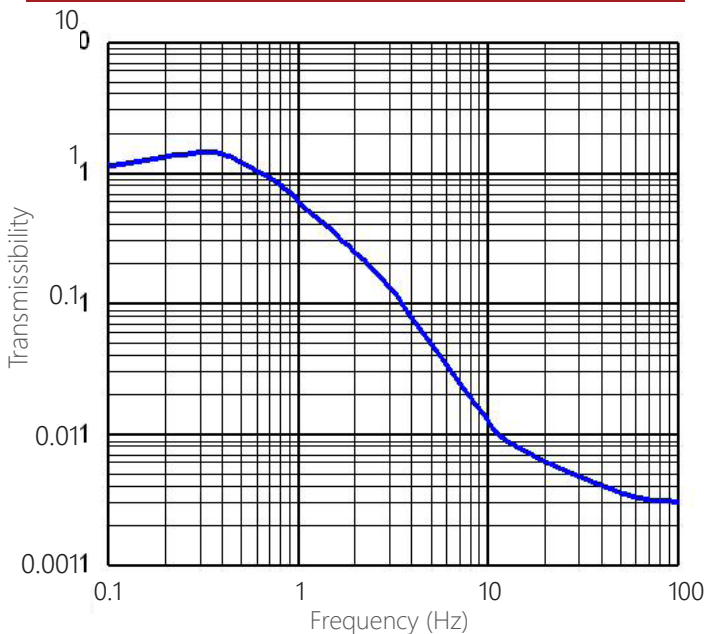
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TS-150 Active Vibration Isolation Table

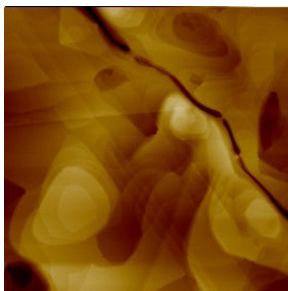
TRANSMISSIBILITY



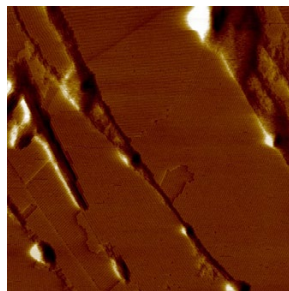
PROBLEM: Vibration Noise SOLUTION: Desktop Active Vibration Isolation Table (TS Series)

The TS Series is designed to provide maximum vibration isolation performance in a compact, easy-to-use form factor that suits the spatial needs of a modern laboratory. With features like automatic-leveling, LCD panel display, and diagnostic output for vibration monitoring, the TS Series delivers industry leading performance (active vibration isolation beginning at 0.7 Hz) as well as a premium user experience.

The inherent stiffness of the TS Series imparts excellent directional and positional stability, ensuring a stable and controlled measuring environment and the lowest noise floor possible for an AFM. The TS Series begins isolating vibrations at 0.7 Hz, delivering 90% reduction at 3.5 Hz, 99% reduction at 10 Hz, and 99.9% reduction at 20+ Hz.



Without TS Series Table



With TS Series Table

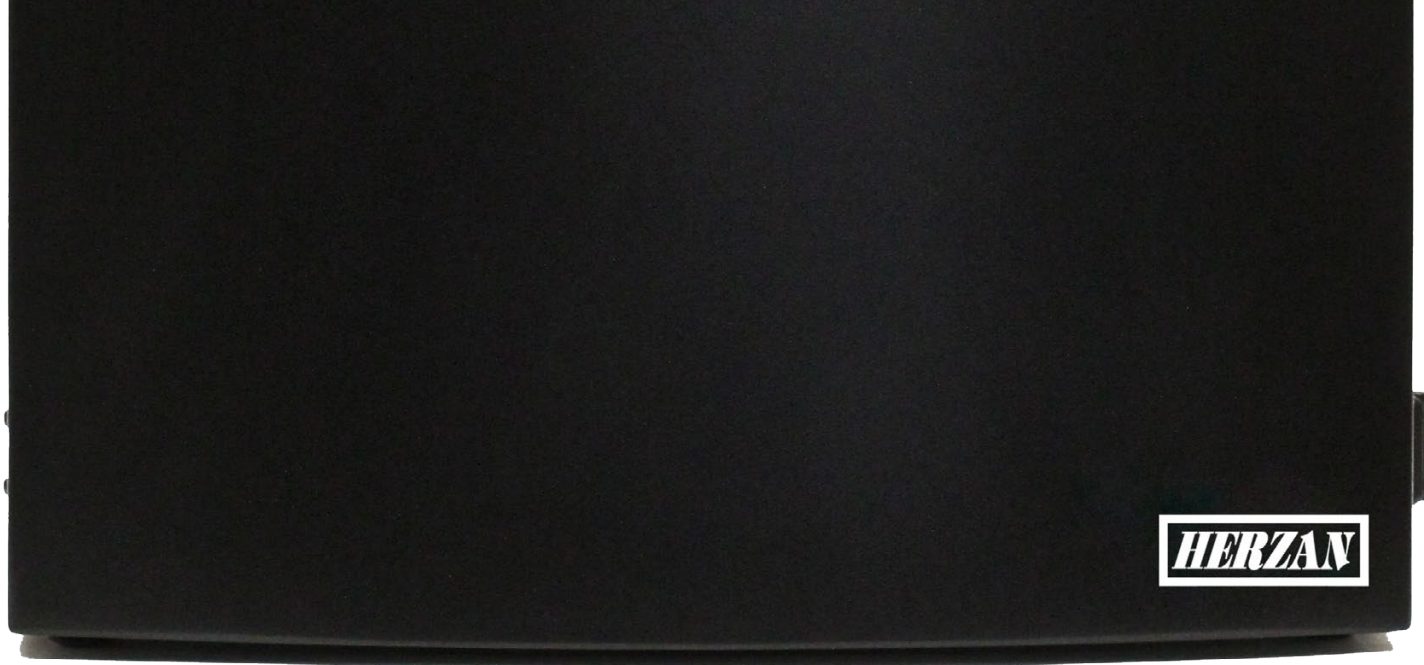
POPULAR UPGRADES:

- Exciter box (turns table into a shaker)
- Drilled/tapped top plate
- Remote power supply
- Remote display
- And more!



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Silencer Desktop Acoustic Enclosure

PROBLEM: Acoustic Noise
SOLUTION: Desktop Acoustic Enclosures

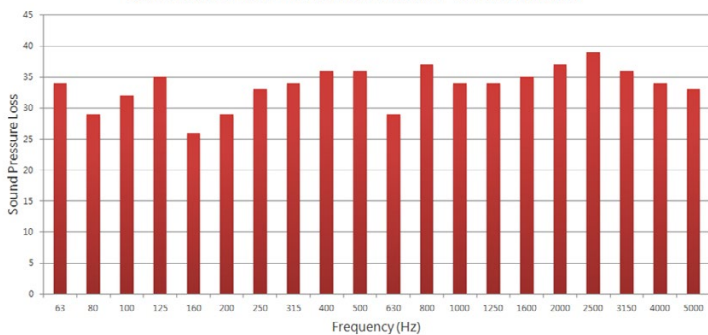
High resolution AFMs are inherently sensitive to acoustic noise due to the precise measurement method being performed. Acoustic noise distorts image quality, limiting the scope of research and delaying results from being achieved.

When acoustic noise is present and the lab space to operate an AFM is limited, the Silencer desktop acoustic enclosure becomes the perfect solution. The Silencer was designed to provide instrument manufacturers and end users the utility of receiving broadband acoustic isolation performance in a form factor fitting the needs of modern laboratories where available space is limited and expensive.

The Silencer combines the same high quality features known throughout all Herzan enclosures, delivering an incredible value for AFM users looking to receive broadband acoustic isolation.

ACOUSTIC ISOLATION PERFORMANCE

Sound Pressure Loss = dB without enclosure - dB with enclosure



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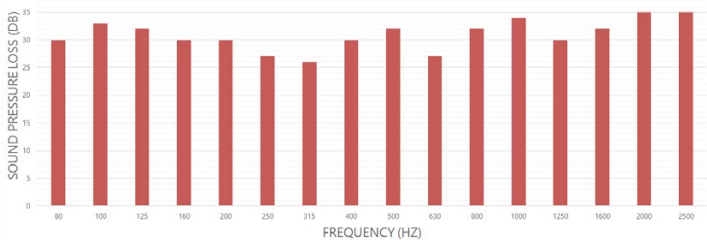
AEK-2011 Workstation Acoustic Enclosure

PROBLEM: Acoustic Noise **SOLUTION:** Workstation Acoustic Enclosures

Herzan acoustic enclosures have become the chosen solution for hundreds of AFMs and SPMs world wide, providing exceptional acoustic isolation in the noisiest environments. Whenever a high-precision microscope is bombarded with disruptive acoustic noise, researchers and instrument manufacturers alike can rely on Herzan's range of acoustic enclosures to help maximize their data quality through carefully selected and highly engineered acoustic control techniques.

When a customer is needing maximum acoustic isolation performance and prefers to operate at a standalone workstation, the AEK-2002, NanoVault, and AEK-2011, are the perfect solution. Not only do they provide broadband acoustic attenuation, they are designed specifically to maximize the utility of any acoustically sensitive instrument by shielding them from ambient acoustic noise.

ACOUSTIC ISOLATION PERFORMANCE



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PROBLEM: Unique Application Requirements

SOLUTION: Acoustic Enclosure Upgrades

AFMs require quiet and stable environments to maximize the quality of data retrieved with each scan. Vibration and acoustic noise are not the only sources of environmental interference affecting the quality of measured data, which is why Herzan enables all acoustic enclosures to include upgrade features benefiting performance, usability, environmental control, and more.

This comprehensive approach to protecting AFMs from the ambient environmental conditions is why Herzan is the chosen partner for many of the top AFM manufacturers in the world.



Internal Shelving



Temperature Stability Feature

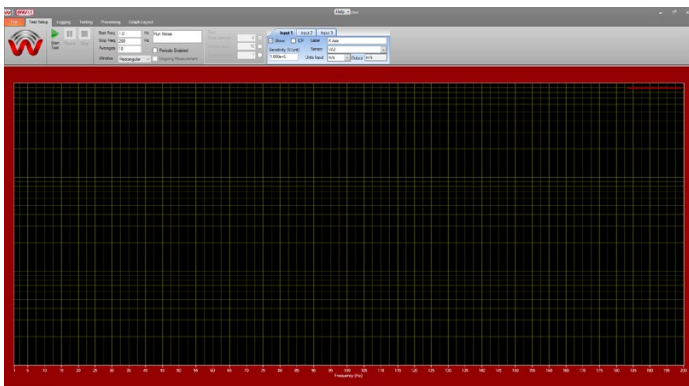
POPULAR UPGRADES:

- Integrated vibration isolation systems
- Temperature stability
- Internal/external shelving
- Performance boost
- NanoDamp frame
- And many more!



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Refreshed WaveCatcher Software Interface



Breakdown of a WaveCatcher Kit (WaveCatcher-E visualized)

PROBLEM: Unknown Environment When Installing New AFM

SOLUTION: Site Survey Tools/Services

Site Survey Tools: The WaveCatcher is Herzan's compact and complete, mobile site analysis tool that can measure all forms of environmental noise (acoustic, vibration, and EMI) with a push of a button.

The WaveCatcher is the perfect solution for researchers interested in characterizing an environment prior to the installation of an AFM or during the planning stages of a lab.

Services: Herzan also utilizes the WaveCatcher to provide site survey analysis and reports for customers needing to understand their environment prior to the arrival of an AFM.

An environmental specialist from Herzan will visit a customer's site, perform extensive measurements, and submit a report with the collected data and recommendations to optimize the environmental conditions for their specific AFM



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