DAEIL SYSTEMS

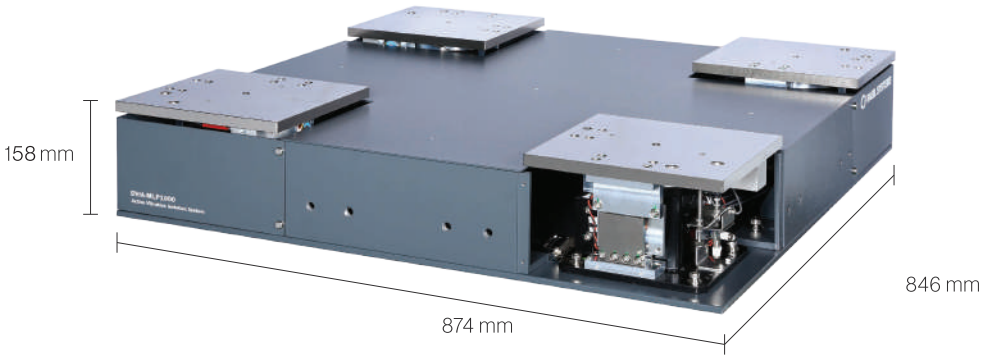
Active Vibration Isolation System

DVIA-MLP1000

DVIA-MLP1000

Custom active vibration isolation system for Thermo Fisher Scientific SEM.

The DVIA-MLP1000, a cutting-edge active vibration isolation system designed for Thermo Fisher Scientific Scanning Electron Microscopes (SEMs), prioritizes user comfort and convenience. Unlike previous models, which required the SEM to be lifted for installation, the DVIA-MLP1000 uses a side-push installation method, making it easier and less costly. Its low profile design maintains the SEM's ergonomic properties, ensuring user comfort. The system features advanced vibration control algorithms that isolate vibrations starting from 0.5 Hz and achieve 80 - 90% isolation at 1 Hz. The DVIA-MLP1000 ensures stability and precision for SEM nanoscale imaging, enhancing functionality and reliability.



Optimized platform dimensions for SEM.

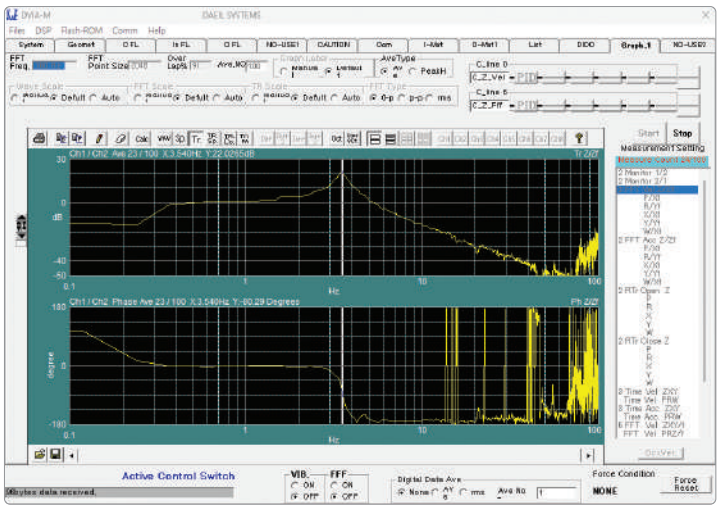
The DVIA-MLP1000, measuring 874 x 846 x 158 mm, is designed to fit perfectly with Thermo Fisher SEMs. Its low-profile design allows the microscope to sit directly on the system, resulting in a minimal overall height increase. This adaptability makes it ideal for the users in space-constrained environments and inside enclosures without modification while also maintaining the microscope's ergonomics for the users.

Perfect fit and ensured stability.

Four active vibration isolators are custom designed to securely bolt the base frame of the SEMs. Each of these isolators has a top plate with two through holes that match the caster holes on the base frame.

Casters for enhanced mobility.

Casters can be attached to four sides of the DVIA-MLP1000 platform, providing enhanced mobility and ease of movement. This design allows the platform to be easily maneuvered in various directions, facilitating transportation and positioning in different installation sites. The ability to attach casters on all sides ensures that the platform can be smoothly rolled across surfaces, reducing the effort required to move it.

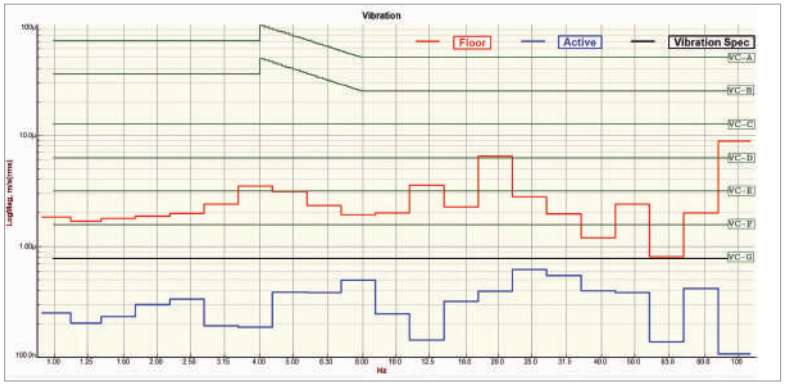


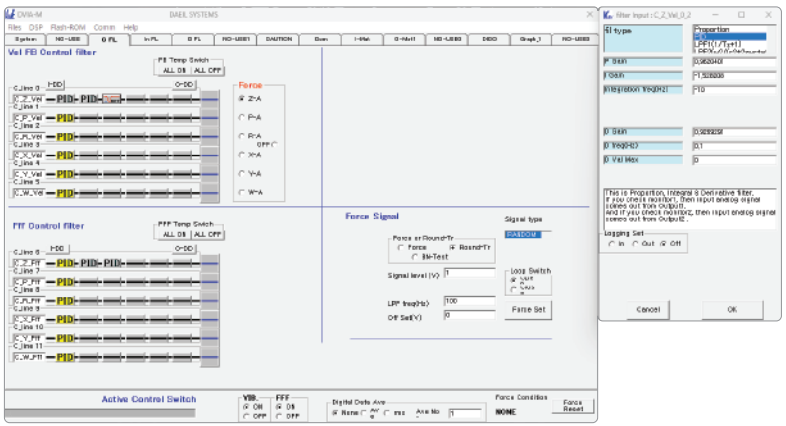
Pneumatic spring with the low resonant frequency. Better isolation performance below 5 Hz.

The DVIA-MLP series uses a pneumatic spring systems with a low resonant frequency below 5 Hz, improving vibration isolation performance at low frequencies.

The world's most advanced active vibration isolation system.

The DVIA-MLP1000 system incorporates eleven highly sensitive Geophone sensors with the excellent low frequency response starting at 0.3 Hz and eight electromagnetic actuators. These components are delicately designed to accurately measure and cancel out vibrations. This configuration combined with the advanced embedded feedback and feedforward algorithms, enables the system to meet the stringent vibration specification VC-G below 2 Hz.



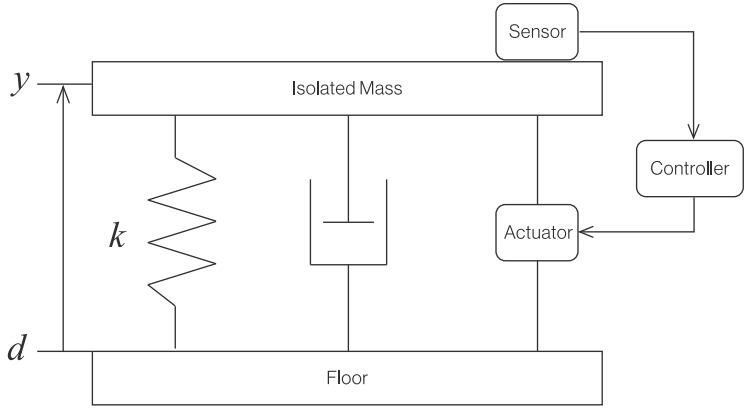


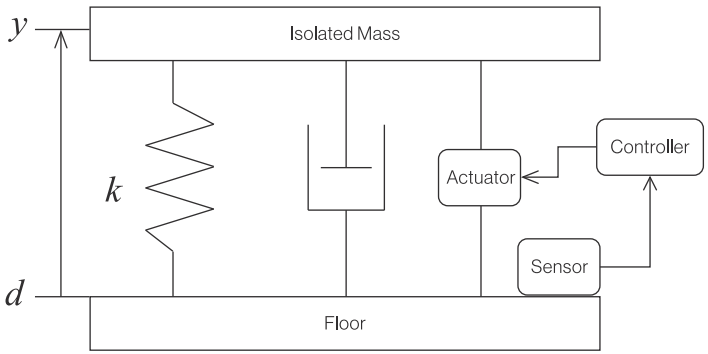
New Tuning Software.

The new tuning software of the DVIA-MLP1000 offers more filters and gains, improving vibration control. The number of filter slot has increased from 3 to 5, allowing for precise active isolation tuning. The new feedforward D gain and D frequency provide excellent stability for tuning below 10 Hz and can attenuate vibrations below 0.5 Hz. The tuning software provides the open-loop transfer function from 0.1 Hz, enabling accurate phase margin checks for superior low-frequency vibration isolation.

Feedback Control

The feedback control system constantly measures the isolated mass vibration and uses the electromagnetic actuators to create an equal and opposite force, attenuating vibration on the isolated mass. Although the isolation system works well out of the box, tuning the feedback loops optimizes the isolation performance by adjusting the gains based on the isolated mass and using the new, advanced notch filters to account for structural resonances or vibration sources.



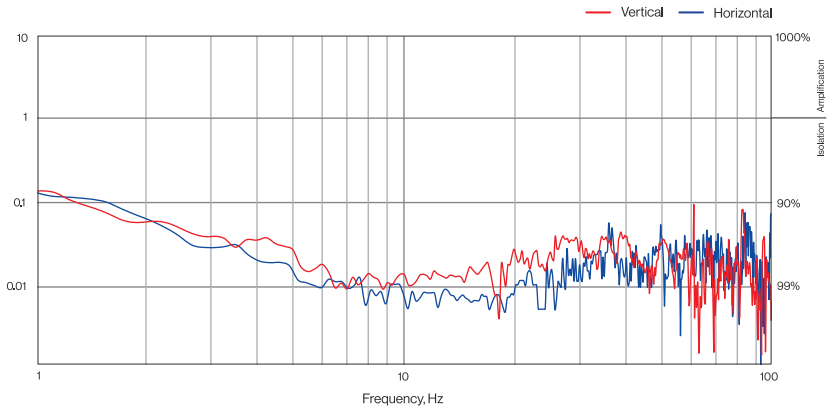


Feedforward Control

The feedforward control uses real-time ground sensor measurements to detect vibration and sends a signal to the actuators to cancel floor vibrations before they transmit to the isolated mass. The feedforward control dramatically improves the vibration isolation performance. With dynamic control, the feedforward system easily adapts to the changing vibration levels in facilities and does not require constant re-tuning to deliver the outstanding performance.

Performance

The DVIA-MLP1000 starts to isolate vibration from 0.5 Hz, providing 80 – 90% vibration isolation at 1 Hz.



Specifications

Model	DVIA-MLP1000
Dimensions	874 x 846 x 158 mm
Maximum Load Capacity	1700 kg
Vibration Isolation Technology	Feedback and Feedfoward Control
Degrees of Freedom	6 Degrees
Active Isolation Bandwidth	0.5 – 200 Hz
Vibration Isolation	80 – 90% at 1 Hz
Actuator	Electromagnetic Actuator
Maximum Actuator Force	Vertical 40 N, Horizontal 20 N
Vibration Sensor	Geophone, Sensitivity: 2.55 V/in/s (100.4 V/m/s) ± 10%
Leveling Repeatability	Repeatability: ± 0.1 mm
Controller	External
Environmental Protection Requirements	CE and TUV
Power Requirements	Line Voltage: 100 – 260V AC, Line Frequency: 50 /60 Hz
Air Requirements	Air Pressure: 4 – 6 bar, Air Delivery: 10 L/min
Environmental Requirements	Temperature: 5 – 50 °C, Humidity: 20 – 90 %

Compatible Thermo Fisher SEM Models

- Aquilos
- Apreo
- Hydra
- Quattro S
- Scios
- Prisma
- Helios 5
- Nova NanoSEM x50
- Teneo
- Verios 5
- Versa 3D
- Centrios

DAEIL SYSTEMS

We enable nanoscale imaging to make the world a better place.

Phone +82-31-339-3375

Email internationalsales@daeilsys.com

Website www.daeilsys.com