



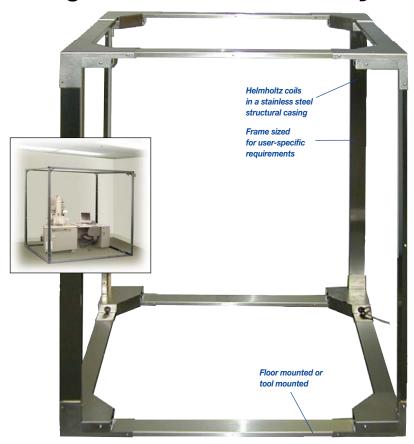
Magnetic Field Cancellation System



Mag-NetX[™] System with Helmholtz coils mounted on a Hitachi S-4700 scanning electron microscope column console.

Mag-NetX[™]

Magnetic Field Cancellation System



Features & Benefits

- Continuous field cancellation
- Continuous field monitoring
- Set and forget operation
- ► AC field cancellation
- Optional DC field cancellation
- ► 50x field improvement (typical)
- Dynamic, 100 μs response
- Accurate field measurement
- Interface for computer monitoring
- ► Feedforward compensation of line frequency and harmonics
- Feedforward capability for other inputs

Controller and sensor mounting/adjustment block assembly



Building upon our ability to use advanced control techniques to actively sense and cancel building floor vibrations, we now offer Mag-NetX $^{\bowtie}$, a product that actively compensates for magnetic field fluctuations.

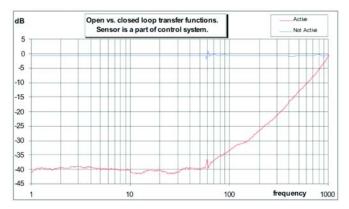
Designed both for point-of-use and OEM applications, Mag-NetX is ideal for scanning and transmission electron microscopes, electron beam lithography systems, ion beam instruments, and any tools that incorporate a charged beam. Combined with TMC's advanced vibration isolation systems, Mag-NetX provides the ultimate control of vibration and magnetic fields.





Photos courtesy of Drexel University. Mag-NetX^{**}
Systems protect Zeiss Supra VP 50 (left) and FEI
ESEM (right) scanning electron microscopes.

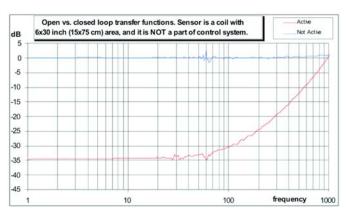
Quiet Work Surfaces for Precision Research & Manufacturing



Plot 1. Transfer function at the exact sensor location.

Excitation coil is not part of cancellation system.

Sensor is the magnetic flux gauge and it is part of cancellation system.



Plot 2. Transfer functions in the volume of 0.5 x 0.5 x 2.5 feet.

Excitation and sensor coils are NOT part of cancellation system.

Excitation coil positioned outside Helmholtz cage, sensor coil positioned near magnetic flux gauge and has dimensions of 0.5 x 2.5 feet.

GENERAL SPECIFICATIONS (may vary depending on configuration)

1.	SYSTEM COMPONENTS:	Up to 3-axes orthogonal magnetic	3.	EMC CONTROLLER:	3 channels for X, Y, Z cancellation
		sensor, EM Cancellation Controller,		1U standard case	
		Up to 6 orthogonal coils		Dimensions of controller:	19"-1U, 14.2" deep (48 x 4 x 36 cm)
2.	PERFORMANCE:			Operational modes:	After power-on: Automatic self test
	Active magnetic field cancellation axes	X, Y, Z		calibration and switch to controlled	
	Controlling volume vs. field flux density	60 m³ at 10 μT RMS		mode in 30-45 sec, no user	
		20 m³ at 50 μT RMS		involvement required.	
		(able to cancel Earth magnetic field)		Manual test/debug mode.	
	Max ambient DC field	∓ 100 μT max		Front panel controls:	
	Dynamic range	= 100 μT (60dB max)		"OK" LED indicator	Green - OK, Yellow - Warning/Error
	Field reduction ratio at sensor location	40dB [100 x] (typical)		LCD 2 x 20 symbols indicator	Show menu and status
		in 0.05 - 1000 Hz		Bar-LED indicators	Show X, Y, Z, real time field strength
		25dB [20 x] (typical) in 100 - 500 Hz		2 rocker switches	For menu access
		(See Plot 1)		BNC socket	For calibration/testing/debugging
	Field reduction ratio in a typical	33dB [30 x] (typical) in 0.5 - 100 Hz		Interfaces:	
	volume of Electronic Microscope	20dB [10 x] (typical) in 100 - 500 Hz		RS-232 socket	For external interface, accepts ASCII
	column: h x w x t = 2.5 x 0.5 x 0.5 feet	0 dB at 1000 Hz			commands
	(75 x 15 x 15 cm)	(See Plot 2)		GO - NO GO signal	Binary, for usage as input for protected
	Bandwidth	0.05 - 1000 Hz			system
	Noise threshold	0.1 nT/√Hz at 50-60 Hz		Power:	200 VA max
				Supply voltage:	90 - 240 VAC 50/60 Hz
				Internal line feedforward input (optional):	Cancels line frequency
					(50/60 Hz and Harmonics)
					allows increased loop gain for better
					suppression of other frequencies
				3 Auxiliary inputs:	Can be used as feedforward to cancel
					disturbances from moving objects
					(sample on X-Y stage, for example)

How to order:

Contact TMC. An Applications Engineer will configure a system for your unique requirements and provide a quotation.

TMC Products AT-A-GLANCE

Laboratory Tables & TableTop™ Platforms



63-500 SERIES High-Performance Lab Tables



63-500 SERIES with a SpaceSaver Accessory



63-600 SERIES ClassOne" Workstations



68-500 SERIES High-Capacity **Lab Tables**



20 SERIES Active Vibration **Isolation Tables**



64 SERIES TableTop™ Platforms



TableTop PZT Active Hard-Mou Top Isolator



66 SERIES TableTop[™] CSP[®] Pneumatic Vibration Isola Syste

Optical Tops, Breadboards, & Supports



CleanTop® II Optical Tops



770 SERIES CleanTop® II Optical Tops



790 SERIES ClassOne CleanTop II **Optical Tops**



710 SERIES Non-Magnetic CleanTop® II Optical Tops



78 SERIES CleanTop® II Breadboards 2 & 4 in. Thick (50, 100 mm)



77 SERIES CleanTop® II Breadboards 2 & 4 in. Thick (50, 100 mm)



75 SERIES Lightweight Breadboards 2 in. Thick (47 mm)



SYSTEM 1 4-Post Systems with Tiebars



SYSTEM 1 Free-Standing **Individual Posts**



Joined Tables

STACIS® Active Piezoelectric Vibration Cancellation System



STACIS® 2100 Active Piezoelectric
Vibration Cancellation System

Floor Platforms for Raised & Solid Floors



Ouiet Island® STACIS® 2100 Active Piezoelectric Vibration Cancellation System



FloorPlatform PZT" **Active Hard-Mount Vibration Cancellation System**

Magnetic Field Cancellation & Electric Field Shielding Systems



65 SERIES Floor Platforms

Electro-Damp[®] Active Vibration Cancellation System



Electro-Damp® PZT with Extended Stroke



Electro-Damp® II Active Pneumatic Vibration Damping



Electro-Damp® PLS **DSP Precision Leveling System**



PEPS® **Precision Electronic Positioning System**



PEPS-VX® Vibration Cancellation Add-On for PEPS®



AccuDock™ **Precision Kinematic** Docking System

Pneumatic Vibration Isolators for OEM Applications



Gimbal Piston™



Compact Sub-Hertz Pendulum Vibration **Isolation System**



MaxDamp[®] Vibration



Mag-NetX[®] Magneti System



Type II

Faraday Cages

Acoustic Enclosures & Precision Structures



83-500 Series **Multi-Purpose** Acquetic Enclos



Full Size "Walk-In" Acoustic Enclosures



Acoustic Enclosure &



Electropolished Stainless Steel Acoustic Enclosure With Integrated TMC Electro-Damp PIS



"T" Shaped Breadboards with Acoustic / Emi / Dust





