

*Quiet Work Surfaces for Precision Research & Manufacturing*



***NEW***

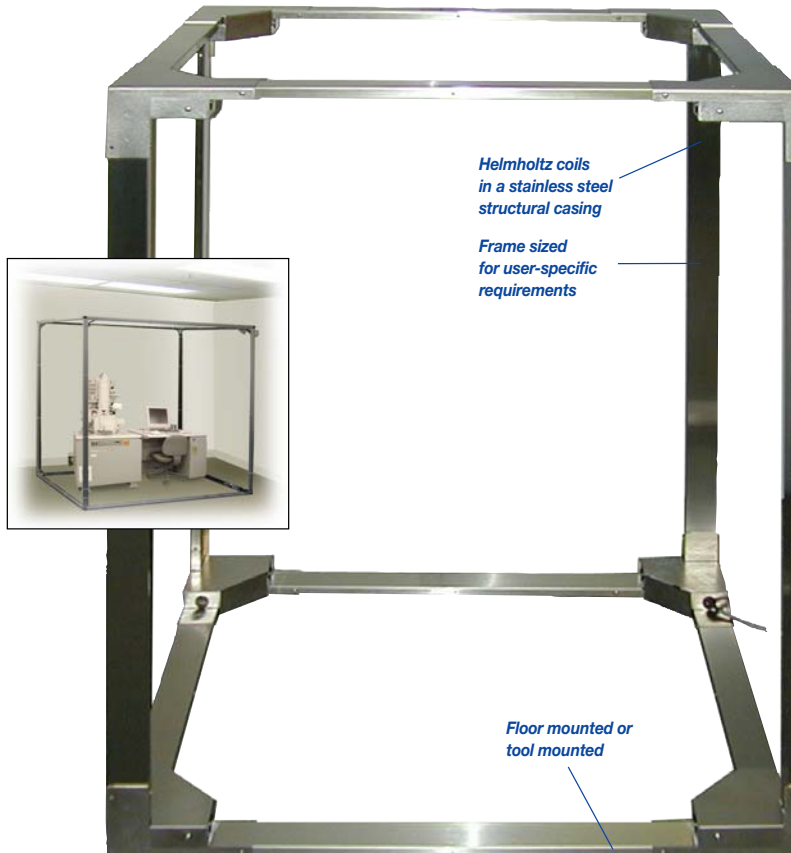
**Mag-NetX™**

**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  $\mu$ s 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



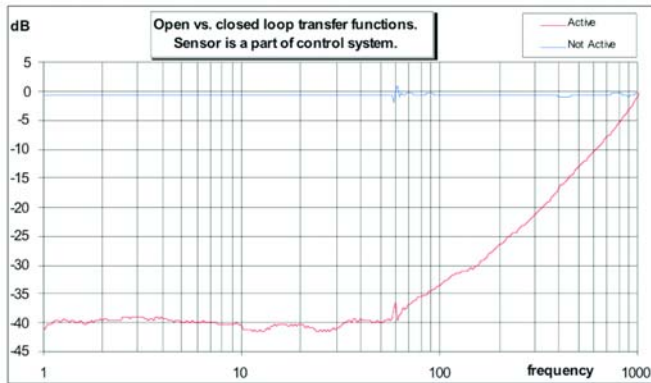
Building upon our ability to use advanced control techniques to actively sense and cancel building floor vibrations, we now offer Mag-NetX™, a product that actively compensates for magnetic field fluctuations.

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.

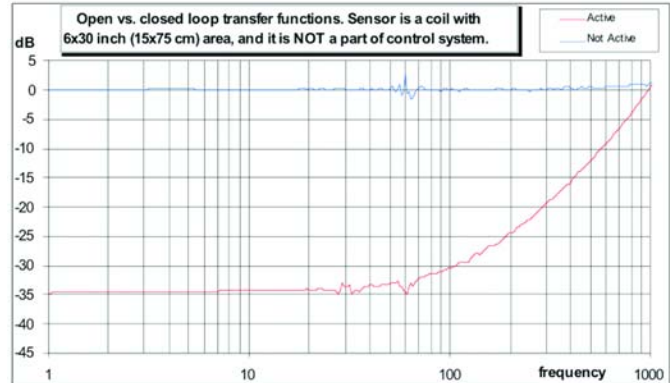


Photos courtesy of Drexel University. Mag-NetX™ Systems protect Zeiss Supra VP 50 (left) and FEI ESEM (right) scanning electron microscopes.

# 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)

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

## 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



## Optical Tops, Breadboards, & Supports



## STACIS® Active Piezoelectric Vibration Cancellation System



## Floor Platforms for Raised & Solid Floors



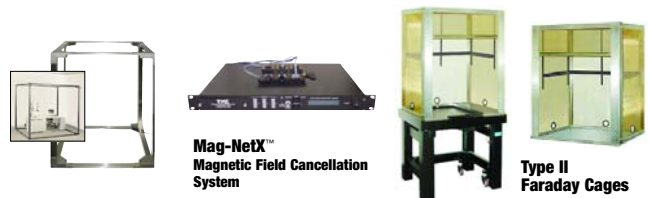
## Electro-Damp® Active Vibration Cancellation System



## Pneumatic Vibration Isolators for OEM Applications



## Magnetic Field Cancellation & Electric Field Shielding Systems



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