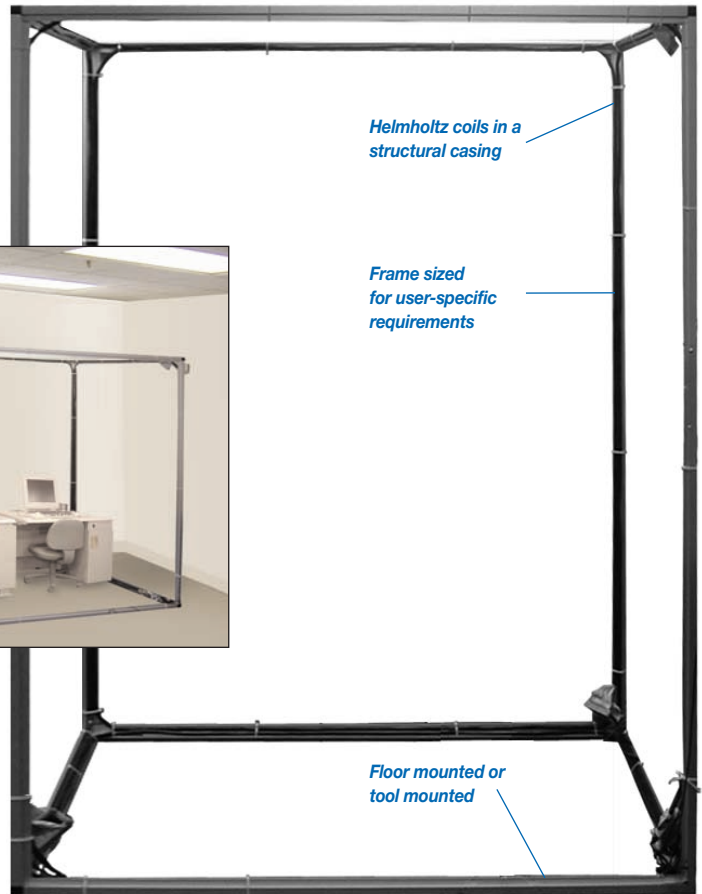


# Mag-NetX<sup>TM</sup>

## Magnetic Field Cancelling System

Technical Manufacturing Corporation (TMC), the world's leading designer and manufacturer of precision vibration isolation systems introduces Mag-NetX. Building upon our ability to use advanced control techniques to actively sense and cancel building floor vibrations, we now offer 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.



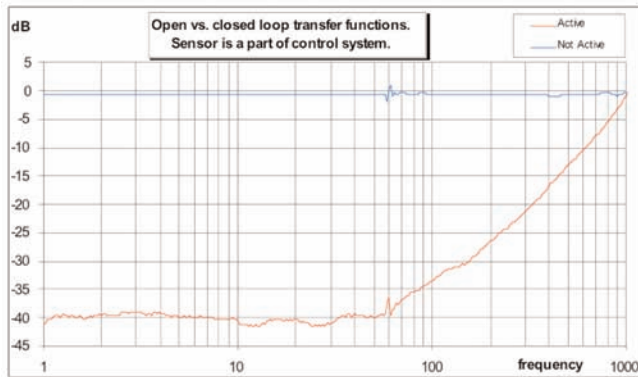
*Dedicated controller with automated calibration and self-test*

### Features:

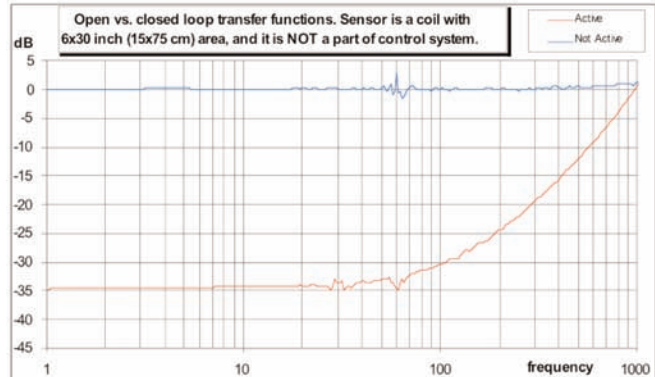
- ◆ Continuous field cancelling
- ◆ Continuous field monitoring
- ◆ Set and forget operation
- ◆ AC field cancelling
- ◆ Wideband DC field cancelling
- ◆ 50 x field improvement (typical)
- ◆ Dynamic, 100  $\mu$ s response
- ◆ Accurate field measurement
- ◆ Interface for computer monitoring
- ◆ Feedforward compensation of line frequency and harmonics
- ◆ Feedforward capability for other inputs

[www.gmp.ch](http://www.gmp.ch)

# Mag-NetX™ Magnetic Field Cancelling System



**Plot 1. Transfer function at the exact sensor location.**  
*Excitation coil is not the 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\*0.5\*2.5 feet.**  
*Excitation and sensor coils are NOT the 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

<p><b>1. SYSTEM COMPONENTS:</b></p> <p>Up to 3-axes orthogonal magnetic sensor, EM Cancellation Controller, Up to 6 orthogonal coils</p>	<p><b>3. EMC CONTROLLER:</b></p> <p>3 channels for X, Y, Z cancellation, 1U standard case</p> <p>Dimensions of controller: 19"-1U, 14.2" deep (48 x 4 x 36 cm)</p> <p>Operational modes: After power-on: Automatic self test/calibration and switch to controlled mode in 30-45 sec, no user involvement required. Manual test/debug mode.</p> <p>Front panel controls: "OK" LED indicator, LCD 2*32 symbols indicator, Bar-LED indicators, 2 rocker switches, BNC socket</p> <p>Interfaces: RS-232 socket, GO - NO GO signal</p> <p>Power: 200 VA max, Supply voltage: 90 - 240 VAC 50/60 Hz, Internal line feedforward input: Cancels line frequency (50/60 Hz and Harmonics) allows increased loop gain for better suppression of other frequencies. Can be used as feedforward to cancel disturbances from moving objects (sample on X-Y stage, for example)</p> <p>3 Auxiliary inputs:</p>
<p><b>2. PERFORMANCE:</b></p> <p>Active magnetic field cancellation axes X, Y, Z</p> <p>Controlling volume vs. field flux density 60 m3 at 10 <math>\mu</math>T RMS, 20 m3 at 50 <math>\mu</math>T RMS (able to cancel Earth magnetic field)</p> <p>Max ambient DC field <math>\pm 100 \mu</math>T max</p> <p>Dynamic range <math>\pm 100 \mu</math>T (60dB max)</p> <p>Field reduction ratio at sensor location 40dB [100 x] (typical) in 0.5 - 100 Hz, 25dB [20 x] (typical) in 100 - 500 Hz (See Plot 1)</p> <p>Field reduction ratio in a typical volume of Electronic Microscope column: h*w*t = 2.5*0.5*0.5 feet (75*15*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)</p> <p>Bandwidth 0.5 - 1000 Hz</p> <p>Noise threshold 0.1 nT/<math>\sqrt</math>Hz at 50-60 Hz</p>	<p>200 VA max</p> <p>90 - 240 VAC 50/60 Hz</p> <p>Cancels line frequency (50/60 Hz and Harmonics) allows increased loop gain for better suppression of other frequencies. Can be used as feedforward to cancel disturbances from moving objects (sample on X-Y stage, for example)</p>

[www.gmp.ch](http://www.gmp.ch)