

- Hybrid (analogue and digital) control loops
- Compensation based upon counteracting field generation
- EMI attenuation in the frequency range from true DC to 10 kHz
- DSP based system for full host control



### Design

The MK4 EMI compensation system is the latest product in a historically long product range of EMI compensation systems from Integrated Dynamics Engineering. It uses the advantages of former products like MK1 and MK3, forming a hybrid control concept for both AC and DC disturbance. It enables fully host-controlled parametric adjustments, using a standard RS232 ANSI terminal. The hybrid control concept is completely transparent to the user, resulting in an easy-to-control, easy-to-install product with its highest performance in a broadband frequency range, starting at DC (0 Hz) up to several kHz. It offers a reduction of disturbance field amplitudes of typically more than 45dB. Options available from IDE include sensor mounting kits for most SEM and TEM models. Helmholtz cages are custom-built into your room or may be ordered as prefabricated kits.

### Hardware

The MK4 controller unit consists of a DSP VC33 being responsible for the host interfacing and control of the DC-loop as well as adjusting the parameters of the analogue AC-loop. The sensor consists of two triaxial, orthogonally mounted EMI-sensors in one single housing, making use of flux-gate type and frequency-response-adjusted coil-type sensors for the AC-control

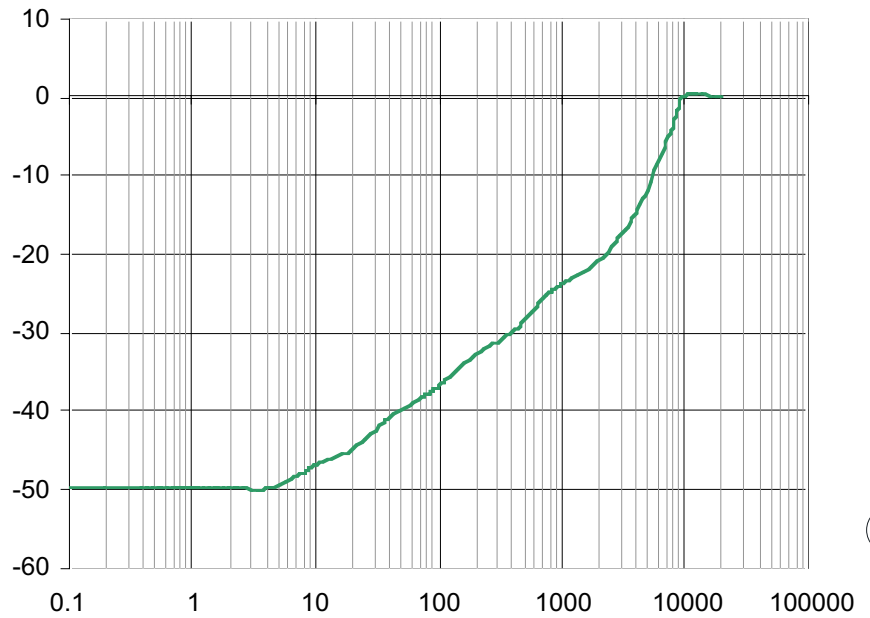
loop. The MK4 uses two signal paths to produce compensation signals, adding the control loop output for DC and AC right before the amplifying unit. The compensation signals are fed to a Helmholtz cage able to produce homogenous compensation fields inside a given volume. Three BNC ports at the rear panel of the controller give access to the sensor signals and a noise input feed for additional diagnostic purposes. The deliverables include a set of connection boards for the use of flat-band ribbon cable, making the installation of the Helmholtz-coils an easy task. Furthermore, a standard sensor mounting for SEM and TEM (aluminium pipe, 30 mm diameter, 3 pieces) is supplied.

### Software

Both DC and AC loop can be controlled by a host, using an RS232 ANSI terminal connection. It offers access to the parameters for tuning, setup and diagnostics. The diagnostic features have shortcuts for installation checks and tuning **helps** so that no external measurement equipment is needed for installation.

## Options

- ▶ Helmholtz-cage in aluminium casting (80 mm square), 3 axis version, up to 4 m edge length
- ▶ Special sensor mounting for various SEM and TEM
- ▶ Flat-band ribbon cable (0.14 mm<sup>2</sup> cross-sectional area, 26 cables), customized length



*Field Attenuation Performance* The curve demonstrate the field attenuation performance of the MK4 system measured at the point of the sensor.



## Technical Specifications

- |                                  |                          |
|----------------------------------|--------------------------|
| • attenuation of quasi-DC fields | typ. -40 to -50 dB       |
| • attenuation at 50Hz            | typ. -45dB               |
| • attenuation at 1kHz            | typ. -25dB               |
| • control bandwidth              | 0 to typ. 10kHz          |
| • power output (per axis)        | 24 Watt (cont.)          |
| • power supply                   | 250VA @100/110/230VAC    |
| • PC interface                   | 9-pin RS-232C            |
| • dimensions of controller       | 19" 2HE                  |
| • dimensions of sensor           | 120 x 80 x 80 mm (BxHxD) |