Magnetic Field Compensation System MR-3

(DC～1kHz)

(DC～10kHz)

Description

Magnetic Field Compensation System MR-3 can compensate the magnetic field which is measured in three axes. Therefore, it can reduce the disturbance from the outer magnetic field. For example, the low frequency disturbance form trams, elevators or other transportations, and also from electric wires such as 16.7Hz, 50Hz, 60Hz and harmonic waves. We can use the system to improve the situation.

The system includes the sensitive magnetic field sensor, a set of special design three axis 3D compensation coils and a built-in power supply controller. The magnetic field sensors which are set in the center of the compensation coils detect the magnetic signals and transmit them to the controller. Then, the controller drives the compensation coils to produce the opposite magnetic field to reduce the original magnetic field disturbance.

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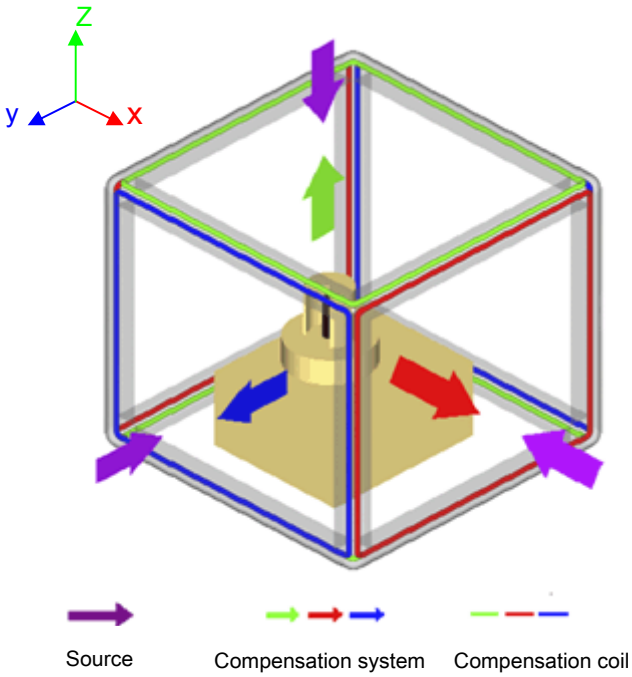
System Principle



(DC ~ 1kHz)

(DC ~ 10kHz)

MR-3 magnetic field sensors

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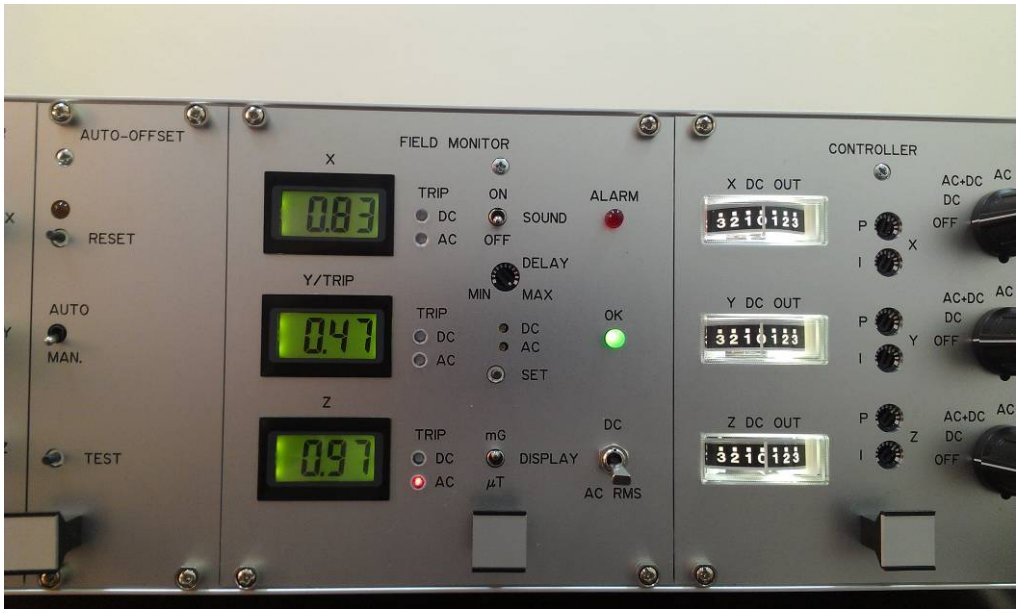
MR-3 system controller – Model A



MR-3 system controller – Model B

MR-3 system controller – Model C

Features

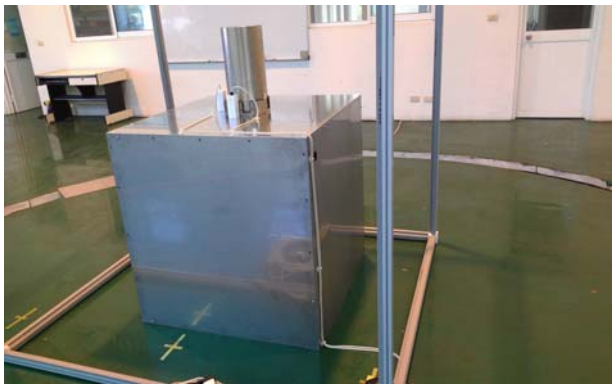
- We supply the best system design for the customer. From estimation the environment and integrate the own experimentation to do the reality simulated test.
- The system is designed and customized according to the actual machine, and the largest dimension of the compensation coils can be up to 6 m .
- The system is easy to install, and it doesn't take the space. It's applicable to use in many places.
- The system design, installation and adjustment, both of that are responsible by professional engineers within the company. Has been operating, and we don't need to trust the other factory. It is most efficient.
- The stocks is supply the emergency situation, it can resolve the problem of the field in short time. That make the products will not affected by the field interference and reach a solution very fast.
- The system possess the Auto-OFFSET function and three Control Mode in the controller. (AC, DC, AC+DC). It can deal with any change of the magnetic field, and achieve to the best protect of the magnetic field. The suitable range is broader.
- The analogy output the opposite phase magnetic field in 1/10000 seconds. The compensation is in real-time, and the range is from DC to 10kHz.

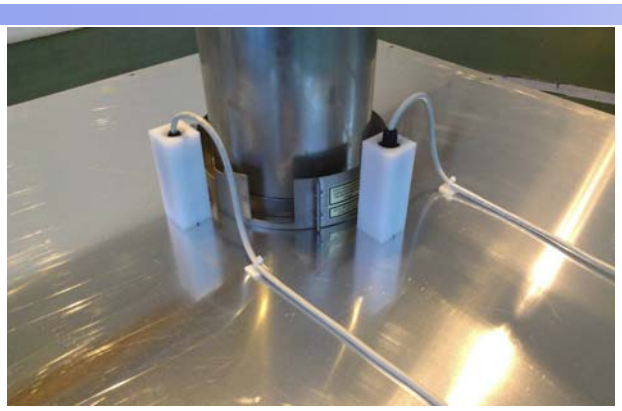
- The analogy output the opposite phase magnetic field in 1/1000 seconds. The compensation is in real-time, and the range is from DC to 1kHz.
- The design of the permanent operate, and each axis can adjust by themselves. Auto compensation and have a good stabilization, it doesn't need to spend long times and manpower to use.
- The system has installation the mood of digital display magnetic field monitor and manual control position of the Alarm. It also can monitor the magnetic field .
- Built-in high power and low emission power supply which applies to 115/230V voltage. It is auto-ranging, therefore suitable for worldwide use.
- The system measurement resolution is better than 0.01 mG, and the measurement error is less than 1%. Sensor is calibrated before the transport, the instrument is calibrated to precise standards from the Physikalisch Technische Bundesanstalt （PTB, Braunschweig, Germany）.

Applications

- E-Beam Writer
- Scanning electron microscope（SEM、CD-SEM）
- Transmission electron microscope（TEM）
- Any kind of electron beam equipments
- Spacelab earth magnetic field certification
- For required stable magnetic field lab（Zero magnetic environment manufactory）

MR-3 testing in the laboratory





Specifications

Items	DC～1kHz	DC～10kHz
Magnetic field sensor	Triaxial fluxgate sensor	
Zero drift	< 0.1 nT/K	
Noise	< 1 nT RMS (0.1 Hz < f < 20 kHz), <20 pT/√Hz @ f = 1 Hz	
Dynamic range of compensation	60mGp-p for X, Y, Z	
Analog outputs	1V/μT,BNC connectors for X, Y, Z	
Voltage range	typ. -6 to +6 V	
Sensor frequency bandwidth, internal	above 20kHz	
DC output	impedance 470 Ω	
Bandwidth	DC to 1kHz	DC to 10kHz
Digital displays	show incremental DC or true rms AC magnetic field	
Measurement range of display	± 2μT (20 mG)	
Field setting adjustment range	± 100 μT sep. for X, Y, Z	
Analog meters	show coil current, range ±3A	
Compensation	DC to 50 Hz : 40 to 50 dB	DC to 200 Hz : More than 50 dB
Compensation	350 Hz ：20 dB	9000 Hz ：More than 13 dB
Max. current per axis	± 3 A	
Compliance	± 6 V	
Operating temperature	0 to 35◦C	
Power supply	built in, 115/230 V +10% -15%, AC 45 to 440 Hz, max. 3.15 A	
Dimensions of system	19 inch, 3 HU, 260 mm depth	
Dimensions of sensor	diam. 25 mm×70 mm	
Length of sensor cable	10 m	
Weight of complete system	7.9 kg	

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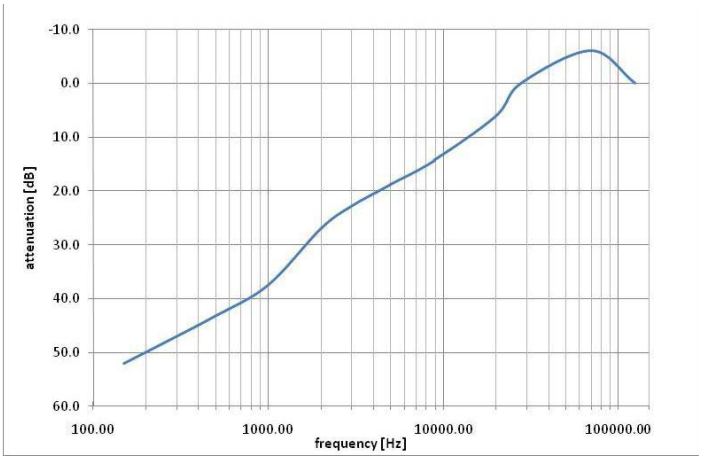
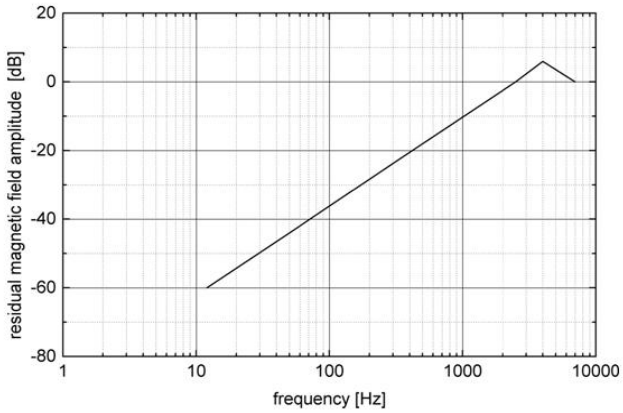
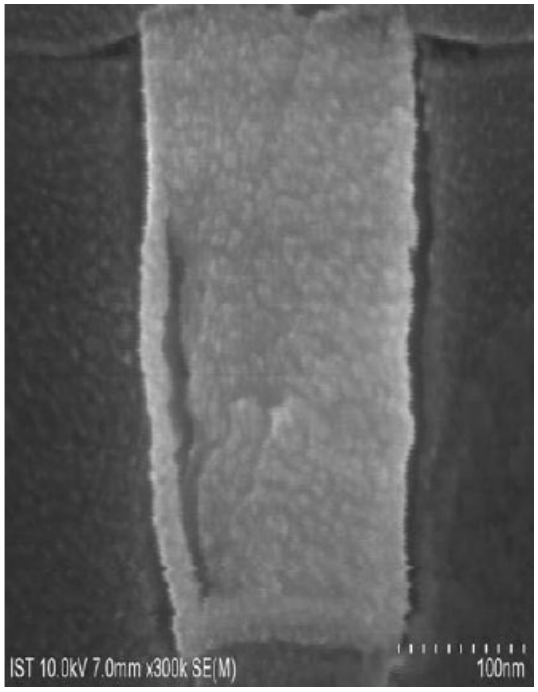




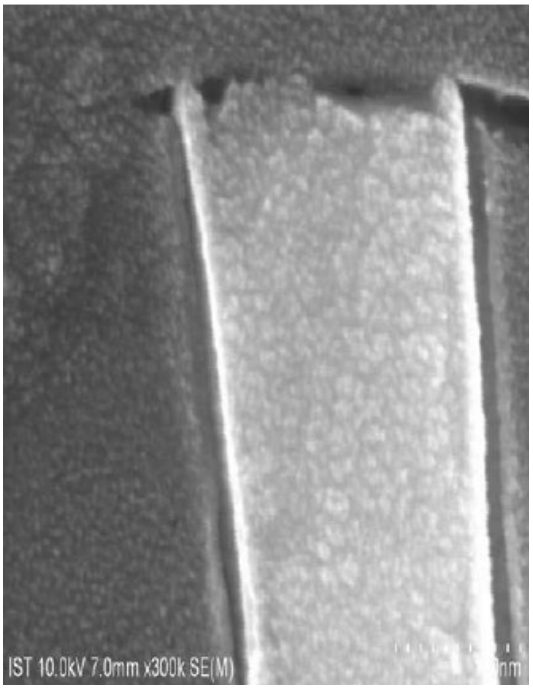
MR-3 Interference Attenuation Line

Case

SEM：AC+DC Interference



MR-3 system OFF



MR-3 system ON

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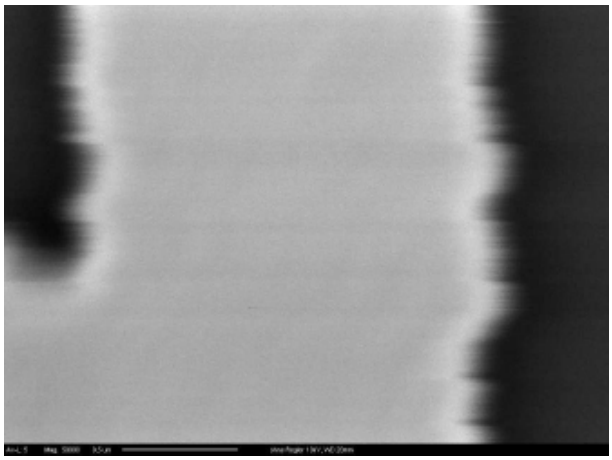
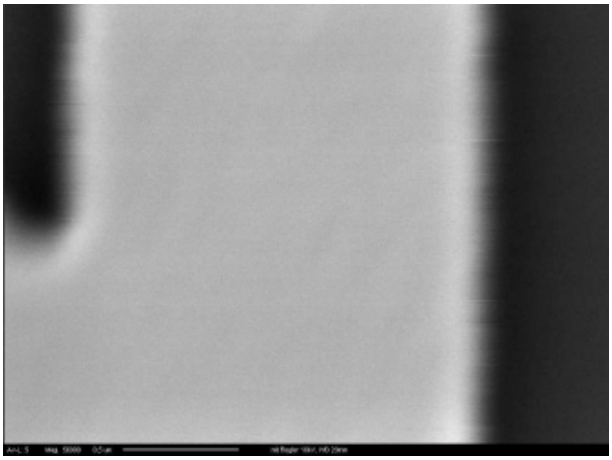
SEM：AC+DC Interference

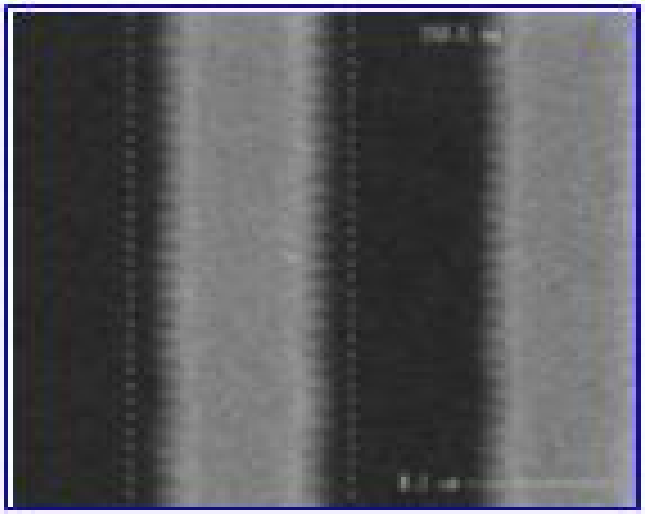


MR-3 system OFF

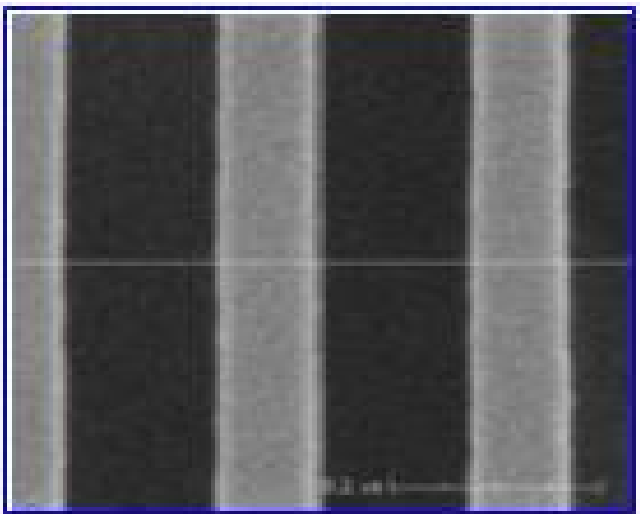


MR-3 system ON

CD-SEM：AC Interference



MR-3 system OFF



MR-3 system ON

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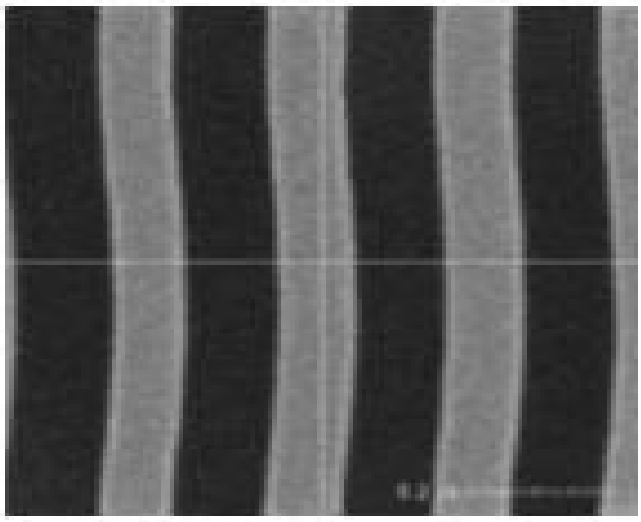
CD-SEM：DC Interference



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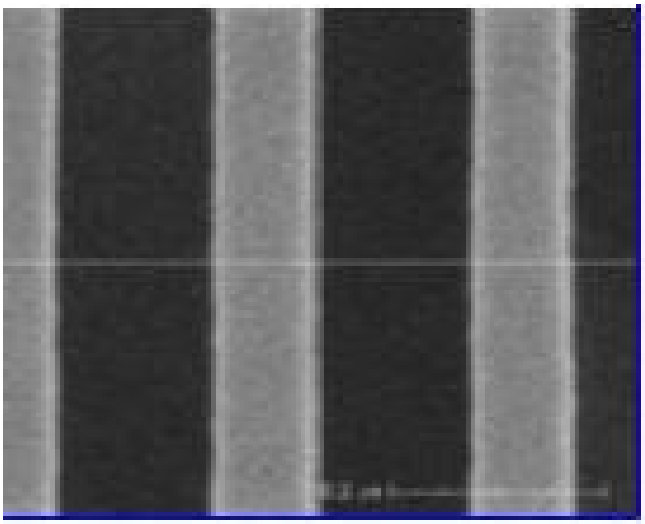
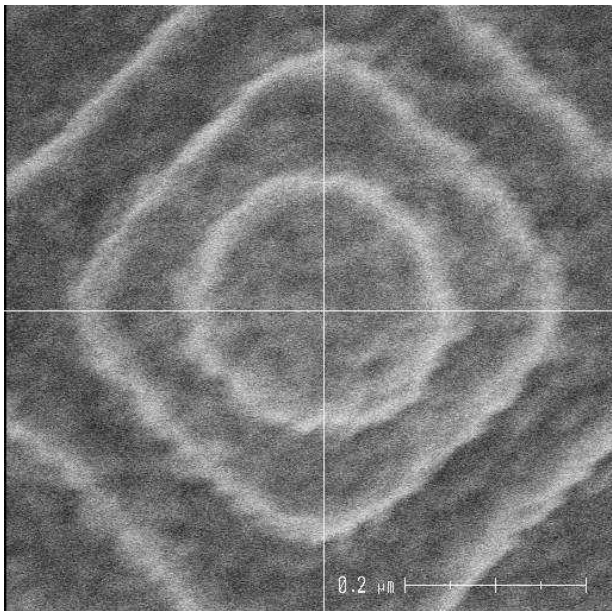
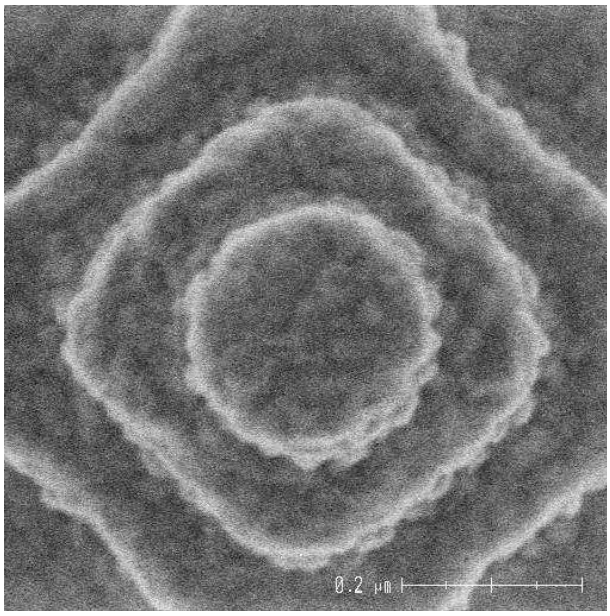


MR-3 system ON

CD-SEM：AC+DC Interference



MR-3 system OFF



MR-3 system ON

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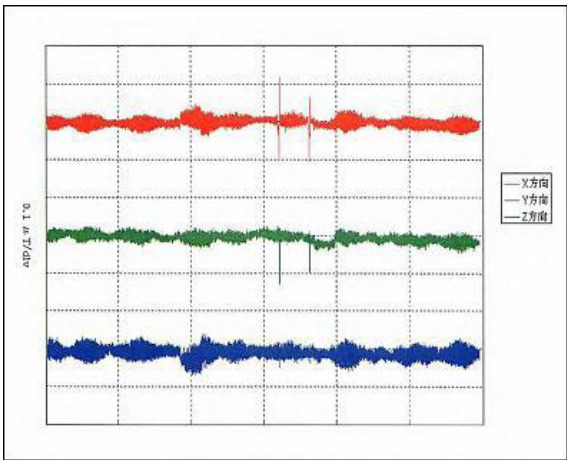
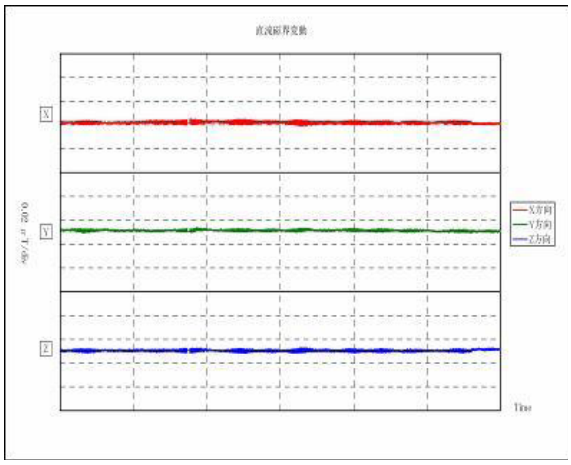
E-beam Writer



MR-3 system OFF



MR-3 system ON