

Helmholtz Coils

Magnetic Field Generation and Compensation

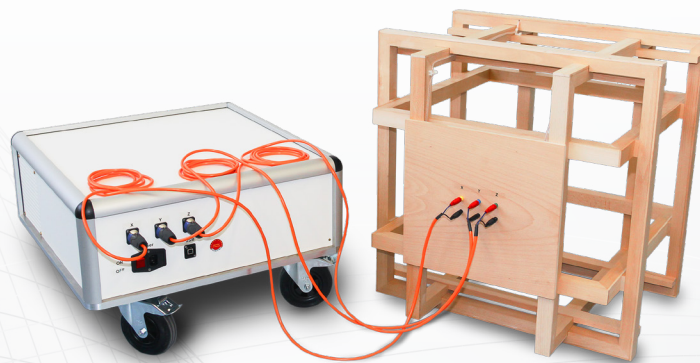


Helmholtz Coils

Magnetic Field Generation and Compensation

Magnetic fields can be generated and controlled using single- and multi-axis coil systems. Our 3-axis Helmholtz coils are particularly suitable for compensating of the earth's magnetic field and for generating particularly homogeneous magnetic fields. They are characterized by a precise coil arrangement and can be controlled reliably and with high precision, using our linear bipolar power sources from matesy.

Construction and functionality



A Helmholtz coil is a coil arrangement consisting of two coils with the same radius or edge length. At the correct distance, these coils are placed in parallel on the same axis and electrical current flows through them in the same direction. The distribution of the magnetic field is then characterized by a large, homogeneous area in the middle of the coil, which is freely accessible for experiments and measurement tasks. Helmholtz coil rings can have circular or square geometry. With the three-dimensional arrangement, a magnetic field of any direction can be generated by varying the current ratio between the pairs of coils.

Matesy Helmholtz coils can be used to generate precise magnetic fields in different spatial directions, which simultaneously compensate the earth's magnetic field and expose your test object to a defined magnetic field value. To do this, our experts design the size, winding and power source according to your requirements. By integrating our reference sensors, we measure the set field and can also readjust it. Helmholtz coils are ideal for calibrating sensors such as: Hall-, magnetoresistive- (XMR), fluxgate- and SQUID-magnetometers.

Highlights

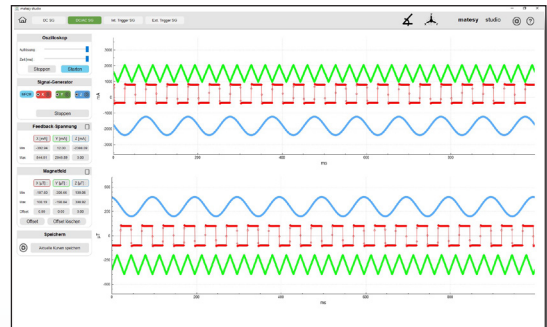
- Modular construction
- Custom calculation and production according to your requirements
- Linear current sources for absolute accuracy and high field resolution
- DC, AC and customer-specific adjustable field signals
- Magnetic shielding chamber for maximum measurement accuracy on request

Advantages

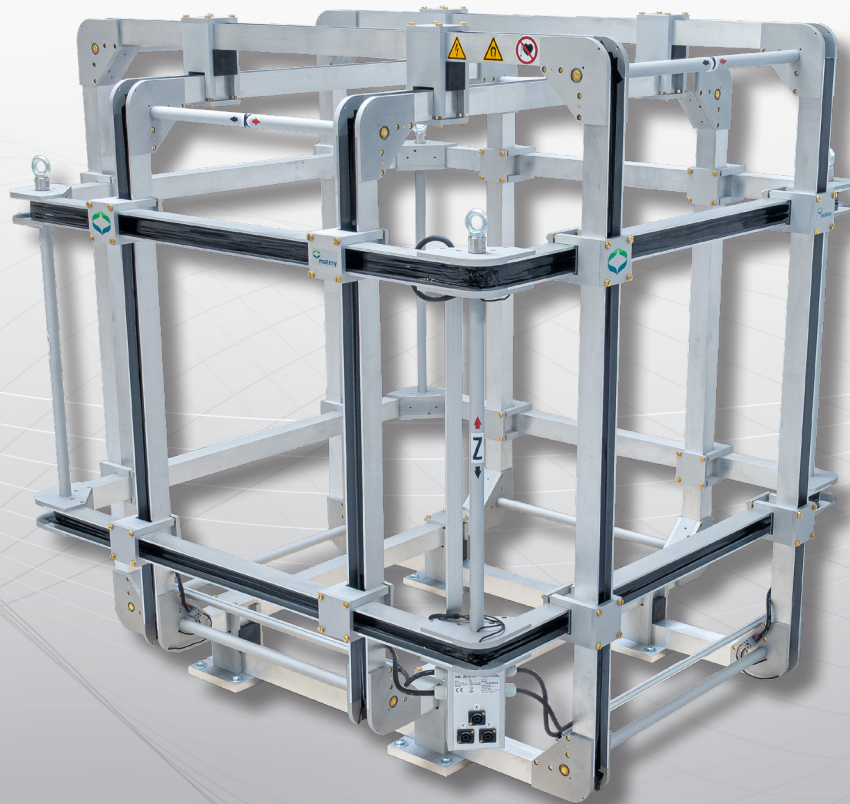
- Single-, two- and three-axis versions available
- Real-time magnetic field and coil current monitoring
- Field configuration control through user-friendly software
- Compensation of the earth's magnetic field
- Interface for integration into industrial environments
- Integrated reference sensor

Software

The matesy studio software offers the option of loading and outputting standard and individual control signals, and measuring and saving of the generated magnetic fields in real time. With the help of the reference sensor, the earth's magnetic field can be compensated and the control signals can be regulated in a closed loop. The software also offers a self-check of all components and a live angle display of the magnetometer, as well as external remote control and step-by-step processing of the signal files using external or internal triggers.



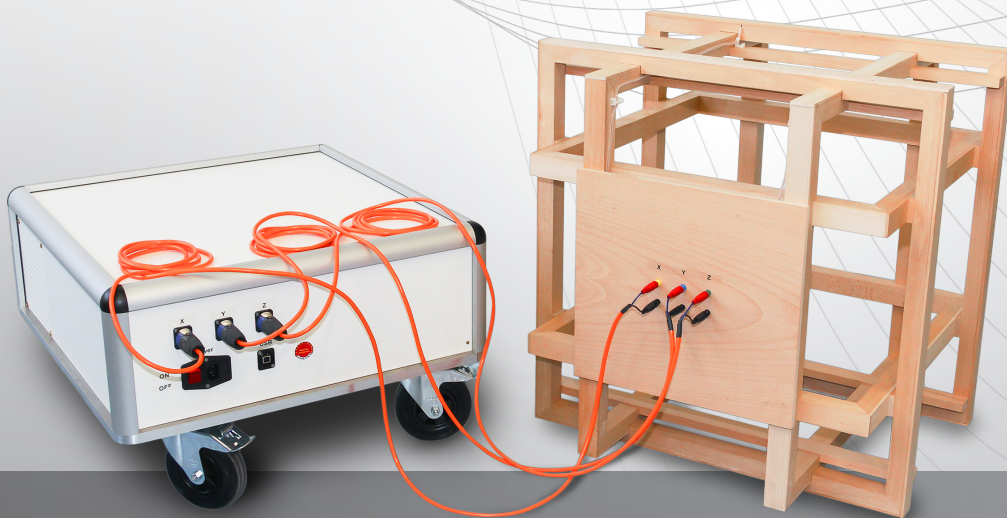
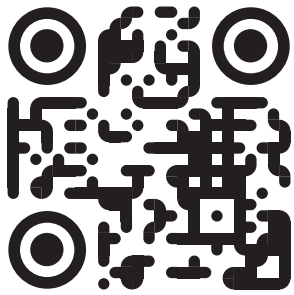
matesy studio



Technical Data & Specifications

- Different sizes to create precise magnetic fields
- Control of field configuration by software
- Edge length / diameter: 10 cm to 4 m
- Field range: $\leq 5\text{mT}$
- Temperature range: $-10^{\circ}\text{C} - 60^{\circ}\text{C}$
- Control: via PC or signal inputs
- Angle error: $\leq 0.1^{\circ}$
- Frequencies: 0 – 1000 Hz
- Homogeneous 3D magnetic fields: $\leq 0.1\%$





Contact & information

Matesy GmbH
Loebstedter-Str. 101-103
D-07749 Jena
Germany

Tel.: +49 (0) 03641 79799 00
Fax: +49 (0) 03641 79799 01
E-mail: info@matesy.de
Web: www.matesy.de

