

# OPERATING INSTRUCTIONS

## Magnetic Field Detector No. 32391

### 1. Introduction

The Magnetic Field Detector (32391) must be used in conjunction with the 12VAC/DC Amplifier Power Supply (32386) and the Six-Range Meter (32381) to measure magnetic field strengths down to a level of 5 gauss.

### 2. Description

The unit consists of a Hall element mounted on the end of a 1 meter long probe that is fed to a voltage reference amplifier.

### 3. Operation

First connect the 32381 Six-Range Meter (SRM) into the output of the 32386 Amplifier Power Supply (APS), red to red and black to black. Turn the APS on. With the meter setting on the 0.1 volt scale, adjust the DC offset of the APS until the SRM reading is zero.

Now plug the Magnetic Field Detector (MFD) into the APS and select the 1000 gauss range. Change the SRM to the 2 volt range setting and, with the probe away from any strong magnetic fields, rezero the SRM by adjusting the APS DC offset.

To calibrate the detector, insert the probe into the "calibrate" slot so the Hall element is on the upper side of the probe. Increase the APS gain setting until the appropriate field reading of 450 gauss (4.5 read on the middle 10V scale) is indicated on the SRM. With this calibration, the magnetic field strength sensed by the probe can be determined by multiplying the meter reading on the 10-volt scale by 100 to yield a reading in gauss.

The MFD can now be used to measure magnetic field strengths for experiments or demonstrations. The magnetic lines of flux perpendicular to the probe are actually measured. This is important to note when determining not only the strength but also the direction of the flux.

### 4. Maintenance

The Magnetic Field Detector needs no special maintenance. If you experience any problems with this unit or if you need more information about it, contact Central Scientific Company. To ensure better service, please do not return any item to Central Scientific Company until we have sent you authorization.

### 5. Required Accessories

| <u>Description</u>              | <u>Cat. No.</u> |
|---------------------------------|-----------------|
| 12VAC/DC Amplifier Power Supply | 32386           |
| Six-Range Meter                 | 32381           |

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