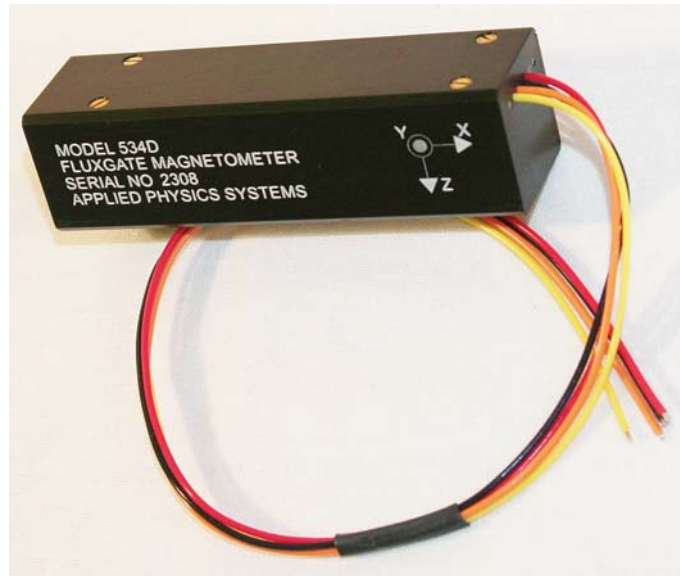


Features

- Complete 3-axis system
- Low noise level
- Measures up to ± 0.65 G
- Compact size, rugged construction
- Single power input, +4.95V to 12V

Applications

- Fluxgate compass systems
- Magnetic fuses
- Measurement of magnetic signatures



The 534D Sensor is a tri-axial vector magnetometer system with a high-speed digital interface that can transmit XYZ magnetic field values at up to 140 times per second. The 534D System contains a microprocessor and a three channel 16-bit analog-to-digital converter. The system also contains a temperature sensor.

The system microprocessor and A-to-D subsystem:

- convert the sensor analog outputs to digital form
- calibrate the sensor scale, offset and alignment
- implement serial communications between the system and an external computer

An ASCII character command language facilitates communication with the 534D. An autosend data mode is included in the 534D software. When this mode is active, data is repeatedly sent out the serial port after power is applied to the system.

System Calibration and Connection

The 534D magnetometers are calibrated by mounting the system in a precision holding fixture, placing this in a 3-axis Helmholtz coil, and systematically applying known magnetic fields to the sensor.

System calibration can be performed at a base temperature (usually 25°C) or as an option over a temperature range (for example 0-75°C). When the system is calibrated over a temperature range, data is read from the system at temperature intervals between the minimum and maximum temperature specification. For instance, for calibration over the interval of 0-75°C, data is usually read at 25°C temperature intervals at 0°C, 25°C, 50°C, and 75°C. The data taken at each temperature includes scale, offset, and sensor alignment data. The recorded data is used to create a lookup table for scale, offset and alignment corrections. This table is then downloaded into the 534D internal EEROM memory where it can be accessed by the system internal microprocessor. Corrections to the sensor data can then be made by the internal microprocessor system before data is transmitted.

The 534D System communicates over a bi-directional RS232 or TTL (optional) serial interface. The RS232 serial communications interface to the 534D is provided by the RS232-in and RS232-out lines. An external PC communicates with the 534D on the serial-in line and replies from the 534D are transmitted out on the serial-out line. The serial-in and serial-out lines are normally set to operate at 9600 baud with one stop bit and no parity. The user, however, can change the baud rate by setting bits in the system EEROM.

Model 534D

Miniature Digital 3-Axis Fluxgate Magnetometer



Applied Physics
Systems

PHYSICAL

Width/Height	.75" (19 mm)
Length	2.75" (69.85 mm)
Weight	30 g
Input connections	6" flying leads

ELECTRICAL

Input	+4.9 VDC to +15 VDC @ 50 mA
Data Rate in Autosend Mode	ASCII mode: 70 transmissions/sec Binary mode: 140 transmissions/sec
Analog Bandwidth	70 Hz
Digital Output Protocols	RS232 and TTL, User programmable baud rate to 9600 baud
Digital Output Formats	ASCII and Binary

ENVIRONMENTAL

Noise Level	± 2 nT (± 20 μ Gauss)
Dynamic Range	$\pm 60,000$ nT (± 600 mGauss) $\pm 100,000$ nT optional
Resolution	2 nT (20 μ Gauss)
Accuracy	$\pm 1\%$ Full Scale

WIRE COLOR	FUNCTION	PIN CONNECTOR
Red	+ V in	1
Black	Ground	2
Orange	RS232 in	7
Yellow	RS232 out	8
Orange/White	TTL serial in	10 (optional)
Yellow/White	TTL serial out	11 (optional)

Note: Power and COM ground are connected together on the 534D PC board. The TTL serial-out and TTL serial-in terminals on connector J5 are also serial I/Os for the 534D. These I/Os operate at TTL levels.

Specifications within this document are subject to change without notice.

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