

# MODEL 534D

## MAGNETOMETER SENSOR

### FEATURES

- Complete 3-axis system
- Low noise level
- Measures up to  $\pm 0.6$  G (optional  $\pm 1$  G)
- Compact size, rugged construction
- Single power input, +4.95V to 12V

### APPLICATIONS

- Fluxgate compass systems
- Magnetic fuses
- Measurement of magnetic signatures and magnetic fields generated by power lines and other instruments

The Model 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 Model 534D device 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:

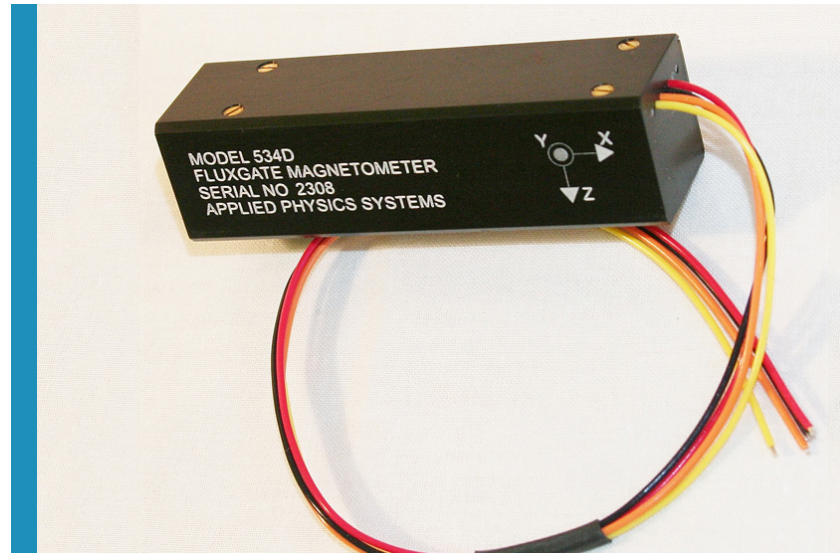
- converts the sensor analog outputs to digital form
- calibrate the sensor scale, offset and alignment
- implement serial communications between the system and an external computer

An ASCII character command language facilitates communication with the Model 534D. An autosend data mode is included in the Model 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 Model 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.

The Model 534D's temperature sensor provides accurate corrections to the sensor data before data is transmitted.



The Model 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 Model 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.

FUNCTION	WIRE COLOR
+Voltage In	RED
Ground	BLACK
RS232 In	ORANGE
RS232 Out	YELLOW
TTL Serial In (optional)	ORANGE/WHITE
TTL Serial Out (optional)	YELLOW/WHITE

Note: Power and COM ground are connected together on the Model 534D PC board. These I/Os operate at 5 Volt TTL levels.

## ELECTRICAL

Input Voltage Range	+4.9 to +12 VDC
Current Draw	<50 mA
Digital Output Protocols	5 V RS232 and TTL
Digital Output Formats	ASCII and Binary
Baud Rate (User Selectable)	300, 1200, 2400, 4800, 9600 (default), 19200, 38400
Data Rate in Autosend Mode	ASCII mode: 70 transmissions/sec Binary mode: 140 transmissions/sec
Analog to Digital	16-bit

## ENVIRONMENTAL

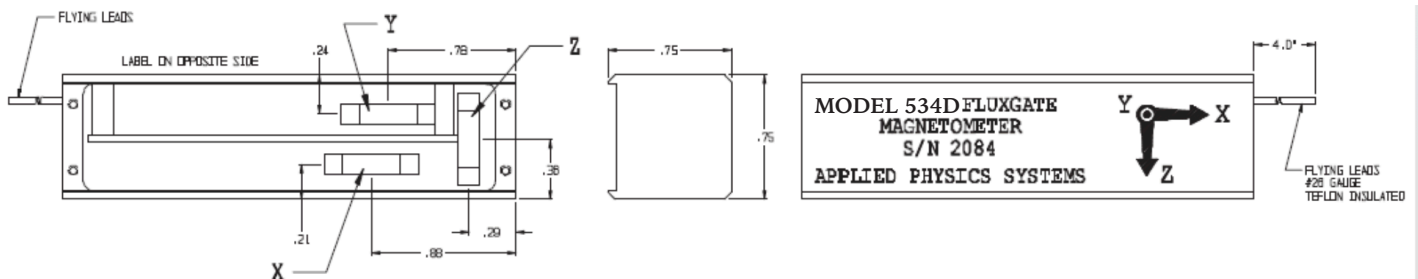
Operating Temperature Range	0°C to +70°C
Storage Temperature Range	-55°C to +160°C

## PERFORMANCE

Range	$\pm 6.0 \times 10^4$ nTesla ( $\pm 0.6$ Gauss) $\pm 1.0 \times 10^5$ nTesla ( $\pm 1$ Gauss) optional
Resolution	2 nT (20 $\mu$ Gauss)
Accuracy @ full scale	$\pm 1\%$
Linearity @ full-scale	$\pm 0.1\%$
Offset versus Temperature	< 5 nT/°C (<0.05 mG/°C)
Temperature Scale Factor	< $\pm 0.02\%$ Full Scale/°C
Noise Level	$\pm 2$ nT ( $\pm 20$ $\mu$ Gauss)
Frequency Response	70 Hz
Orthogonality between axis	$\pm 0.2^\circ$
Alignment of sensor package with sensor reference surfaces	$\pm 0.2^\circ$

## PHYSICAL

Width/Height	0.75" (19.05 mm)
Length	2.75" (69.85 mm)
Weight	30 g
Input/Output Connections	six #26 gauge insulated wires 6" long



Specifications are subject to change without notice.