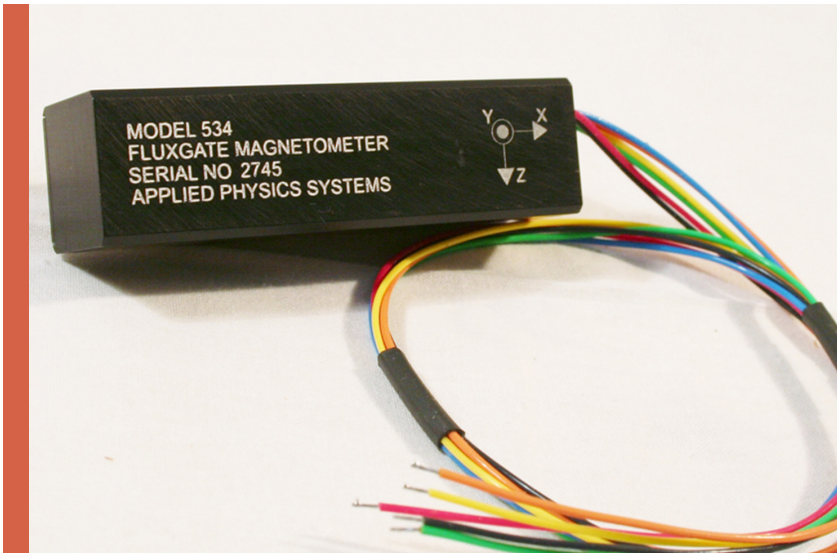
MODEL 534
MAGNETOMETER SENSOR

FEATURES

- Complete 3-axis system
- Compact size, rugged construction
- Operates from ±5 VDC at ±30 mA
- Low noise level
- Measures up to 1 Gauss
- Low temperature coefficient

APPLICATIONS

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



As a magnetic compass, the Model 534 can provide direction accuracy to better than 0.1°. Some applications combine the Model 534 with a precision 3-axis accelerometer to provide roll, pitch and yaw angles accurate to 0.1°.

In magnetic anomaly detection situations, the low noise level of the Model 534 enables very small magnetic signatures to be measured. This enables large-distance spacing between the Model 534 and the anomaly being measured; use several Model 534s to record both field and field gradient. Range is proportional to the quotient of these quantities.

System Calibration and Connection

Before shipment, we calibrate the Model 534 system in our set of mu metal shields (to determine zero offset) and precision Helmholtz coils (to measure scale and axis alignment factors). As an option, a calibration sheet can be provided with each unit to enable external correction of these system parameters if desired. In addition, calibration of offset and scale factor variation can also be obtained over any temperature excursion in the -55 to +125°C range.

The system provides 3 analog output voltages proportional to the magnetic field in three orthogonal directions. Full scale output is ±4.0 volts; this voltage represents a magnetic field of ±1.00 Gauss. Output scale factor is adjusted to an accuracy of ±0.1%.

For sensor alignment, the X axis is aligned parallel to the package long dimension. The Z axis is aligned so that it projects through the center of a 0.067" hole in the bottom of the system. The system Y axis is orthogonal to the X and Z directions. The system coordinate system is right handed.

The output polarity sense of the axes is such that a field increase in the direction of the arrows produces an increase in the voltage output for that axis. In general, the magnetic axis of the Model 534 systems is orthogonal and aligned within ±0.2° of the right-handed coordinate system specified by the outer package alignment surface and alignment holes.

WIRE COLOR	FUNCTION
RED	+Voltage In
BLUE	-Voltage In
BLACK	Ground
ORANGE	X output
YELLOW	Y output
GREEN	Z output
WHITE	OSC Input

The input connections for the Model 534 consist of six #26 gauge Teflon insulated wires with a nominal length of 6". The system is powered by connection to the 7 flying leads. The oscillator (OSC) input is only used when an external 25 KHz TTL oscillator is supplied to the system.

APPLIED PHYSICS AEROSPACE

HEADQUARTERS
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ELECTRICAL

Input Voltage Range	±7 to ±12 VDC
Current Draw	30 mA @ +5 VDC 20 mA @ ±7 to ±12 VDC
Total Power Consumption	200 mW

ENVIRONMENTAL

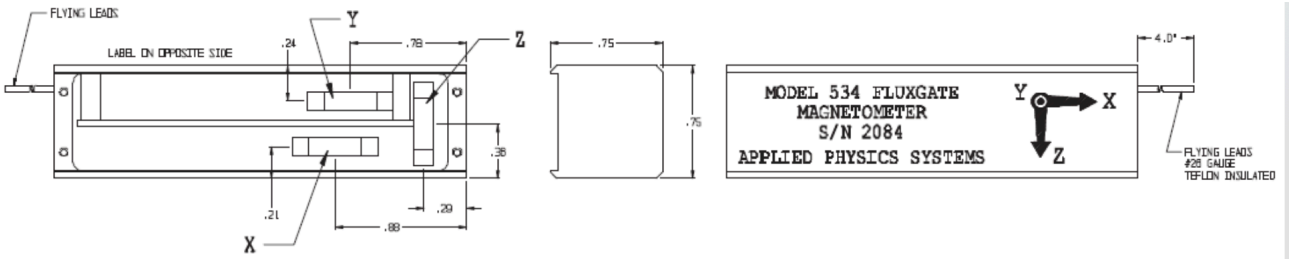
Operating Temperature Range	0°C to +70°C
Storage Temperature Range	-55°C to +160°C

PERFORMANCE

Range	$1.0x10^5$ nT (1.0 Gauss)
Noise Level	0.3 nT RMS/√Hz 3 µG RMS/√Hz
Sensitivity	± 4 V/G
Linearity @ full-scale	±0.1%
Frequency Response	DC to 400 Hz (-3 db)
Orthogonality between axis	±0.2°
Alignment of sensor package with sensor reference surfaces	±0.2°
Offset versus Temperature	< 5 nT/°C (<0.05 mG/°C)
Temperature Scale Factor	<± 0.02% Full Scale/°C

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.