MODEL 1540
MAGNETOMETER SENSOR

FEATURES

- Complete 22-bit 3-axis system
- Low noise level <5 microGauss
- Measures up to ±0.65 G
- Compact size, rugged construction
- Cylindrical or rectangular design
- Single power input, +4.95V to 12V

APPLICATIONS

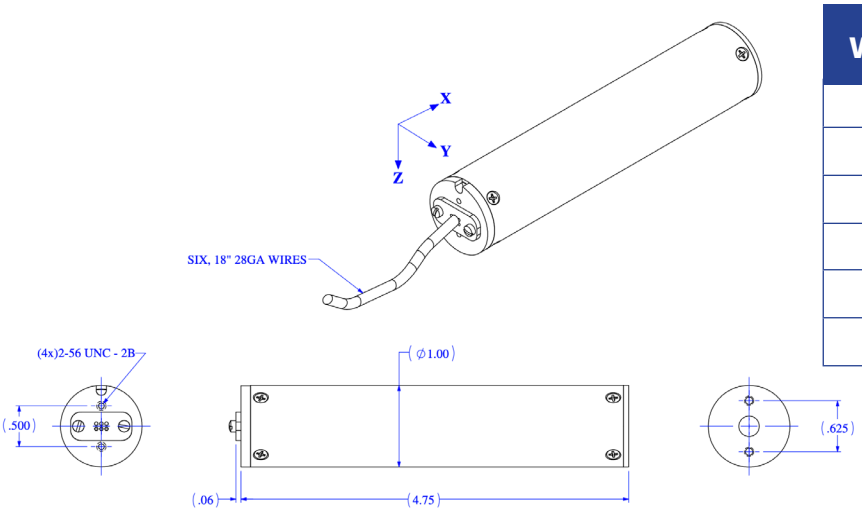
- Fluxgate compass systems
- Magnetic fuses
- Measurement of magnetic signatures and magnetic fields generated by power lines and instruments

The Model 1540 is a high-speed 3-axis fluxgate magnetometer employing 22-bit analog-to-digital converter. Magnetic field data transmitted by the Model 1540 is expressed in the units of Gauss (G). The use of 22-bit converters enables the Model 1540 system to measure magnetic field magnitudes from ±0.65G down to the system noise level (5 µG peak-to-peak) using a single range.

The Model 1540 is packaged as either a cylinder (1" diameter and 4.75" length) or, optionally, as a rectangular package (1540S).

The Model 1540 system communicates over a bi-directional serial interface using TTL logic levels and RS232 levels. The system can be optionally configured to communicate with the RS422 protocol.

An autosend data mode is included in the Model 1540 software. When this mode is active, data is repeatedly sent out the serial port automatically after power is applied to the system.



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

APPLIED PHYSICS RESEARCH

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ELECTRICAL

Input Voltage Range	+4.95 to +12 VDC
Current	<45 mA
Digital Output Protocols	RS232 and TTL (RS422 optional)
Digital Output Formats	ASCII and Binary
Baud Rate (User Selectable)	300, 1200, 4800, 9600 (default), 38400
A to D Communications	22-bit Sigma Delta
Data Rate in Autosend Mode	ASCII mode: 10 transmissions/sec Binary mode: 20 transmissions/sec
Operating Temperature Range	-25°C to +70°C

PERFORMANCE

Range	±6.5x10⁴ nT (±0.65 G)
Resolution	0.03 nT (0.0003 mG)
Accuracy	±0.5% full-scale
Linearity @ full-scale	±0.05% full-scale
Initial Bias at 25°C	<0.005 mG
Temperature Sensitivity Scale Factor	±0.05% full-scale/°C
Offset versus Temperature	<0.01 mG/°C
Axis Alignment	Better than ±0.2°
Alignment of sensor package with sensor reference surfaces	Better than ±0.2°
Noise Level	±0.5 nT (±5 µG) peak-to-peak
Frequency Response	DC to 400 Hz (-3 db)
Analog Bandwidth	100 Hz
Analog Scale Factor	3 V/G

PHYSICAL

Cylinder size with connection plate	4.81" (122.17 mm) L x 1" (25.4 mm) diameter
Rectangle size (1540S)	4.75" (120.65 mm) L x 1.00" (25.4 mm) x .95" (24.1 mm)
Weight	85 g
Input/Output Connections	Flying leads (Teflon insulated) #28 gauge >6" length or 9-pin nonmagnetic MDM connector

Specifications are subject to change without notice.