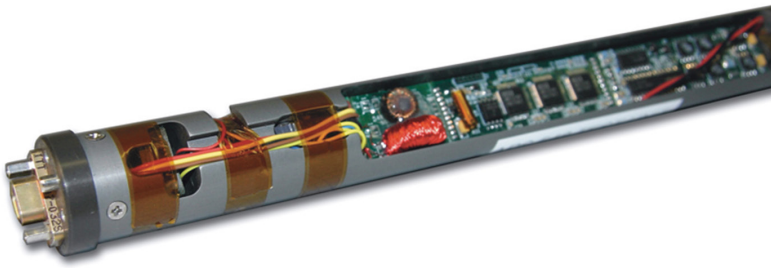
MODEL 547
ORIENTATION AND LOGGING SENSOR

FEATURES

- Small size: 1.0” OD x 10.5” length
- High accuracy: ±0.4° for inclination
- Digital serial input/output
- Internally stored calibration data
- Direct angular output

APPLICATIONS

- Directional drilling steering tools
- Short radius drilling steering tools
- Orientation of borehole logging instruments
- Towed sonar arrays



The Applied Physics Systems Model 547 provides orientation information for borehole logging and directional drilling systems. It is also used in vehicular orientation and sonar array applications. Because of its small size, it is well suited to short radius drilling applications. It is extremely rugged and can be used in drilling and wireline logging situations with high shock and vibration. The 547 System powers from a single input voltage ranging from +7V to +12 V.

The Model 547 contains both a 3-axis fluxgate magnetometer and a 3-axis accelerometer. The microprocessor corrects all sensor outputs for temperature drift and alignment factors before transmitting data on a serial data link.

In addition to magnetometer and accelerometer outputs, it provides digital output for azimuth, inclination, and roll (toolface).

The Model 547 communicates digitally using a bidirectional TTL level serial data link using ASCII characters. A compact high speed binary communications protocol can also be configured.

The Model 547 has an autosend option to enable repeated output of data upon power-on.

These inputs can be used to monitor sensors external to the unit, such as gamma ray detectors and pressure measuring systems.

System calibration can be performed over two temperature ranges:

- 0°C to 70°C (Model 547)
- 0°C to 125°C (Model 547H)

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 example, for calibration over the interval of 0°C to 125°C, data is read at 25°C increments between 0°C and 125°C. The data taken at each temperature includes scale, offset and sensor alignment data.

APPLIED PHYSICS
NAVIGATION

HEADQUARTERS
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ELECTRICAL

Input Voltage Range	+7 VDC to +12 VDC
Max Power Consumption	500 mW
Baud Rate	User Programmable up to 9600 baud
Protocol	User Selectable: ASCII or binary
Communications	5 Volt TTL @ 9600 baud

ENVIRONMENTAL

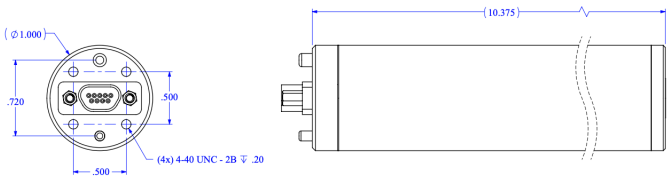
Calibration Temperature Ranges	0°C to 70°C (Model 547) 0°C to 125°C (Model 547H)
Shock	750 G 1 ms half sine wave
Vibration	20 G rms 5 Hz to 1,000 Hz

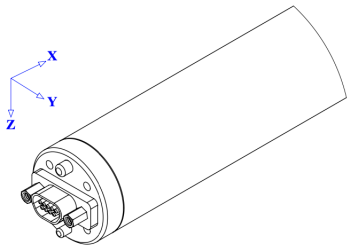
PERFORMANCE

Azimuth Accuracy (Inclination 90°)	±1.2°
Toolface (Roll) Accuracy (Inclination 90°)	±0.4°
Inclination Accuracy (Inclination 90°)	±0.4°
Magnetometer Range	± 6.5x10⁴ nT (± 0.65 G)
Accelerometer Range	± 2 G
Linearity	±0.1% full-scale

PHYSICAL

Outside Diameter (OD)	1.000" (25.4 mm)
Length	10.375" (263.525 mm)
Weight	250 grams
Main Connector	MDM9SH003P (ITT Cannon)
Mating Connector	MDM9PH003L (ITT Cannon)





Specifications are subject to change without notice.