



Applied Physics
Systems

Model 547

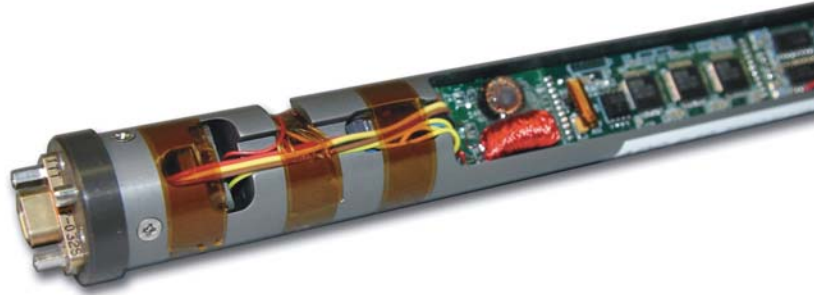
Micro Orientation Sensor

Features

- Small size: 1.0" OD x 10.5" length
- High accuracy: $\pm 0.4^\circ$ 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. It powers from +5 V @ 80 mA.

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 autoselect option to enable repeated output of data upon power-on. It has two auxiliary inputs:

- Analog input with voltage range ± 2.5 V
- TTL count input

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
- 0°C to 125°C

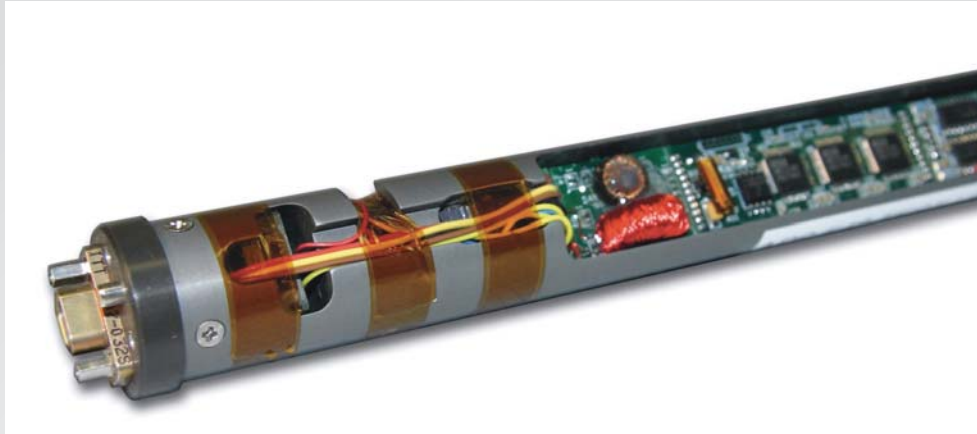
When the system is calibrated over a temperature range, data is read from the system at temperature intervals between the minimum and maximum temperature specification. For example, for calibration over the interval of 0°C to 125°C , data is read at 25°C increments between 0°C and 125°C . The data taken at each temperature includes scale, offset and sensor alignment data.

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PHYSICAL	
Outside Diameter (OD)	1.0" (25.4 mm)
Length	10.375" (263.525 mm)
Weight	1.25 lb (566.99 grams)
Main Connector	MDM9SH003P (ITT Cannon)
Mating Connector	MDM9PH003L (ITT Cannon)
ELECTRICAL	
Input Voltage Range	+5 VDC \pm 0.05 VDC or +7 VDC to +12 VDC
Logic level	TTL/CMOS
Baud Rate	User programmable to 9600 Baud
Protocol	User selectable: ASCII or binary
ENVIRONMENTAL	
Calibration Temperature Ranges	0°C to 70°C or 0°C to 125°C
Storage Temperature Range	-55°C to +150°C
Shock	1000 G 1 ms half sine wave
Vibration	20 G rms 5 Hz to 1,000 Hz
PERFORMANCE	
Toolface (Roll) Accuracy	\pm 0.4°
Azimuth Accuracy	(latitude < \pm 40°): \pm 1.2°
Inclination Accuracy	\pm 0.4°

Specifications are subject to change without notice.