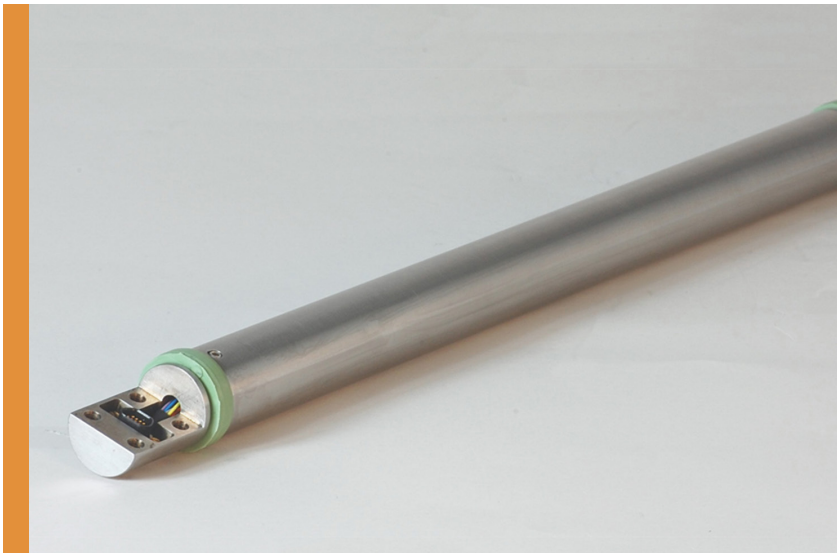
MODEL 850
DIRECTIONAL SENSOR

FEATURES

- Smallest diameter MWD sensor in the world (1.04" OD x 12.3" long)
- High accuracy: ±0.1° for inclination, ±0.3° for azimuth
- Digital serial input/output
- Operational temperature up to:
  - 150°C (Model 850)
  - 175°C (Model 850H)



APPLICATIONS

- EM and pulse based MWD systems
- Short and Ultra Short Radius Drilling applications
- Narrow diameter/Re-entry applications

The Applied Physics Systems Model 850 Orientation Sensor enables high accuracy measurement of the toolface, inclination and azimuth orientation angles in borehole logging and drilling applications in operational temperatures up to 175°C. Because of its small size, it is particularly well suited for use with completion systems.

The Model 850 contains 3-axis fluxgate magnetometer and 3-axis accelerometer packages, both are temperature calibrated to operate through the entire operating temperature range of the system. The combination of these two sensor systems enables determination of the toolface, inclination, and azimuth angles of the directional sensor.

The Model 850 transmits the instrument temperature and either the magnetometer and accelerometer outputs or the system orientation angles. The maximum transmission rate is 8 times per second for magnetometer and accelerometer outputs and 4 times per second for orientation angles.

The Model 850 communicates over a serial bidirectional TTL interface. The serial-in and serial-out lines operate at TTL levels and 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 sensor.

Two communication protocols are available, ASCII and binary:

- With the ASCII protocol, the data returned by the Model 850 is transmitted as an ASCII data stream, complete with returns and line feeds, so that it can be easily displayed on a video terminal (provided a TTL to RS-232 conversion is made by the user).
- The binary protocol is used for high speed sensor to computer interchange. In this case, two bytes are sent to request data. The Model 850 then responds with a multibyte data packet containing the desired data plus header and checksum.

The Model 850 can also be configured to either end data when queried or can be run in an "autosend" mode that continuously sends data in ASCII or binary protocol upon power-up.

The Model 850 system is also available in multiple different configurations with custom end caps and electrical interface configurations available.

Related Products
Model 850HT High temperature

APPLIED PHYSICS
OIL & GAS

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ELECTRICAL

Input Voltage Range	+12 V to +36 V
Current Draw	70 mA @ 15 V
Power Requirement (max)	15 V
Logic Level	TTL
Baud Rate	User Programmable up to 38400 baud (default 9600 baud)
Protocol	User Selectable: ASCII or binary

ENVIRONMENTAL

Operating Temperature Range	0°C to +150°C (Model 850) 0°C to +175°C (Model 850HT)
Storage Temperature Range	-55°C to +160°C
Shock	1000 G 1 ms half sine wave
Vibration	10 G RMS random 50 Hz to 500 Hz

PERFORMANCE

Azimuth Accuracy (@ n° inclination)	±0.3° @ 90° ±0.1° @ 10° ±0.2° @ 5°
Inclination Accuracy	±0.1°

PHYSICAL

Outside Diameter (OD)	1.04" (26 mm)
Length	12.3" (312 mm)
Weight	0.53 lb (240 grams)
Main Connector	MDM9SH003P (ITT Cannon)
Mating Connector	MDM9PH003L (ITT Cannon)

Specifications are subject to change without notice.