

MODEL 760

DIRECTIONAL SENSOR

FEATURES

- Rugged chassis with Max Temperature Indicator
- Accurate inclination and azimuth while rotating
- Accurate RPM detection from static to 300 RPM
- Real time clock, vibration, and flow detection
- Device log with variables for temperature, and vibration versus time

APPLICATIONS

- EM and pulse based MWD systems
- Directional Drilling
- Borehole Logging

The Applied Physics Systems Model 760 is a directional sensor based on our flagship Model 750 platform that incorporates several exciting new features in a more rugged package. Among the new functions added are accurate inclination while drilling (rotating) and real time rotation detection with accurate RPM reporting up to 300 RPM. The new design also uses a stronger chassis and includes a real time clock which enables vibration, flow, and rotation data to be reported in real time and/or logged.

The Model 760 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 760 transmits the instrument temperature along with magnetometer and accelerometer outputs or the system can provide data in orientation angles. The maximum transmission rate is 3 times per second for the magnetometer and the accelerometer outputs and 2 times per second for the orientation angles.

The Model 760 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 can change the baud rate, as well as other user-definable settings, using the Directional Sensor Configuration Utility.

Two communication protocols are available, ASCII and binary:

- With the ASCII protocol the data returned by the Model 760 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 host interchange. In this case, two bytes are sent to request data. The Model 760 then responds with a multibyte data packet containing the desired data plus header and checksum.

The Model 760 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 760 system is also available in multiple different configurations with custom end caps and electrical interface configurations available.

ELECTRICAL

Input Voltage Range	+12 V to +36 V
Current Draw	63 mA @ 15 V, 35 mA @ 28 V
Logic Level	TTL
Baud Rate	User Programmable up to 38400 baud (default 9600 baud)
Protocol	User Selectable: ASCII or binary
Logging Size	4 megabytes

ENVIRONMENTAL

Operating Temperature Range	0°C to +150°C
Storage Temperature Range	-55°C to +160°C
Shock	1000 G 1 ms half sine wave
Rotation Measurement Range	0 to 300 RPM
Vibration	10 G RMS random 50 Hz to 500 Hz

AZIMUTH ACCURACY AT 90° INCLINATION

0 RPM	±0.3°
60 RPM	±0.9°
120 RPM	±1.5°
150 RPM	±3.0°

INCLINATION ACCURACY

	At 90° Inclination	At 45° Inclination	At 20° Inclination
0 RPM	±0.1°	±0.1°	±0.1°
60 RPM	±0.2°	±0.3°	±0.3°
120 RPM	±0.4°	±0.6°	±0.6°
150 RPM	±0.6°	±0.8°	±1.0°

PHYSICAL

Outside Diameter (OD)	1.25" (31.75 mm)
Length	16.66" (423 mm)
Weight	1.4 lb (635 grams)
Main Connector	MDM9SH003P (ITT Cannon)
Mating Connector	MDM9PH003L (ITT Cannon)

Specifications are subject to change without notice.