



Features

- High Accuracy:
 - ±0.1° for inclination and toolface
 - ±0.3° for azimuth
- LCD readout continually displays azimuth, inclination, toolface and more
- Steers in any orientation
- Simple set up and operation - lightweight and compact
- Reliable data transmission with continuous error checking and error display
- Models available for operation up to 150°C

Applications

- Horizontal Directional Drilling
- Short radius directional drilling
- Borehole logging and re-entry drilling



Description

The System

The Applied Physics Systems Model 175 system is designed for high accuracy measurement of toolface (roll), inclination and azimuth orientation angles in borehole logging and drilling applications and for horizontal directional drilling. The system consists of the following components:

1. Downhole Probe Assembly
2. Model 5545 Top End Unit
3. Driller's Display
4. Drill Gamma Software

Downhole Probe Assembly

The downhole probe assembly consists of a Model 750WL Orientation Sensor shock mounted in a 1.75" diameter by 29" long pressure barrel.

With the 750WL sensor, the accuracy of the Model 175 system is ±0.1° for toolface and inclination and ±0.3° for azimuth.

Model 5545 Top End Unit

The Top End Unit interfaces with the wireline and provides power for the downhole probe. In addition, the unit displays the measured orientation angles and the temperature compensated accelerometer and magnetometer sensor outputs.

Downhole voltage, current draw and temperature are also displayed. The unit has a switch to zero the toolface angle at the surface before starting drilling or logging operations. During operation, toolface and inclination averaging can be used to dampen vibration noise due to drilling. This enables accurate orientation data to be obtained while continuing to drill.

Driller's Display

The Driller's Display has a large daylight viewable LED display which indicates azimuth and inclination. Gravity toolface or magnetic toolface is shown on a large circular display. This unit is housed in a water resistant case with no operating controls and a single cable connection to the display unit.

Drill Gamma Software

Drill Gamma software is typically run on a laptop computer connected to the Top End Unit. The software displays all of the downhole orientation and sensor data. In addition, the software captures and saves data to logging files. These logging files store all of the downhole data together with depth information, which is typically entered manually.

Model 175

Wireline Steering Tool System



Applied Physics
Systems

750WL ORIENTATION SENSOR	
Angular Accuracy	
Azimuth (latitude $\pm 45^\circ$)	$\pm 0.3^\circ$
Inclination	$\pm 0.1^\circ$
Toolface	$\pm 0.1^\circ$
Operating Temperature Range	-40°C to 125°C (standard model) -40°C to 150°C (high temperature model)
Storage Temperature Range	-55°C to 165°C
Size (pressure barrel)	1.75" diameter 29" long
Weight	13.0 lb
Shock	1000 g 1 ms
Vibration	20 G RMS 5 Hz to 1000 Hz
MODEL 5545 TOP END UNIT	
Operating Temperature Range	-30°C to 50°C
Size	4" x 9" x 7"
Weight	2.65 lb
System Power	110 to 240 VAC 50 Hz to 60 Hz 0.8 A
DRILLER'S DISPLAY	
Operating Temperature Range	-30°C to 50°C
Size	16" x 1.5" x 9"
Weight	6.95 lb
Power	Driller's Display is powered from the Top End Unit with an interconnect cable over 200 feet long.

Specifications are subject to change without notice.