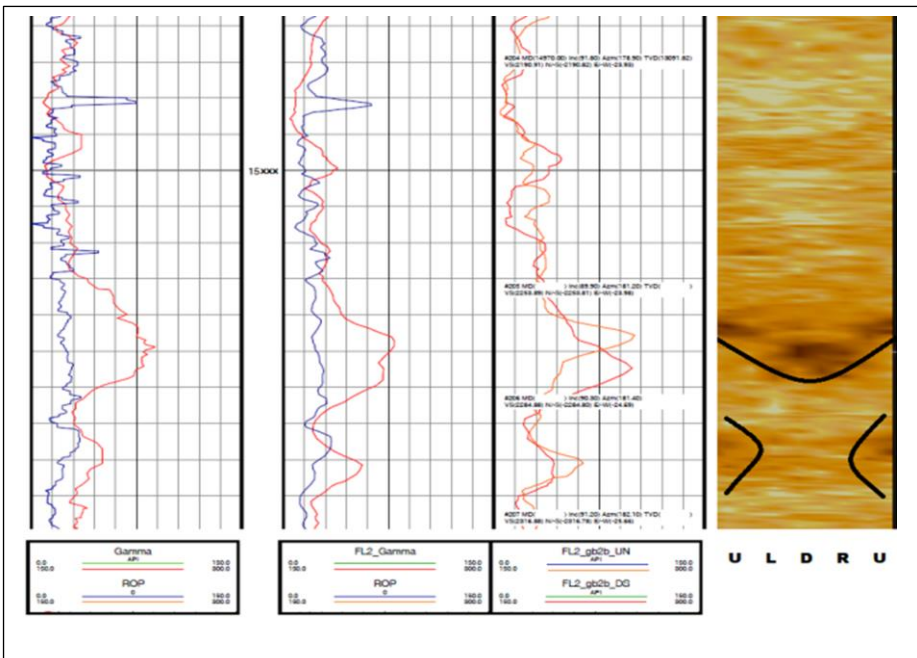


# ORBITAL GAMMA

## Azimuthal Gamma and Rotary Inclination

Increasing complexity of lithology requires more accurate decision making to remain in the sweet spot. With azimuthal gamma, operators can see the dip and direction of the formation. By using the rotary inclination, operators can make instantaneous corrections to the well bore trajectory. By combining state of the art technology from the PDT Flashlight tool with the cost effective style MWD probe, Pulse Directional Technologies is pleased to offer the Orbital Gamma probe. It is designed to be incorporated with the MWD tool string, and replace the existing MWD gamma while providing the same features currently available in our Flashlight tool. The Orbital Gamma is capable of communicating to surface in real time, azimuthal gamma measurements of 2, 4 or 8 bins, and storing up to 32 bins in memory. Using PDT's surface decoder, an 8 bin azimuthal gamma can be compressed into a single 16 bit word and decompressed on surface for blazing fast decoding.



### Features and Benefits

#### Field Programmable

- Selectable between 2, 4 and 8 bin azimuthal gamma.
- Gamma can be sent to surface using conventional 1 bin at a time transmission or data compression methods.
- Rotary inclination.
- Shock and vibration.
- Conventional gamma.
- RPM

#### Fully Retrievable

- Reduce LIH exposure.
- Field replaceable fin centralizer.

### Applications

#### Conventional Drilling

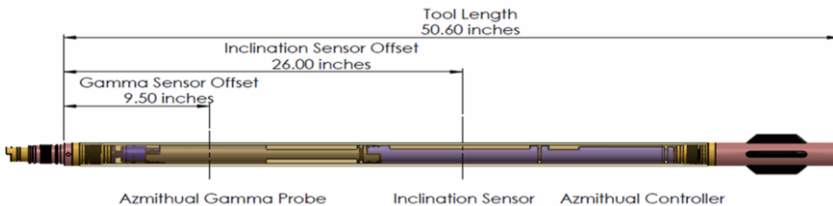
- Vertical, directional and horizontal drilling.

#### Unconventional Drilling

- Coal Bed Methane/ coal seam gas.
- Mining/degasification and delineation of fields.

#### Faulted Formations

- Rotary inclination feature allows for continuous survey while drilling
- Azimuthal gamma tells the dip and directional of the formation.



Diameter (O.D.)	1.875"
Length	50.6"
End Connectors	10 Pin Kintec Connectors
Input Voltage Range	17V - 30V
Max Counts per Second Range	1023
Vibration (3 axis) 50-1000 Hz Random spectrum	20 G's
Shock (Z-axis)	500 G., 0.5 ms
Shock (X or Y-axis)	1000 G., 0.5ms
Sensitivity	1 CPS
Max Operating Pressure	20,000 psi
Max Operating Temperature	150°C, 302°F
<b>Sensor Specification</b>	
Two Bin Gamma Up and Down	180 degree Windows
Four Bin Gamma Up, Down, Left and Right	90 Degree Windows
Eight Bin Gamma	45 Degree Windows
Rotary Inclination Accuracy	0.25 Degrees +/-
RPM Measurement	2 RPM +/-
Shock measurement range	70g
RMS vibration measurement range	70g
Shock measurement accuracy	+/- 1g
rms vibration measurement accuracy	+/- 1g
Shock Count Threshold	20 G's
Temperature	1 Degree Celsius/Resolution