

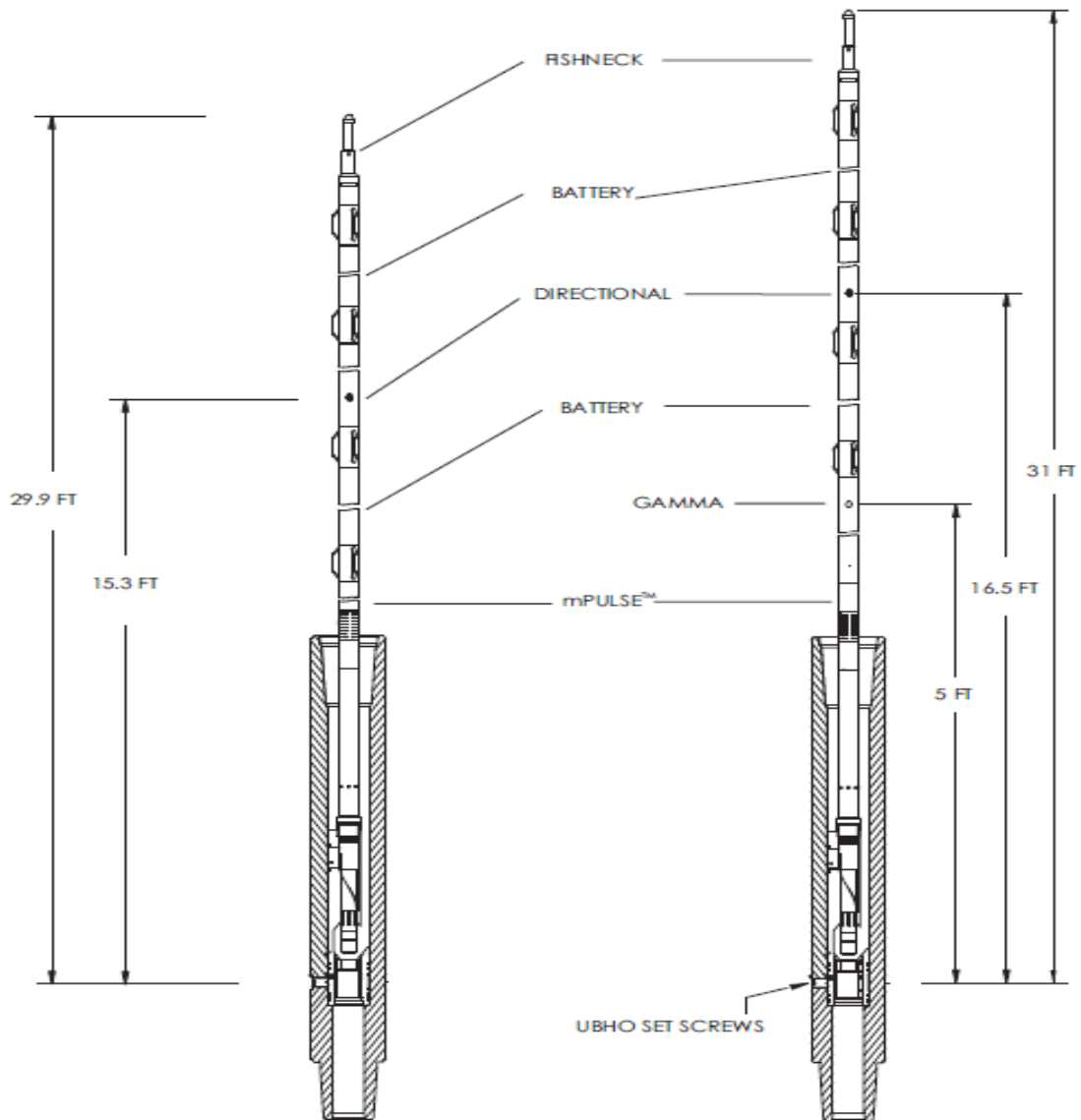
# MWD System Overall



<b>Flow Rates</b>	60-165 gpm (3.5" O.D. collar, 2.25" I.D.) 100-300 gpm (4.75" O.D. collar, 2.25" I.D.) 150-600 gpm (6.50" O.D. collar, 2.25" I.D.) 400-1200 gpm (8.25" O.D. collar, 3.25" I.D.)	
<b>Pressure Drop</b>	175 psi @ 500 gpm	
<b>Hydrostatic Pressure</b>	20,000 psi MAX	
<b>Maximum Temperature</b>	175°C (347°F), all assemblies with HT batteries 150°C (302°F), with LT batteries	
<b>Length</b>	Directional Only w/ 2 battery assemblies Directional + Gamma w/ 2 battery assemblies	~ 29.90 ft ~ 31.00 ft
<b>Downhole Operating Battery Life</b>	Directional Only, 2 battery assembly Directional + Gamma w/ 2 battery assembly	~ 1,000 hrs ~ 600 hrs
<b>Sensory Accuracy</b>	Dip Mag Field Gravity Inclination Azimuth Pointing Accuracy	+/- 0.1° +/- 0.0001 Gauss +/- 0.004 g +/- 0.1° +/- 0.5° +/- 0.15°
<b>Roll Test Spreads</b>	Dip Mag Field Gravity Inclination Azimuth	+/- 0.5° Max +/- 0.0035 Gauss Max +/- 0.004 g Max +/- 0.15° Max +/- 0.3° Max
<b>Survey Trans Time</b>	50 - 100 sec. for typical configurations	
<b>Toolface Updates</b>	~ 15 sec. intervals (typical, pulse width & resolution dependent)	
<b>Suitable LCM</b>	Tolerant in Medium to High LCM Concentrations	
<b>Retrievability</b>	Wireline retrievable and re-insertable	

**Shock & Vibration** Designed and Demonstrated for harsh drilling environment

**Gamma** Standard correlation with calibrated and compensated wireline logs of 3 API @ 100



**DIRECTIONAL ONLY**

**DIRECTIONAL + GAMMA**