Smart Motor at-bit instrumented mud motor technical data sheet



Scientific Drilling's Smart Motor features at-bit measurements integrated with a positive displacement mud motor. The electronic sensor package provides azimuthal gamma ray, inclination, RPM, and vibration measurements at the bit, making it the ultimate drilling & geosteering solution.

Using its Wi-Sci[™] short hop bi-directional communication system, the Smart Motor transmits real-time logging data directly to surface via high-speed mud pulse telemetry and electromagnetic telemetry.

For more information on improving your drilling efficiency [while staying on target] contact your Scientific Drilling sales representative or visit: http://scientificdrilling.com/LWD



Example azimuthal gamma ray plot

APPLICATIONS

- Instantaneous monitoring of mud motor output
- + Geosteering

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- Tight well plan trajectory control
- Lithology identification/correlation
- Casing and coring point selection

BENEFITS

- + Reduce slide % with immediate monitoring of motor yields
- Proactive geosteering with Azimuthal Gamma Ray measurements 16" above the bit
- Reduce dogleg severity in vertical or horizontal sections with continuous at-bit inclination
- + Larger allowable motor bend settings than other at-bit measurements subs

FEATURES

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- Wi-Sci[™] EM short hop communication for real-time data in OBM and WBM applications
 - 16-sector gamma ray images, continuous inclination, bit RPM, and tri-axial vibration measurements at the bit
 - At-bit sensor package is power section independent and is compatible with a majority of SDI's Titan motor line

GENERAL SPECIFICATIONS	5.25 in	6.75 in	MWD	
NUMINAL I UUL UD	(13.34 cm)	(17.15 cm)	Collar	
RECOMMENDED HOLE SIZES	6 in - 6 ³ / ₄ in (15.24 cm - 17.15 cm)	$7 \frac{7}{8}$ in - 8 $\frac{3}{4}$ in (18.65 cm - 22.23 cm)		
MOTOR LENGTH	Dependent on power section	Dependent on power section		
BIT TO BEND LENGTH	63.00 in (160.02 cm)	70.00 in (177.80 cm)		
BIT BOX CONNECTION	$3 1/_2$ in API reg. Box	$4 \frac{1}{2}$ in API reg. Box	1	
MAKEUP TORQUE BOX TO BIT	8,320 ft·lbf (11,280 Nm)	20,280 ft·lbf (27,496 Nm)		
MAX BEND ANGLE	2.25°	2.25°		
MAX OPERATING TEMPERATURE	302° F (150° C)	302° F (150° C)		
MAX WEIGHT ON BIT	30,000 ft-lb	60,000 ft-lb		
MAX DRILL STRING RPM	Dependent on motor bend	Dependent on motor bend	Power	
MAX BIT RPM	500 RPM	500 RPM	Section	
MEAN BATTERY LIFE	300 hrs 400 hrs Please see current motor handbook for DLS and RPM limitations		a	
MEASUREMENT SPECIFICAT	IONS			
BIT TO SENSOR DISTANCE	16.00 in (40.64 cm)		đ	
DETECTOR	Focused, Eccentered, Scintillation Nal			
RANGE	0 - 1000 API			
AZIMUTHAL GAMMA BINS	Total, 2, 4, 8** Real-time, 16 Memory			
STATISTICAL REPEATABILITY	+/- 2.1% at 60 ft/hr at 100 API			
INCLINATION ACCURACY	Static Drilling +/- 0.15° +/- 0.3° Sliding, +/- 0.5° Rotating			Wi-Sci™
STICK/SLIP RPM	500 - 1000 RPM, +/- 5			H Short Hop
VIBRATION & SHOCK	0-50g, +/- 5%			
**When used with EM-telemetry	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Bent Housing	
Quadrant	8 bins	16 bins	Bearing Housing Sensor Electronics Integrated Mandrel	
	COMPANY ST			

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