

DISCOVER THE NEW GENERATION

Discover the potential of unified telemetry configurable in real-time

Eliminate unnecessary runs with the ability to instantly adapt transmission modes to the downhole environment

- ▶ Extended Run Length Up to 250 Hours
- ▶ Utilize EM Technology in Challenging Areas
- ▶ Seamlessly switch between pulse and EM, or Unified Telemetry
- ▶ Compatible with Echo Antenna

Discover the impact of unparalleled data rates

Elevate drilling standards with comprehensive real-time BHA diagnostics

- ▶ Drill Faster with Less Risk
- ▶ Optimize Drilling Performance
- ▶ Drilling Mechanics Measurements (e.g. collar RPM, stick/slip, shock & vibration)
- ▶ Instantaneous six axis surveys

Discover the value of advanced measurements

Maximize production and minimize completion risks with a wellbore drilled on more data and fewer calculated projections

- ▶ Continuous Inclination/Azimuth
- ▶ Accurate Placement
- ▶ Smoother Wellbore
- ▶ Increased ROP
- ▶ Less Time Required Sliding
- ▶ Compatible with At-Bit inclination & azimuthal gamma ray

Discover the strength of collar mounted

Fuel productive downhole hours with a system designed for endurance in the harshest drilling conditions

- ▶ Ground-Breaking Reliability
- ▶ Total tool length under 15'
- ▶ Elimination of UBHO's, muleshoes, set screws, centralizers and wire harnesses
- ▶ Anti-Jam feature to chew through debris



OPERATING SPECIFICATIONS

Description	5.13"	5.50"
Minimum ID	3.125" (79.4mm)	3.125" (79.4mm)
Collar OD	5.125" (130mm)	5.500" (139.7mm)
Connection Makeup Torque	12,500 ft-lbs (16,947 Nm)	18,500 ft-lbs (25,082 Nm)
Max. Continuous Rotating Axial Load	50,000 lbs (22,240 daN)	55,000 lbs (24,466 daN)
Max. Overpull Before Inspection	200,000 lbs (88,960 daN)	220,000 lbs (97,860 daN)
Max. Absolute Overpull	500,000 (222,410 daN)	625,000 (278,014 daN)
Recut Length Box End Connection	3.60" (91.44mm)	3.60" (91.44mm)
Max. Dogleg Severity Rotating (°/100ft°/30m)	14° Slick, 20° Flex	12° Slick, 17° Flex
Max. Dogleg Severity Sliding (°/100ft°/30m)	20° Slick, 26° Flex	18° Slick, 24° Flex
Recommended Max. Flow Rate	450 gpm (1.7m³/min)	450 gpm (1.7m³/min)
Max. Landed Tool Weight	775 lbs	1,041 lbs

*Velocity is non-retrievable

Description	6.63"	8.00"	9.00"
Minimum ID	3.600" (94.0mm)	4.700" (119.4mm)	4.700" (119.4mm)
Collar OD	6.625" (168mm)	8.125" (206mm)	9.000" (228.6mm)
Connection Makeup Torque	25,500 ft-lbs (34,573 Nm)	46,500 ft-lbs (63,045 Nm)	55,600 ft-lbs (25,082 Nm)
Max. Continuous Rotating Axial Load	70,000 lbs (31,140 daN)	110,000 lbs (48,930 daN)	138,000 lbs (61,000 daN)
Max. Overpull Before Inspection	275,000 lbs (122,330 daN)	450,000 lbs (200,170 daN)	550,000 lbs (245,000 daN)
Max. Absolute Overpull	1,000,000 lbs (444,820 daN)	1,500,000 lbs (667,230 daN)	1,650,000 lbs (733,000 daN)
Recut Length Box End Connection	3.90" (99.06mm)	4.00" (101.60mm)	2.00" (50.8mm)
Max. Dogleg Severity Rotating (°/100ft°/30m)	10° Slick, 14° Flex	8° Slick, 12° Flex	4° Slick
Max. Dogleg Severity Sliding (°/100ft°/30m)	16° Slick, 22° Flex	12° Slick, 15° Flex	8° Slick
Recommended Max. Flow Rate	800 gpm (3.0m³/min)	1,300 gpm (4.9m³/min)	1,300 gpm (4.9m³/min)
Max. Landed Tool Weight	1,355 lbs	2,500 lbs	3,500 lbs

OPERATING PARAMETERS

Drilling Fluid	Water Based / Oil Based / Air		Max: 50 lb/bbl, 2% Sand Volume, LGS< 8%	
Temperature Range	0°C–150°C (32°F–302°F)			
Max. Operation Limitations	20,000 psi Pressure	500 rpm Rotation	1,000g 1/2 msec 1/2 Sine	30g 30–500Hz
Telemetry Transmission Carrier	Unified telemetry (1.0 - 16 BPS EM, (multiple frequency), 0.5-2 BPS Pulse (Multiple frequency)			
Battery Probe Output at 150°C	76A.hr at 36V (196A.hr at 14V Equivalence)			
Shock / Vibration And Rotation Sensing	3 Axis ±500g Shock w/ 0–2,000 Hz Response, 500g Lat. and Axl. Shock. ±500 rpm, ±5,000°/s² Acceleration			
Distributed Shock Level (Lateral, Axial) Count Above 100 grm	Level 3	CPS > 11 = Severe		
	Level 2	6 < CPS > 10 = Moderate		
	Level 1	3 < CPS < 5 = Low		
	Level 0	< 2 CPS = Very Low		
Distributed Stick Slip Measurement Every 20 secs	Level 3	>50% difference between Minimum and Maximum RPM		
	Level 2	25% - 49% difference between Minimum and Maximum RPM		
	Level 1	1% - 24% difference between Minimum and Maximum RPM		

Velocity Directional Sensor	(3 axis flux gate magnetometer, 3 axis ruggedized servo balanced quartz accelerometers)
Inclination Range	0 to 180 degrees
Inclination Accuracy	+/- 0.1 degrees
Azimuth Range	0 to 360 degrees
Azimuth Accuracy	1 degree @ inc > 10 degrees
GTF Accuracy	1 degree with inc > 10 degrees
MTF Accuracy	2 degrees with dip<70 deg
Continuous Inclination	+/- 0.25 degrees
Continuous Azimuth	+/- 3 degrees with Inc > 25 degrees
High Definition Surveys	Realtime automated Multi Station Survey Analysis upon request

Velocity Gamma Sensor	(NaI Scintillation detector with PMT)
Calibration	API 0-800 API +/-3 API @100 API
Vertical Resolution	6" (152 mm)
PMT	Hamamatsu Photonics
Gamma Averaging Interval	Configurable between 1 - 60 secs
Gamma Recording Interval	Configurable between 3 - 60 secs
Maximum ROP for 2 points per foot Recorded Mode at 3 sec Recording Interval	600 fph
Maximum ROP for RT Data	Dependent on telemetry and frame selection