

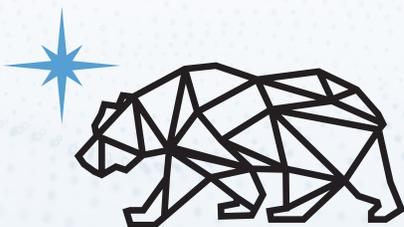
URSA gyroMWD is Scientific Drilling International's (SDI) rugged, high-angle gyroMWD built using SDI's propriety solid-state gyro sensors. This innovative system enables collection of accurate gyroMWD surveys in a wide range of onshore and offshore drilling environments while providing robust, dependable surveys. Additionally, URSA survey times are greatly reduced compared to traditional gyroMWD sensor survey times, keeping drilling programs on target and on time.

As a modular add-on to industry-leading MWD systems, URSA gyroMWD combines high-accuracy gyro surveys with dependable quality assurance you can trust. Designed for ZeroPOB operations without the need for dedicated personnel on location, URSA gyroMWD enables the ultimate flexibility in precision wellbore placement.

- + Precision surveying in the presence of magnetic interference
- + Advanced quality control systems for collision avoidance

For more information on improving your wellbore surveys, contact your Scientific Drilling representative or visit:

<http://scientificdrilling.com/wellbore-surveying>



URSA gyroMWD

APPLICATIONS

- + Collision avoidance
- + Close proximity drilling
- + Magnetic ranging
- + High-angle directional wells
- + Gross error detection
- + Reduced error ellipse
- + Offshore and onshore drilling
- + Multi-well and pad drilling
- + Congested fields and platforms
- + Batch drilling
- + Riserless top hole drilling
- + Magnetic interference zones
- + Whipstock orientations & kickoffs
- + Extreme environments

BENEFITS

- + Provides fast, high-accuracy surveys
- + Ruggedized sensor package and robust quality assurance
- + High shock/vibration tolerance
- + Enables high-accuracy surveying in multi-well environments with real-time true gyro tool face
- + Provides seamless compatibility with industry-leading RSS and MWD systems
- + Allows continuous gyro tool face while sliding
- + Enables operational efficiency through flexibility of BHA configurations
- + Significantly reduces cost and time by eliminating the requirement for wireline orientation and survey check-shot runs

MECHANICAL SPECIFICATIONS

COLLAR SIZES	4.75 in. (120.65 mm) 6.75 in. (171.4 mm), 8.00 in. / 8.25 in. (203.2 mm / 209.55 mm) 9.50 in. (241.3 mm)
PROBE OD	1.75 -2.5 in. (44.5 - 63.5 mm)
PROBE LENGTH*	8.74 - 24.11 ft (2.66 - 7.35 m)

*Additional length may be added to enable flexible BHA placement

ENVIRONMENTAL SPECIFICATIONS

PRESSURE RATING	20,000 psi (137,895 kPa) 30,000 psi (206,843 kPa) Available on request
TEMPERATURE RATING	302°F (150°C)
VIBRATION RATING	20 g _{rms} (0-350Hz)
OPERATING TIME*	300+ hrs

*Operating time varies based on slide / rotate ratio and profile

INSTRUMENT & SYSTEM SPECIFICATIONS

SENSOR TYPE	North-seeking solid-state gyroscope (URSA) 3- Axis hi-shock accelerometer	
MEASUREMENT	ACCURACY*	RANGE
Inclination	±0.1°	0°-80°
Azimuth	±0.1°	0°-360°
Tool face	±0.1°	0°-360°
CALCULATED OUTPUTS	Inclination, Azimuth, Gravity TF, Gyro Tool Face, Temperature, Shock & Vibration Continuous Inclination (sliding and rotating)	
TELEMETRY	Host MWD telemetry system	

*System accuracy subject to well profile. Error ellipse calculations available upon request.

Specifications are subject to change without notice.



Innovatively designed with a focus on operational performance and efficiency, Scientific Drilling's URSA gyroMWD technology is optimized for a visionary, industry-first approach to remote operations.

With URSA gyroMWD, fast, detailed, and dependable gyroMWD surveys can be achieved. Combining URSA gyroMWD with advanced quality control systems allows peace of mind in an accurate survey program.

Additional configurations available depending on BHA design. Consult your SDI representative.