

The latest addition to the Gyro-Guide GWD™ suite of tools. Capable of surveying from vertical up to and beyond 90 degrees of inclination.

Developed for durability, reliability and highly accurate azimuth readings while enduring the harsh drilling environment.

A new revolution in guidance adds the rate-gyro sensor to MWD systems in drilling operations. Inside is the new MXY Gyro, an in-house designed and manufactured gyroscopic sensor featuring greater accuracy, stability, shock resistance and the ability to be modeled at higher inclinations. Combined with a unique and proprietary gyro mechanization, this system is a complete all attitude surveying solution.

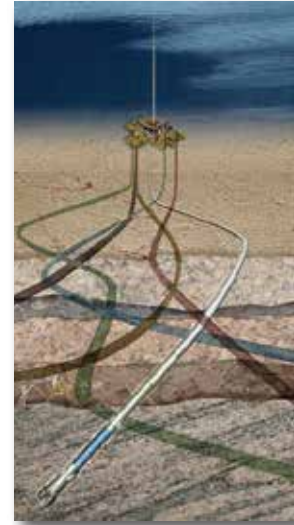
Key applications and advantages:

- » Elimination of gross errors by comparing GWD and MWD survey data. Real time knowledge of accurate well bore placement increases safety and operational decisions. Reliable, high accuracy surveys from section TD to surface while tripping verifies both MWD and GWD performance, eliminating the need for a separate gyro run with no incremental time taken.
- » Derisking environmental and regulatory liability
- » High inclination kick-offs
- » Accurate and real time well bore navigation during high inclination close approaches
- » Well interceptions, for example relief well operations
- » Accurate and reliable well bore placement while drilling
- » Memory multishot surveys on the trip out of hole
- » Survey data is further enhanced by applying MSC (Multi-Station Correction) calculations

Features:

- » Gyro based guidance system compatible with all major MWD and directional companies
- » Compatible with all BHAs including those with Rotary Steerable Systems

GWD90™



- » Continuous inclination and tool face from vertical while sliding.
- » Full surveys on demand
- » Proven ruggedized proprietary rate-gyro and accelerometer sensor array
- » Optional IMT mode option allows for accurate survey operations in areas with BHA movement, such as on floating structures and riser-less operations
- » Fastest surveying times in the industry
- » Communicates in real-time through the host MWD mud pulse or EM telemetry system
- » Unaffected by magnetic interference, Gyro-Guide sensors can run closer to the bit in the MWD string by eliminating the need for nonmagnetic spacing collars
- » Robust enough to be positioned directly above the bit

Specifications

Sensors: Three axes of rate-gyro and accelerometer sensors.

» **System accuracy at maximum inclination:**

Azimuth	± 1.0°
Inclination	± 0.1°
Gyro Toolface	± 1.0°
Gravity / High-Side TF	± 0.1°

» **Maximum Inclination:** Unlimited

» **Probe OD:** 1 7/8"

» **Pressure rating:** 20,000 psi

» **Temperature:** 150° C / 300° F with no time constraints.