

GYRO PATH® MWD

REAL-TIME GYRO-TELEMETRY SYSTEM

Looking for a reliable MWD solution that will boost the efficiency of your drilling operation? Look no further than Gyro Path® MWD!

This state-of-the-art Measurement While Drilling tool uses a north-seeking gyro to provide precise wellbore surveys and telemetry with unparalleled accuracy.

Unlike conventional magnetometer-based sensors, Gyro Path® MWD is not affected by magnetic fields, and the real-time telemetry is reliable and available, all without a wireline.

The Gyro Path® MWD system is designed to streamline your drilling operations and eliminate the need for multiple tools, reducing costs and minimizing downtime.

A compact design, advanced features and modular assembly options, make Gyro Path® MWD the perfect solution for any drilling company looking to stay ahead of the competition.

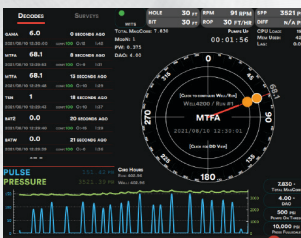
So, what are you waiting for?

Get in touch with us to learn more about the Gyro Path® MWD system and stay on track with this game-changing tool.

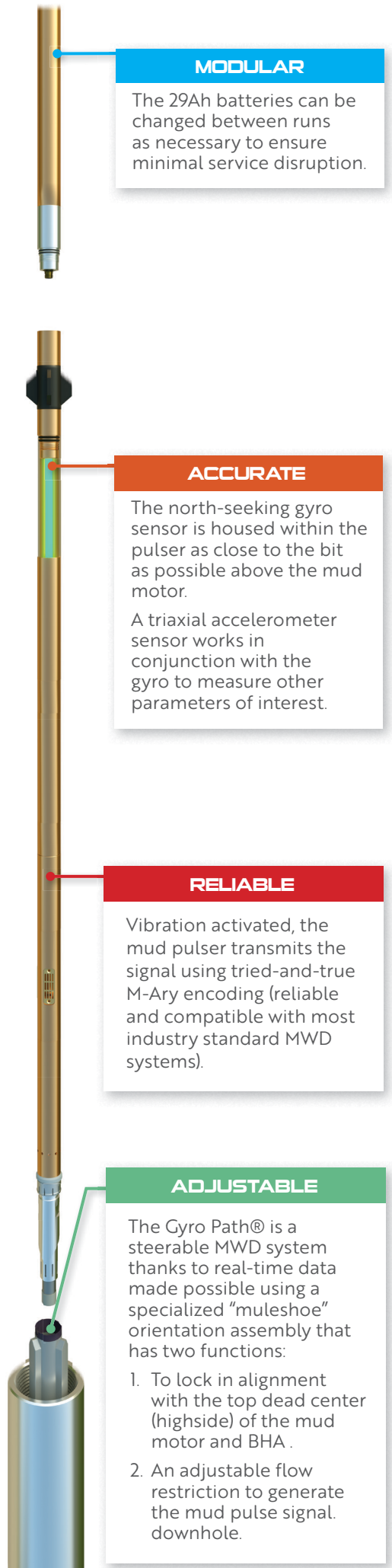
FEATURES

- ▶ Minimal MWD expertise is necessary to operate this tool; the entire system can be up and running in less than 30 minutes.
- ▶ Uses a tried-and-true mud pulse transmission to deliver real-time telemetry data, eliminating the need for wireline services.
- ▶ Fully retrievable.
- ▶ Places gyro sensor as close to the bit as possible.
- ▶ Perfect for whipstock orientation and anti-collision environments, when accuracy is critical.
- ▶ For increased operational flexibility, several add-on sensors can be installed into the same string of tools.
 - Conventional Orientation Sensor
 - 360° Gamma, Orbital Gamma
 - Continuous Inclination & Azimuth
 - Shock & Vibration
 - RPM & Stick-Slip

ADVANCED DECODING



Drilling engineers can make wellbore adjustments with confidence when they have an Icefield Gyro in the hole and a reliable next generation decoder on the surface. The MWD software is accessible anywhere on site, and remote monitoring functionality can be enabled when needed.



MODULAR

The 29Ah batteries can be changed between runs as necessary to ensure minimal service disruption.

ACCURATE

The north-seeking gyro sensor is housed within the pulser as close to the bit as possible above the mud motor.

A triaxial accelerometer sensor works in conjunction with the gyro to measure other parameters of interest.

RELIABLE

Vibration activated, the mud pulser transmits the signal using tried-and-true M-Ary encoding (reliable and compatible with most industry standard MWD systems).

ADJUSTABLE

The Gyro Path® is a steerable MWD system thanks to real-time data made possible using a specialized "muleshoe" orientation assembly that has two functions:

1. To lock in alignment with the top dead center (highside) of the mud motor and BHA .
2. An adjustable flow restriction to generate the mud pulse signal downhole.

OPERATING SPECIFICATIONS

These are the minimum specifications and subject to change depending on the tool version and availability. Users can expect no less than the following characteristics when operating the Gyro Path® MWD system.

PHYSICAL

| | | |
|----------------------------|-------------|------------|
| TOOL OD | 47.625 mm | 1-7/8 in |
| TOOL LENGTH | 6.2 m | 21 ft |
| MAXIMUM PRESSURE | 124,105 kPa | 18,000 psi |
| MAXIMUM TEMPERATURE | 85°C | 185°F |

| | BHA SIZE (INCHES) | BEND RADIUS | MAXIMUM FLOW RATE | |
|--|---------------------------------|------------------------|--------------------------|---------|
| MECHANICAL OPERATING THRESHOLDS | 3-½ | 30° | 0.8 m³/min | 200 gpm |
| | 4-¾ | 25° | 1.5 m³/min | 400 gpm |
| | 6-½ | 18° | 2.6 m³/min | 700 gpm |
| | 6-¾ | 20° | 2.6 m³/min | 700 gpm |
| | 8-½ | 12° | 3.5 m³/min | 900 gpm |
| MAXIMUM SHOCK | 500g, 0.5 msec, ½ sine all axes | | | |
| MAXIMUM VIBRATION | 50 – 500 Hz - 10g all axes | | | |
| LOST CIRCULATION MATERIAL (FAST-PULSE SCREEN) | FINE | MEDIUM | COARSE | |
| | 50 lb/bbl | 30 lb/bbl | 20 lb/bbl | |

TECHNICAL

| | |
|---------------------------|--|
| TELEMETRY SYSTEM | Positive Mud Pulse |
| RETRIEVABILITY | Wireline Retrievable BHA ID >= 57 mm [2-¼ in] |
| TOOL ACTIVATION | Vibration Sensor Switch |
| OPERATING CAPACITY | 180 Hours Per Battery 3 Batteries Maximum |

| | | DATA RATE | 0.5 - 1.2 Bits/Second | 0.250 - 2.00s Plsw |
|------------------------------------|-------------------|------------------|-----------------------|--------------------|
| SENSOR | PARAMETER | RANGE | ACCURACY | SPREAD |
| 3-AXIS ACCELEROMETER | INCLINATION | 0° - 180° | +/- 0.10° | 0.20° |
| | GRAVITY TOOL FACE | 0° - 360° | +/- 0.10° | 0.20° |
| | TEMPERATURE | -35 - 200°C | +/- 0.5°C | 1.00°C |
| NORTH-SEEKING GYROSCOPE | AZIMUTH | 0° - 360° | +/- 0.10° | 0.20° |
| | GYRO TOOL FACE | 0 - 360° | +/- 0.10° | 0.20° |

Gyro accuracy is dependent on total survey time and may vary depending on the tool model and application.

| | |
|------------------------------|---|
| GYRO ACQUISITION TIME | < 1 minute (depending on accuracy requirements) |
| TELEMETRY UPDATES | 10 - 28 seconds between data points |
| GYRO CONSIDERATIONS | Azimuth values are not reliable at orientations within 20° of an east-west horizontal line but are valid at other horizontal azimuths. Inclination/ Dip values are valid at all orientations. |

