

NorthStar MWD System

Stay On Target and In Zone with Aim NorthStar MWD

Aim Directional Services uses industry proven technology to provide precise directional and gamma ray data for any Measurement While Drilling (MWD) application. With Aim's robust equipment, operators can rely on our accurate sensors to land in zone, stay on target, and eliminate unnecessary costly trips out of the hole. Aim Directional Services offers both mud pulse and electromagnetic (EM) technology to meet our client's various drilling needs.

Aim Directional has invested in ruggedized tool components to provide multiple reliable performance MWD systems. All of the available systems below can be equipped with EM to create our Parallel Telemetry systems.

- **Classic NorthStar MWD System**
- **Essential NorthStar MWD System**
- **Elite NorthStar MWD System**

Available MWD Services

- Mud Pulse, EM, and Dual Telemetry
- Gamma, Azimuthal Gamma, and Resistivity
- Continuous Inclination and Azimuth
- Top Mount and Rotary Pulsers, Aim Patented Lower Ends
- Near-bit Inclination/Gamma
- Pressure While Drilling (PWD)



Mud Pulse System Advantages

- Proven technology with Tensor based design
- Fully retrievable via wireline
- Patented lower poppet housing provides reliable performance, even in formations where high LCM is required



EM System Advantages

- Ability to operate in any drilling fluid (mud, oil, air, foam, etc.)
- Low or no survey wait time
- Extreme reliability even in high LCM situations
- Ultra-low noise receiver allows for deeper drilling
- Increased speed of data transmission

Aim Directional Benefits

- Highly reliable and proven technology reduces non-productive time (NPT)
- Avoid costly mistakes of well path deviation and missed targets
- Tool strings are centralized and integrated with rugged components, which are designed to greatly reduce negative effects of high shock and vibration
- Accurate gamma logging, including Azimuthal Gamma combined with real-time operation center (RTOC) services ensures real-time quality control and on-the-fly well path changes



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Mechanical Specifications

Directional / Gamma	
Operating Temp	0-350° F 32-175° C
Survival Temp	-40-365° F -40-185° C
Max Operating Pressure	20,000 psi 137.9 Mpa
Random Vibration	20 g (RMS 30-500 Hz)
Shock	1000 g (0.5 msec half-sine)

Sensor Accuracy

Directional		
Inclination		±0.1°
Azm	5° inc	±1.2°
	10° inc	±1.0°
	90° inc	±0.5°
Toolface		±1.0°
Dip		±0.3°
Gravity		±2.0 mG
Magnetic		±1.5 mGauss
RPM		±0.5% of value

Gamma	
Sensitivity	1.4 CPS per API
Accuracy	± 2% to 300° F ± 5% to 350° F
Max AP Range @ 5% PPU error	8000 API
Thin-bed resolution (8" hole at 50% points)	6.8"/0.173m

Aim NorthStar MWD Systems	Classic	Essential	Elite
High LCM Compatible	✓	✓	✓
RTOC Monitoring (24-hr)	✓	✓	✓
Wireline Retrievable	✓	✓	✓
Parallel Telemetry (EM) Compatible	✓	✓	✓
Rotational Sequence	✓	✓	✓
Real-time Raw Survey Data	✓	✓	✓
Real-time Shock & Vibe	✓	✓	✓
Real-time Stick-Slip Detection	✓	✓	✓
Long Surveys (6 decimals)	✓	✓	✓
Generic Variables		✓	✓
High Speed MP Decoding		✓	✓
Continuous Inclination (onboard)		Optional	✓
Continuous Azimuth (onboard)		Optional	✓
Continuous Incl. (additional sensor)		Optional	Optional
Azimuthal Gamma		Optional	Optional
Nearbit Inclination/Gamma		Optional	Optional
Pressure While Drilling (PWD)		Optional	Optional
Resistivity		Optional	Optional
Collar Mounted System	Optional	Optional	Optional



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