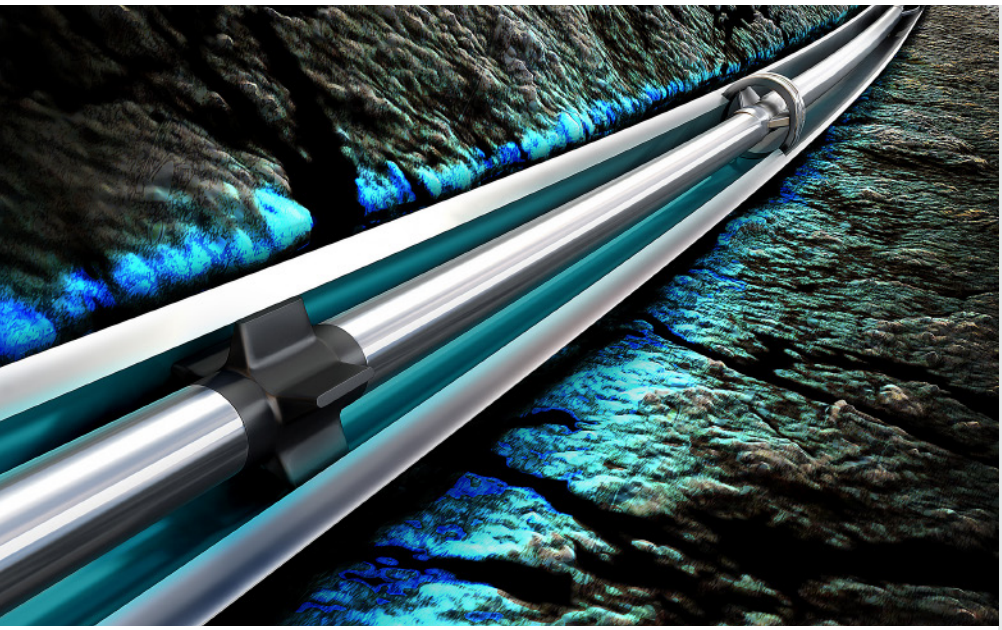
FALCON X EM

HIGH-SPEED MWD

TECHNICAL DATA SHEET



Falcon X is Scientific Drilling's fastest, most robust MWD system, designed to deliver maximum reliability in the harshest drilling environments.

As the next evolution of the Falcon platform, Falcon X features faster data speeds, dual-transducers, and advanced solid-state sensors; ensuring un-matched dependability, faster surveys, safer operations, precision wellbore placement, and deeper reach.

Falcon X high-speed toolface parameters are fully field-programmable, yielding predictable performance in the world's harshest drilling environments, including extreme LCM conditions.

Falcon X MWD provides the following borehole measurements in real-time:

- Survey inclination & azimuth
- Tool face
- API calibrated gamma ray
- Drilling dynamics: axial and lateral vibration, stick slip, temperature
- Continuous inclination
- Annulus and pipe pressure
- Azimuthal gamma, near-motor inclination, and resistivity

For more information on improving your drilling efficiency [while staying on target] contact your Scientific Drilling sales representative or visit: **http://scientificdrilling.com/mwd**

FALCON X

APPLICATIONS

+ Severe drilling environments
+ Directional/horizontal drilling
+ Magnetic ranging (passive and Active)
+ Orbit Connect™
+ Enhanced gyroMWD drilling
+ Under-balanced drilling with aerated fluids

FEATURES

+ Downhole to surface data transmission speeds up to 14 bps
+ Capable of 0-150 GPM flow rates
+ Supports BHA sizes 3.125" to 9.5"

BENEFITS

+ Supports all drilling fluid types (air, mist, foam, mud)
+ Provides unlimited LCM tolerance, eliminating trips required due to plugged MWD pulsers
+ Allows survey transmission during connections, significantly reducing NPT
+ Bi-directional communication for MWD tool parameter customization while downhole
+ Field-configurable system enables flexibility for changing well conditions
+ Proven electronics and mechanical design provide superior reliability

GENERAL SPECIFICATIONS

TOOL OD	DOG LEG SEVERITY	
	Sliding	Rotating
3.125 in (79.4 mm)	40˚	17˚
3.500 in (89.9 mm)	37˚	15˚
4.750 in (120.7 mm)	28˚	12˚
6.250 in (158.8 mm)	20˚	10˚
6.500 in (165.1 mm)	20˚	10˚
6.750 in (171.5 mm)	19˚	8˚
8.000 in (203.2 mm)	12˚	7˚
9.500 in (241.3 mm)	12˚	6˚

PRESSURE RATING	20,000 psi @ 300˚F (30,000 psi available) 137,900 kPa @ 150˚C (206,842 kPa available)
TEMPERATURE RATING	302˚F (150˚C)
LOST CIRCULATION MATERIAL	No limit
TELEMETRY	Electromagnetic, up to 14bps
SENSOR ACCURACY	Tool Face ±0.15" > 3 Azimuth ±0.25" > 3 Inclination ±0.15" at all angles
MAX BIT PRESSURE	No limit
OPERATING TIME	150+ Hours

DIRECTIONAL SPECIFICATIONS

LENGTH	**DIRECTIONAL ONLY** 24.17 ft (7.37 m) (+6 ft gap sub & antenna)	**DIRECTIONAL & GAMMA RAY** 27.33 ft (8.33 m) (+6 ft gap sub & antenna)
DATA UPDATE PERIOD	32 ms pulse width yields .5 sec. update 250 ms pulse width yields 3.5 sec. update	
CALCULATED SURVEY TIME	2.4 Seconds	
RAW SURVEY TIME	6.2 Seconds	
CONTINUOUS INCLINATION	**SLIDING** Yes	**ROTATING** Yes

VIBRATION SPECIFICATIONS

AXIAL	4 g_{RMS} for 3hr; 6 g_{RMS} for 0.5hr
LATERAL	5 g_{RMS} for 3hr; 7.5 g_{RMS} for 0.5hr
STICK-SLIP DETECTED (0.5HR)	150% for 3hr, 200% or neg. rpm detected for 0.5hr

*Specifications are subject to change without notice