



Orientation Modules

High-quality directional sensors designed for accuracy, durability and reliability.

With more than 30 years of experience, our portfolio of custom-designed orientation modules provides unsurpassed accuracy, reliability, and configuration flexibility.

Our most compact borehole survey technology is designed to fit into the smallest of tools by using a compact electronics package. The technology has undergone extensive thermal cycle and soak testing up to 185°C to ensure the unit's performance is accurate, stable and reliable. Test data indicates at least a 3-fold reduction in total magnetic field spread and bias change over time. For our customers, this means an **increase of 2X in both life and mean time between calibrations, which translates directly to lower cost of ownership.**

Superior performance in harsh environments

GE Oil & Gas orientation modules are designed for efficient operation in a compact, rugged chassis. By providing accurate and stable survey measurements, with minimal downhole power consumption, the module has helped customers lower operational costs associated with downhole batteries, and enabled the horizontal drilling techniques required for unconventional resource development.

Combining robust packaging with high-temperature electronics, our orientation modules are calibrated to deliver accurate survey data over a wide operating temperature range from -20°C to 175°C (-4°F to 347°F), with downhole vibration up to 20 grms.

Benefits

- Operating temperature range from -20°C to 175°C (-4°F to 347°F) and survival temperature range from -40°C to 185°C (-40°F to 365°F)
- Compact electronics and packaging result in smaller, more versatile orientation modules
- Fully customizable orientation modules, including a wide range of sizes, electronics packages, and configurations (analog modules, digital modules, inclinometers, magnetometers, and specialized wiring/connectors)
- Rigorous testing and calibration processes ensure orientation modules work the first time, every time to lower your cost of ownership and minimize non-productive time
- State-of-the-art total field calibration labs with best-in-class calibration services



Engineered, calibrated, and tested for reliability

Our orientation modules incorporate the operational experience gained from the design and manufacture of almost 30,000 units over 30 years. This experience and the associated proprietary manufacturing and processing techniques that have evolved from it, have resulted in modules that are regarded by many as the industry's gold standard for borehole magnetic surveys. GE Oil & Gas' orientation module sensor assemblies provide accurate directional data and information for real-time steering decisions.



Specifications

Performance

Parameter	Minimum	Units
Inclination accuracy	± 0.10	degrees
Inclination spread	< 0.20	degrees
Azimuth accuracy	± 0.50	degrees ¹
Azimuth spread	< 1.0	degrees ¹
Tool face accuracy	± 1.0	degrees ¹
Total g field accuracy	± 3.0	mGee
Total magnetic field accuracy	± 7.0	nT

¹ For inclination between 10° and 90°

Mechanical, Electrical & Environmental

Parameter	Minimum	Maximum	Units
Outside diameter	1.18 (29.97)	1.36 (34.54)	inches (mm)
Length	14.5 (368.3)	22.7 (576.6)	inches (mm)
Power requirements ²	± 12.0	± 18.0	volts DC
Operating temperature	32 (0)	347 (175)	°F (°C)
Survival temperature	-40 (-40)	365 (185)	°F (°C)
Vibration, random		20	g RMS, 5-500 Hz
Shock		1000	g, 0.5 mSec, half-sine

² Current draw: 70 mA @ 15 vdc

Contact your GE Oil & Gas representative today for complete product specification and ordering information.

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