

G-824A

Cesium Magnetometer



The G-824A mates the proven high-performance cesium sensor with new sensitive internal sensor driver and Larmor counter electronics. Improved low noise amplifiers have now lowered the noise floor to approximately 350 fT (femto-Tesla). This advanced integrated magnetometer provides unmatched versatility in performance, small size, low weight, wide application range and cost effectiveness.

In addition to transmitting the magnetometer measurement, the internal electronics also accepts an external sync pulse and up to 2 auxiliary serial transmissions into onboard ports for integration into the data string. The system includes six 12-bit A/D converters for digitizing and subsequent transmission of signal amplitude, radar/ barometric altimeter, EM, orientation sensors or other analog data. The transmission format of all functions is selected by software command and may be customized for each application.

The system's high performance and multi-function capability are excellent for mapping geologic structure or for mineral or oil and gas exploration. Rapid sample rates enhance the detection and delineation of targets for environmental, archaeological or UXO and EOD surveys. Detection ranges, classification and precision mapping are improved by the G-824A performance and in some cases provide results not achievable by any other means. The G-824A meets the highest standards for airborne, land or marine surveys, meeting rigorous vibration and environmental testing standards.

Gradiometer sensor arrays are particularly effective for geologic mapping and search. The G-824A provides the ability to concatenate serial outputs from up to 8 sensor/counter assemblies into a single digital stream, transmitted up a single cable and recorded on a single computer serial port.

The system outputs serial data converted to nT (γ) for recording by any standard computer. High sample and data transmission rates are accomplished using a compressed binary data transmission protocol.

Geometrics offers a complete system including magnetometer, birds or stingers, GPS navigation, integration of Gamma Ray spectrometry, data logging and display software, and post-acquisition data processing software and training.

FEATURES & BENEFITS

Versatile – Usable in both airborne and vehicle applications, with altimeter and other analog inputs, or in multi-sensor arrays.

Extreme Sensitivity and Speed – Undisputable data resolution; this system boasts a superior $350\text{fT}/\sqrt{\text{Hz}}_{\text{rms}}$ sensitivity and 1000 Hz sample rate.

Very Low Heading Error – Get very clean, repeatable measurements without fear of instrument noise impacting the data.

Faster Baud Rates – Concatenate more magnetometers with ease.

Terminal Software Included – Simply and quickly set up survey parameters.

Reliability and Ruggedness – Cesium magnetometers never need to be returned to the factory for calibration or tuning. Designed for tough environmental conditions and high "g" loads.

MAGNETOMETER / ELECTRONICS

Operating Principle: Self-oscillating split-beam Cesium vapor (non-radioactive).

Operating Range: 20,000 to 100,000 nT.

Operating Zones: The earth's field vector should be at an angle greater than 10° from the sensor's equator and greater than 10° from the sensor's long axis. Automatic hemisphere switching.

Noise: $350 \text{ fT}/\sqrt{\text{Hz}}_{\text{rms}}$

NOTE: US EXPORT LICENSE REQUIRED.

Max Sample Rate: 1000 Hz.

Heading Error: $\pm 0.15 \text{ nT}$ over entire 360° equatorial and polar spins. Not specified on 824B.

Absolute Accuracy: $< 3 \text{ nT}$ throughout range.

Output: RS-232 data at 115K baud, concatenated data streams from up to 8 sensors depending on sample rate, compressed binary.

Power: 24 to 32 VDC, 2.0 A at turn-on and 1.0 A thereafter.

Gradient Tolerance: 500 nT/in.

Temperature Drift: $< 0.05 \text{ nT}/^\circ\text{C}$.

MECHANICAL

Total Weight (including interconnect cable): 2.7Kg (5.9 lb).

Sensor (cylindrical): L: 6 cm; W: 15.6 cm (2.375x6.125 in).

Electronics (rectangular): L: 6.35 cm; W: 38 cm; 8.9 cm diagonal corners (2.5x15x3.5 in).

Electronics Base Plate: L: 6.35 cm; W: 40.6 cm (2.5x16 in).

Base Plate Mounting Holes: DIA: 0.635 cm (0.25 in).

Cables:

Sensor to electronics: Standard 2.77 m (9 ft) with connector on electronics end. Other lengths available from 0.75 m to 3.75 m (2.4 ft to 12.75 ft) at 1 m (40-in) increments. Lengths approximate due to cable variations.

Power, Data & Signal: RS-232 to Computer; Standard 8m, 60m max.

ENVIRONMENTAL

Operating Temperature: -35°C to $+50^\circ\text{C}$ (-30°F to $+122^\circ\text{F}$).

Storage Temperature: -45°C to $+70^\circ\text{C}$ (-48°F to $+158^\circ\text{F}$).

Altitude: Up to 9,000 m (30,000 ft).

Weatherproof: O-Ring sealed for operation in 100% humidity.

ACCESSORIES

Standard: Power/RS-232 multi-conductor cable (electronics to power/data junction box with 9 pin RS-232 connector and power lugs), lengths to be specified, spare O-Rings, operation manual and carrying case.

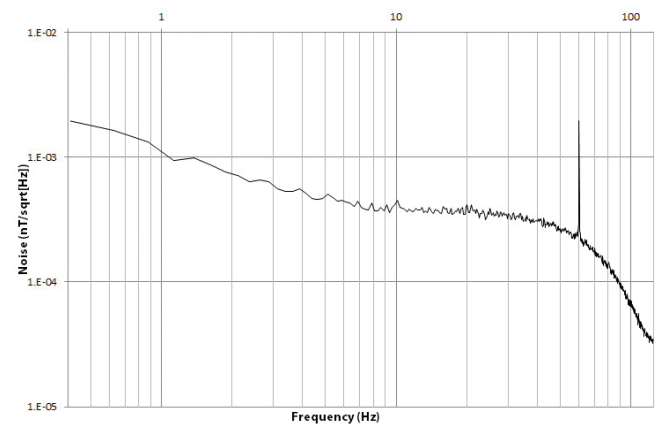
Optional:

Logging Software: MagLog (Logs GPS and Mag, shows track plot, mag profile, other data).

Accessories: Birds, Stingers, Wingtips, Avionics, GPS, Gamma Ray, Logging Computer.

OTHER MODELS

G-824B – Geometrics, Inc. also provides G-824 systems for stationary mounted configurations that can address surveillance and other remote detection applications. These systems are identical in all performance and reliability standards except heading error. These "B" systems are offered for land or marine base station use. The G-824B system comes complete with interconnect cables, power/data junction box, power supply and optional tripod assembly.



Noise spectral plot of G-824A

Specifications subject to change without notice. G-824A_v1 (0317)