

G-824A CESIUM MAGNETOMETER

- **Airborne and Vehicle Applications with Multi-Sensor Array Capability**
- **Extreme Sensitivity and Speed – 300 fT/ $\sqrt{\text{Hz}}$ RMS and 1000 Hz with internal counter**
- **Very Low Heading Error – $\pm 0.15\text{nT}$ over 360° equatorial and polar spins. Systems supplied with spin curves for gradiometer installation curve matching**
- **Versatility – includes 6 channel 12 bit A to D converters for digitization of altimeter or other analog signals, digital data stream concatenation, telemetry option, wide voltage range**
- **Reliability and Ruggedness – Cesium magnetometers never need be returned to factory for calibration or tuning. Designed for tough environmental conditions and high “G” loads**
- **Gradiometer arrays offering simultaneous operation of up to 8 separate sensors using the designed-in serial port concatenation capability**
- **Geometrics offers complete turnkey systems including birds, stingers, wingtip installation accessories as well as digital data acquisition systems, post acquisition Magnetic Compensation software, Flight path recovery cameras, GPS navigation, gamma ray spectrometers and post acquisition data processing software and training**



The Geometrics Model G-824A mates the well-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 300 fT (femto-Telsa). This advanced integrated magnetometer provides unmatched versatility in performance, small size, low weight, wide application range and cost effectiveness.

The system outputs RS-232 output 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.

The G-824A provides sensitivities of 0.3 pT/ $\sqrt{\square\text{Hz}}$ RMS or approximately 0.01 nT P-P at 50 Hz to 0.1 nT P-P at 1000 Hz, selectable via software command and embedded HTML graphical user interface. In addition to transmitting the magnetometer measurement, the internal electronics also accepts an external sync pulse and up to 2 auxiliary RS-232 transmissions into onboard ports for combination 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 RS-232 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. Each of these sensors is synchronized to within 1ms for simultaneous measurement and true gradient measurements. The specialized Cesium-vapor sensor components are stable and do not require factory calibration.

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.

MODEL G-824A AIRBORNE CESIUM MAGNETOMETER/SENSOR SPECIFICATIONS

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.
SENSITIVITY (INTERNAL COUNTER):	<0.3 pT/√Hz RMS. Typically 0.01 nT P-P at a 0.02 second (50 Hz) sample rate (90% of all readings falling within the P-P envelope) NOTE: US EXPORT LICENSE REQUIRED
SAMPLE RATE:	0.001 s (1000Hz) to 15.999s in 1ms increments
HEADING ERROR:	±0.15 nT over entire 360E equatorial and polar spins Not specified on 824B
ABSOLUTE ACCURACY:	<3 nT throughout range
OUTPUT:	RS-232 data at 115K baud, concatenated data streams from up to 8 sensors depending on sample rate, compressed binary
MECHANICAL:	Total weight including interconnect cable 5 lbs (2.3Kg). Electronics 2.5 x 15 in (6.35cm x 38cm). Sensor 2.375 x 5 in (6 x 12.7cm)
CABLES: Sensor to electronics: Electronics to Junction Box:	Standard 109 in. (9 ft or 2.77 m) with connector on electronics end. Other lengths available from 2.4 ft (0.75m) to 12.75ft (3.75m) at 40 inch (1 m) increments. Lengths approx. due to cable variations. RS-232 to Computer, standard 8m, 60m max. Larmor to external counter with coupler over Coax, standard 10m, 50m max
OPERATING TEMPERATURE:	-30°F to +122°F (-35°C to +50°C)
STORAGE TEMPERATURE:	-48°F to +158°F (-45°C to +70°C)
ALTITUDE:	Up to 30,000 ft (9,000 m)
WEATHERPROOF:	O-Ring sealed for operation in rain
POWER:	24 to 32 VDC, 2.0 amp at turn-on and 1.0 amp thereafter
ACCESSORIES:	
Standard:	Power/RS-232 multiconductor 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	MagLogPro (Logs GPS and Mag, shows trackplot, mag profile, other data)
Accessories	Birds, Stingers, Wingtips, Avionics, GPS, Gamma Ray, Logging Computer, MagComp Compensation software

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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