



## G-823A CESIUM MAGNETOMETER

- **Airborne and vehicle applications with Multi-Sensor Array Capability**
- **High Sensitivity — 0.004 nT/Hz RMS with the CM-201 Mini-Counter**
- **Very low heading error —  $\pm 0.15$ nT over 360° Equatorial and Polar spins**
- **Versatility — CM-201 counter includes 6 channel 12 bit A to D converters for digitization of altimeter or other analog signals, digital data stream concatenation**
- **Superior resolution of the Cesium Larmor signal with earth's field tracking rates exceeding thousands of nT ( $\gamma$ ) over 0.1 second periods**
- **Gradiometer arrays offering simultaneous operation of up to six separate sensors using the designed-in concatenation of the CM-201 Internal Mini-counter**
- **Geometrics offers complete turnkey systems including Birds, Stingers, Wingtip installation accessories as well as Digital Data Acquisition Systems, Flight Path Recovery, GPS Navigation, Gamma Ray Spectrometers, VLF EM and Post Acquisition Data Processing Software and training.**



Model G-823A includes the well proven high performance G-822A sensor with the ultra-small size CM-201 Larmor counter. This new model (G-823A) provides unmatched versatility of performance, size, function, and cost effectiveness. The system has two outputs: the standard Larmor sine wave superimposed on 28 VDC power (uncounted for RMS AADCII or 822A Counter) or the Larmor signal counted, converted into nT( $\gamma$ ) and output as RS-232 for recording by any standard computer. This powerful new combination is also the basis for new specialized models such as G-823B Base Station.

The G-823A provides sensitivities of 0.002 nT at 1 Hz up to 0.22 nT at 100 Hz which are selectable via software command. Typical operation might include 0.02 nT at 10 samples per second. In addition to the magnetometer measurement, the CM-201 Counter also includes Julian / Time / Date, a provision to accept an external sync pulse and six A/D converters for digitizing and recording

signal amplitude, radar/ barometric altimeter, EM or other analog data. The transmission format of all functions is also selected by software command and may be customized for each different job.

The system's high performance and multi-function capability are excellent for mapping geologic structure, for mining, oil and gas exploration and the detection and delineation of target bodies for environmental or military surveys. Detection ranges, target classification and precision mapping are enhanced by the G-823A performance and in some cases provide results not achievable by any other means. The G-823A meets the highest standards for airborne, land or marine surveys and over 300 systems are in service. Custom length cables and special packaging are available for each of these applications. Critical heading error performance is documented and supplied for each G-823A system.

Gradiometer sensor arrays are particularly effective for geologic mapping and target identification. The G-823A provides ability to concatenate RS-232 outputs from up to six sensor/counter assemblies into a single digital stream, transmitted up a single cable and recorded on a single computer port. Each of these sensors are synchronized for simultaneous measurement at high sample rates. Once a new system has completed all phases of run-in and testing, reliability is very high. The specialized Cesium components are stable and not subject to limited life or early failure. Even after years of operation, full conformance with original stringent specifications can be expected. A full one year warranty is offered with every system.

## G-823B

Producing sensors with extremely low heading error ( $\pm 0.25\text{nT}$ ) is an expensive and time consuming process. Some sensors are produced to a less exacting heading error standard and are thus designated as model G-823B. These units are identical in all performance and reliability standards except for heading error where typical system specs may range from  $\pm 2$  to  $3\text{ nT}$  or larger (Heading errors specs are not supplied with the 823B). These systems are offered for base station use (where heading error is not an issue) at a significantly lower price. Systems come complete with interconnect cables, power/data splitter box and tripod with nylon support wires.

### MODEL G-823A AIRBORNE CESIUM MAGNETOMETER SENSOR SPECIFICATIONS

<b>OPERATING PRINCIPLE:</b>	Self-oscillating split-beam Cesium Vapor (non-radioactive)
<b>OPERATING RANGE:</b>	20,000 to 100,000 nT
<b>OPERATING ZONES:</b>	The earth's field vector should be at an angle greater than $6^\circ$ from the sensor's equator and greater than $6^\circ$ away from the sensor's long axis. Automatic hemisphere switching.
<b>SENSITIVITY WITH CM-201:</b>	$<0.004\text{ nT}/\sqrt{\text{Hz}}$ rms. Typically $0.02\text{ nT P-P}$ at a $0.1$ second sample rate (90% of all readings falling within the P-P envelope) using CM-201 Mini-Counter
<b>HEADING ERROR:</b>	$\pm 0.15\text{ nT}$ over entire $360^\circ$ equatorial and polar spins Not specified on 823B
<b>ABSOLUTE ACCURACY:</b>	$<3\text{ nT}$ throughout range
<b>OUTPUT:</b>	Cycle of Larmor frequency = $3.498572\text{ Hz/nT}$ , RS-232 data at 9600 baud, concatenated data streams from up to 6 sensors
<b>MECHANICAL:</b>	See G-822A Data Sheet
<b>OPERATING TEMPERATURE:</b>	$-30^\circ\text{F}$ to $+122^\circ\text{F}$ ( $-35^\circ\text{C}$ to $+50^\circ\text{C}$ )
<b>STORAGE TEMPERATURE:</b>	$-48^\circ\text{F}$ to $+158^\circ\text{F}$ ( $-45^\circ\text{C}$ to $+70^\circ\text{C}$ )
<b>ALTITUDE:</b>	Up to $30,000\text{ ft}$ ( $9,000\text{ m}$ )
<b>WATER TIGHT:</b>	Sealed for up to $2\text{ ft}$ ( $0.9\text{ m}$ ) water depth
<b>POWER:</b>	$24$ to $32\text{ VDC}$ , $0.75\text{ amp}$ at turn-on and $0.5\text{ amp}$ thereafter
<b>ACCESSORIES:</b>	
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	MagAir (Logs GPS and Mag, shows trackplot, mag profile)
Accessories	Birds, Stingers, Wingtips, Avionics, GPS

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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