



6877-1 Goreway Drive  
Mississauga, Ontario  
Canada L4V 1L9

Tel: (905) 677-5533  
Fax: (905) 677-5030  
Web: <http://www.rmsinst.com>  
e-mail: [rms@rmsinst.com](mailto:rms@rmsinst.com)

**GEOMETRICS' MODEL G-823A CESIUM MAGNETOMETER  
MODEL G-823B BASE STATION MAGNETOMETER**

- ◆ **Airborne and mobile applications with multi-sensor array capability**
- ◆ **High Sensitivity –  $0.004\text{nT}/\sqrt{\text{Hz}}$   $RMS$  with the CM-201 Mini-Counter**
- ◆ **Very low heading error:  $\pm 0.15\text{ nT}$  over  $360^\circ$  equatorial and polar spins. Systems supplied with spin curves for gradiometer installation curve matching**
- ◆ **Versatility – CM-201 Counter includes six-channel 12-bit A/D converters for digitization of altimeter or other analog signals, digital data stream concatenation**
- ◆ **Gradiometer arrays offering simultaneous operation of up to 8 separate sensors using the designed-in concatenation of the CM-201 internal Mini-Counter**
- ◆ **Outstanding reliability and ruggedness**



Model G-823A includes the well proven high performance G-822A sensor with the ultra-small size CM-201 Larmor Counter. This model provides unmatched versatility of performance, size, function, and cost effectiveness.

The system has two outputs: the standard Larmor signal superimposed on 28-VDC power (for direct input into any of RMS Instruments' AARC500-series Real-Time Compensation systems), and the Larmor signal counted, converted into 'nT' and output via RS-232 for recording on any standard computer. This powerful combination is also the basis for new specialized models such as the G-823B Base Station.

The G-823A provides sensitivities of 0.002 nT at 1 Hz, up to 0.22 nT at 40 Hz, which are selectable via software command. Default configuration provides 0.02 nT p-p ( $0.004\text{ nT}/\sqrt{\text{Hz}}$   $RMS$ ) 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 application.

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 meeting rigorous vibration and temperature environmental testing standards. 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 8 sensor/counter assemblies into a single digital stream, transmitted up a single cable

and recorded on a single computer port. Each of these sensors is synchronized to within 1ms for simultaneous measurement at high sample rates. The specialized Cesium components are stable and do not require factory calibration. 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 BASE STATION MAGNETOMETER**

Some sensors are produced to a less exacting heading error standard and are thus designated as *model G-823B*.

With the exception of the heading error, these units are identical to the G-823A in all other performance and reliability specifications.

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 10° from the sensor's equator and greater than 10° from the sensor's long axis. Automatic hemisphere switching.
<b>SENSITIVITY:</b>	< 0.004 nT/√Hz <sub>RMS</sub> . Typically 0.02 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>	±0.15 nT over entire 360° equatorial and polar spins. Not specified on G-823B.
<b>ABSOLUTE ACCURACY:</b>	< 3 nT throughout range.
<b>OUTPUT:</b>	Cycle of Larmor frequency = 3.498572 Hz/nT, RS-232 data at 9600 baud, concatenated data streams from up to 8 sensors.
<b>MECHANICAL:</b>	
Sensor:	2.375" (60.32 mm) diameter, 5.75" (146 mm) length, 12 oz (339 g) – any orientation in 7" diameter (177.8 mm dia.) stinger.
Sensor Electronics:	2.5" (63.5 mm) diameter, 11" (279.4 mm) length, 22 oz (623 g).
Cables:	
Sensor to electronics:	Standard 162" (4.11 m)
Sensor Electronics/Counter:	Standard 32 ft (10 m), up to 165 ft (50 m). Coax with signal superimposed on power.
Electronics to Junction Box:	RS-232/computer, stand. 25 ft. (8m), 196 ft. (60 m) max. Larmor to external counter with coupler over Coax, stand. 32 ft. (10m), 164 ft. (50m) max.
<b>OPERATING TEMPERATURE:</b>	–30°F to +122°F (–35°C to +50°C).
<b>STORAGE TEMPERATURE:</b>	–48°F to +158°F (–45°C to +70°C).
<b>ALTITUDE:</b>	Up to 30,000 ft (9,000 m).
<b>WATER TIGHT:</b>	O-Ring sealed for operation in the rain and/or 100% humidity.
<b>POWER:</b>	24 to 32 VDC, 1.0 A at turn-on and 0.5 A 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:	
Signal/Power Decoupler:	Signal/Power Decoupler modules are available from Geometrics and RMS Instruments. (RMS Instruments' AARC500-series Real-Time Compensation systems include an embedded signal/power decoupler module.)
Logging Software:	MagLog (Logs GPS and Mag, shows track plot, mag profile, other data).