

# G-859AP

## Mining Magnetometer



This economically priced Cesium vapor magnetometer system offers the mining/oil/gas survey companies the best total field magnetic surveying tool available. Based on our industry-standard G-858 MagMapper system, the G-859AP incorporates all of the reliability and proven performance in a lightweight survey package with integrated WAAS/EGNOS/MSAS enabled Tallysman™ GPS.

The G-859AP Mining Mag uses a graphical interface to make survey design and data acquisition quick and efficient. A "Simple" or "Mapped" mode uses line numbers and known staked reference points to define the map parameters. Or, the user may use the integrated Tallysman TW5341™ GPS for mapping positions automatically. Position information may come from an external GPS, from regularly-spaced fiducial marks input by the operator, or both.

Electrical connectors on the G-859AP's sensor have been eliminated in order to increase reliability and reduce setup time. The G-859AP's internal firmware has been streamlined to include those features important for mining exploration. We are so confident in the improved design of the G-859AP that it comes with a **2 Year Warranty**.

The G-859AP also works well for local environmental studies such as mapping waste sites, locating buried metal drums, storage tanks, buried pipelines, well-heads and other ferrous structures.

Data is collected in up to 5 separate survey files and transferred via high speed serial data link to a computer for further analysis and map generation. The full-featured graphical data editing program, MagMap, is provided to allow repositioning, realignment, GPS smoothing, data filtering and interpolation. After editing, the data is formatted in either Surfer for Windows or Geosoft formats for further plotting and analysis.

## FEATURES & BENEFITS

- **Low Noise/High Sensitivity** - Measure the smallest changes in magnetic field.
- **Low AC Field Interference** - Survey next to power lines when necessary.
- **Easy-to-use Interface** - Practical for use by inexperienced personnel.
- **Rugged and Reliable** - Weatherproof. Survives three-foot drop onto hard surface.
- **Ergonomic Backpack** - More comfort during and after extensive surveying.
- **Integrated GPS** - Know the true boundary of each anomaly.
- **Ultra-stable** - No need to calibrate sensors.



**GEOMETRICS**  
Simplify your search

# SPECIFICATIONS | G-859AP Mining Magnetometer

## MAGNETOMETER / ELECTRONICS

**Operating Principle:** Self-oscillating split-beam Cesium Vapor (non-radio-active Cs-133) with automatic hemisphere switching.

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

**Operating Zones:** For highest signal-to-noise ratio, the sensor long axis should be oriented at 45°, ±30 to the earth's field but operation will continue through 45°, ±35°. Sensor is automatic hemisphere switching.

**Noise:**  $< 0.008 \text{ nT}/\sqrt{\text{Hz}_{\text{rms}}}$  (SX (export) version:  $0.02 \text{ nT}/\sqrt{\text{Hz}_{\text{rms}}}$ ).

**Heading Error:**  $< 1.5 \text{ nT}$  including backpack and GPS.

**Gradient Tolerance:**  $> 500 \text{ nT/in}$  ( $> 20,000 \text{ nT/m}$ ).

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

**Max Sample Rate:** 5 Hz.

**Data Storage:** Non-volatile RAM with capacity for 8 to 12 hrs of magnetometer, time, event marks, field notes and XYZ or GPS locations.

### Audio Output:

1. Audio tone of field variation; pitch and volume adjustable. (Search mode).
2. Audio pulse each 1 second (pace metronome).
3. Alarm for loss of signal, low battery or quality control setting exceeded.

**Data Output:** Three-wire RS-232 standard serial port, optional continuous real-time transmittal of data via RS-232 to PC. Total memory output transfer time less than 5 min at 115,200 baud.

**Visual Output:** 320 x 200 graphic liquid-crystal display, daylight-visible with selectable outputs for:

Display of up to 5 stacked profiles, real time or review mode. Survey grid showing boundaries and position.

All system set-up functions, e.g., memory status, data transfer, sample time.

All survey set-up functions, e.g., survey profile number and direction, station number or GPS data transfer protocol, line number.

Survey monitoring functions, e.g. total field, noise level, profile number or x-y coordinates.

**Internal Clock:** Resolution of 0.1 sec, drift:  $< 1 \text{ sec/day}$ .

**Power:** 24 VDC rechargeable gel cell, 5 hrs for Mag w/GPS. Magnetic effect less than 1.5 nT at 4 ft. Internal backup battery for clock and non-volatile RAM.

### Operating Software:

1. **Survey Modes:** Search survey - Simple survey - Mapped survey, station or continuous - Base station.
2. **Data acquisition/display:** Acquire and store data and survey functions. Display profiles, total field to 0.1 nT resolution, survey / map parameters and diagnostics.

**Post-acquisition Software:** MagMap software for installation on customer's computer.

1. Data transfer and corrections:
  - a. Transfer of data from field Magnetometer, GPS, or Base station to PC.
  - b. Diurnal correction using base station data.
  - c. Processing the corrected data into ASCII values of X-Y-Z.
2. Data processing functions include spike editing, spline filtering, repositioning of X, Y, Z or GPS Lat/Long, conversion to UTM coordinates, profile and contour map plotting.

## MECHANICAL

**Sensor:** DIA: 6 cm; L: 15 cm; Weight: 340 grams (2.4x6 in; 12 oz).

**Backpack:** 4.3 kg (9.5 lb).

**Console:** L: 28 cm; W: 15 cm; H: 8 cm; Weight: 1.6 kg (11x6x3 in; 3.5 lb). Magnetic effect less than 1 nT at 4 ft.

## ENVIRONMENTAL

**Operating Temperature:**  $-25^\circ\text{C}$  to  $+50^\circ\text{C}$  ( $-13^\circ\text{F}$  to  $+122^\circ\text{F}$ ).

**Storage Temperature:**  $-35^\circ\text{C}$  to  $+60^\circ\text{C}$  ( $-30^\circ\text{F}$  to  $+140^\circ\text{F}$ ).

**Water Tight:** Weatherproof in driving rain.

**Shock:** Survives a 3 ft drop onto a hard surface.

**Warranty:** 2 years on G-859AP and sensor, 1 year on accessories.

## TALLYSMAN TW5341™ SPECS:

- Code and carrier phase tacking with 1Hz Position, velocity, time output.
- SBAS capable and designed for harsh environments.
- RS-232 compatible interface.

**Size and Weight:** DIA: 66.5mm; H: 21mm; Weight: 60 g (2.6x0.8 in; 2.1 oz).

**Input Voltage:** +9 to +16 VDC.

**Power Consumption:** 1.2W (typical).

**Com Ports:** 1 RS-232 (optional 2 RS-232) at up to 19,200 baud.

**Operating Temperature:**  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$  ( $-40^\circ\text{F}$  to  $+185^\circ\text{F}$ ).

**Position Accuracy:** Single point L1  $< 2 \text{ m CEP}$ ; WAAS L1  $< 1 \text{ m CEP}$ .

**Data Rates:** Measurements 1 Hz; Position 1 Hz.

**Time to First Fix:** Cold start 39 sec; warm start 34 sec; hot start 2.5 sec.

**Signal Reacquisition:**  $< 1 \text{ sec}$  typical.

Specifications subject to change without notice. G-859AP\_v1 (0723)