G-857 Proton Magnetometer

The G-857 provides a reliable, low-cost solution for a variety of magnetic search and mapping applications.

Typical uses

> **Environmental** – Find abandoned wells, pipes, and storage tanks quickly.

> **Archaeology** – Perform basic magnetic archeology surveys.

> **Geology** – Survey for regional variations in the magnetic field for mining and oil and gas applications.

GEOMETRICS
Simplify your search

G-857 – Magnetometer

Single keystroke operation means the G-857 can be operated by non-technical field personnel and used in teaching environments. Utilizing the well-established proton precession method, the system allows for accurate measurements to be made with virtually no dependence upon variables such as sensor orientation, temperature or location.

The automated cycling option with long sensor cable and external power connection allows the G-857 to be used as a base station instrument for the measurement of diurnal changes in the Earth's magnetic field. Optional GPS allows data to be stamped with time and Latitude/Longitude positions. Quickly and easily upload GPX waypoint survey routes to the GPS for in-field navigation using MagMap software. If you're looking for a basic low-cost magnetometer with base station configurations, the G-857 Proton Magnetometer is the instrument of choice.

Features and benefits

> **Versatile**
Use as a single sensor magnetometer, vertical gradiometer, or base station for diurnal corrections.

> **Economically Priced**
Great for academic settings, small companies, or personal hobbies, as well as professionals in the oil and gas industry.

> **Great for Any Application**
Well suited for mapping geological structures, mineral exploration, and search for industrial, environmental, or archaeological targets.

> **Easy to Operate**
Designed for use by experienced and non-skilled personnel.

> **Rugged Weatherproof Construction**
Works in extreme weather and temperatures.

> **Optional Integrated GPS with In-Field Steering**
Data points can be stamped with GPS position and time.

MagMap – Processing Software for Magnetometer Survey Data
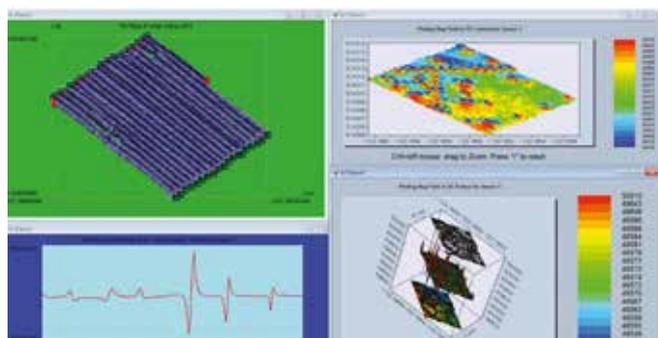
MagMap™ Data Review Screens

This powerful Windows program provides basic data processing filters for quick analysis of magnetic, Ohm-Mapper, and EM61 data. MagMapTM facilitates data download from Geometrics magnetom-eters, applies diurnal correction upon export, and generates 2D/3D color contour plots and shaded relief maps.

This program also offers full GPS support with UTM conversion, sensor-GPS antenna offset computation as well as GPS file integration with basic magnetic data.

Erroneous data due to spikes can be eliminated with the despik-ing function by using a user-selectable maximum and minimum window to cut the data outside of this range. Dropouts due to entering a dead zone or loss of signal can be removed entirely or interpolated to estimate the actual values.

The magnetic data collected can be checked for accuracy either as a complete profile of the survey, with each transect stitched together, or on a line-by-line basis. The zooming feature focuses the window on a point of interest and helps determine the validity of a series of readings.

The time, date, and magnetic readings can be seen in the bottom panel for reference. Data can be shown for each individual magnetometer, both sensors on the same plot to examine consistency, or as a pseudo-gradient.

Features

> **Runs on Windows XP, 7, 8 and Newer** - Multicore Multi-tasking operating systems.

> **Prompts Automatic Data Download** from Geometrics Magnetometers.

> **Quickly View Color Contour Maps** within a few clicks after data download.

> **Process EM Data** in the same program as the magnetometer data such as from the OhmMapper™ or EM61.

> **Fix Operator Errors** by manually deleting points, lines, or shifting them to the correct position.

> **Remove Erroneous Data** with Despiking, Destriping and "Remove Dropouts" features

> **Correct GPS Positions** by performing a sensor-
> to-GPS offset correction

> **Merge GPS and Magnetic Data Files** which do not already contain GPS positions.

> **Constant Updates** feature automatically checks Geometrics FTP site for newer releases of the program each time the program is opened.
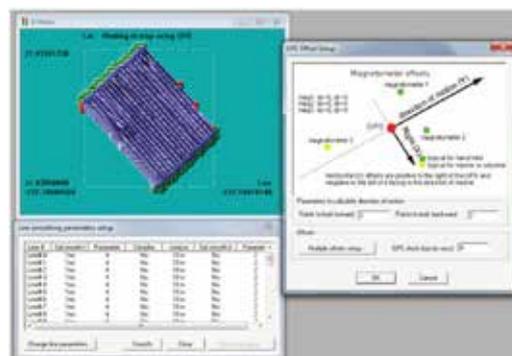
Correcting GPS Data for Offsets

Analog components

MagMap also downloads data from the OhmMapper and can create 2D image plots showing differences in the resistivity of the survey area. Using multiple receivers for a survey also allows you to create multiple depth slices to see how the resistivity changes at different depths, as well as creating vertical profiles of a transect. GPS offsets can be incorporated to properly position the resistivity data.

Merging gps and magnetic data files

If you collect magnetic data and do not have an integrated GPS unit you can still merge both datasets in MagMap.

It is important that both files contain accurate time stamps and were recorded simultaneously to marry the two datasets together. It is neces-sary to download GPS Babel prior to attempting to merge GPS and magnetic data. A link to the download website is provided in the software.

GPS corrections

MagMap allows the user to include GPS offsets to correctly associate location information with each magnetic data point. Smoothing parameters are also available to reduce relative positioning errors in the GPS readings.

2D / 3D grid views

Data can be seen in a traditional 2D image plot or shaded relief to examine the size and nature of each anomaly. The 3D plot is a colored wireframe plot to give a visual representation of the strength of each anomaly as well as a comparison between two features.

The 3D grid option also allows you to zoom in on areas of interest for a closer examination of subtle differences in the data.

Data destriping

Heading and operational errors can be removed with the destriping function. It also employs a high frequency filter to remove small sinusoidal noise typically representative of the walking gait of the operator.
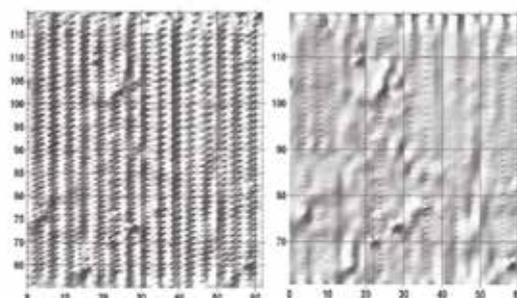
Results of Destriping and Periodic Noise Removal Feature

G-857 Magnetometer Specification List

Resolution	0,1 nT
Clock	Julian date, accuracy 5 sec. per month
Tuning	Auto or manual, range 20,000 to 90,000 nT
Gradient Tolerance	1000 nT/meter
Max Sample Rate	0.6 Hz
Read	Manual, or auto cycle for base station use
Memory	65,000 field or base station readings
Display	Six-digit display of field/time, three-digit auxiliary display of line number, day
Digitai Output	RS-232, switch-selectable to 115200 baud.
Digitai Input	Will accept external cycle command
Physical	Console: L: 18 cm; W: 27 cm; H: 9 cm; Weight: 2.7 kg (7x1 O.Sx3.5 in; 6 lb)
Sensor	DIA: 9 cm; L: 13 cm; Weight: 1.8kg (3.SxS in; 4 lb)
Environmental	Meets specifications within 0° to +40°C (+32° to +105°F). Will operate satisfactorily from -20° to +50°C (-40 to +122°F).
Power	12 Volt rechargeable Gel Celi.
Standard Accessories	Sensor, staff, chest harness, two sets of batteries, RS-232 cable USB Serial adapter, operations manual, applications manual, MagMap software
Options	Gradiometer attachment, external power/RS-232/sensor cable, rechargeable battery and charger set, Garmin® Oregon 600® GPS