

**Now Available For Rent or Sale!**

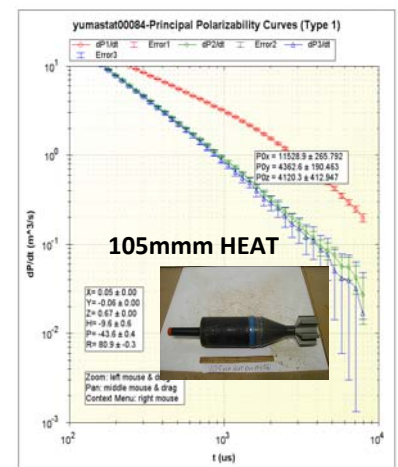
- ❑ Proven in ESTCP-funded testing at Aberdeen Proving Ground and San Luis Obispo
- ❑ Advanced UXO detection and discrimination
- ❑ May be towed or front-mounted
- ❑ Complete 3-axis polarizability measurement, allowing for estimation of target depth, size, and shape
- ❑ Rugged, light-weight antenna cart suitable for man-portable or vehicular-towed operation
- ❑ 3 orthogonal high power transmitter loops permit precision static characterization from a single point
- ❑ 7 tri-axial dB/dt receiver cubes sample the vector secondary TEM field
- ❑ Wide dynamic range, high bandwidth A/D converters
- ❑ User-friendly acquisition software
- ❑ Optional dual-mode (TEM/Mag) acquisition capability
- ❑ Optional platform attitude sensor measures platform magnetic heading, pitch, and roll.
- ❑ Windows-based acquisition software permits:
  - Acquisition parameter selection
  - On-site data QC
  - Real-time data display and operator feed-back during acquisition
- ❑ Custom Geosoft Executables (GX) support importing data into Oasis montaj™ and automate many data processing procedures unique to MetalMapper.
- ❑ Physics-based analysis software
  - Computes target position and attitude,
  - Computes principal target polarizability transients (3)
  - Provides convenient data base management of targets

The MetalMapper is a 3<sup>rd</sup> generation UXO detection and discrimination system. It is the first commercially available system incorporating recent advances in Electromagnetic methods for advanced ordnance detection and discrimination.

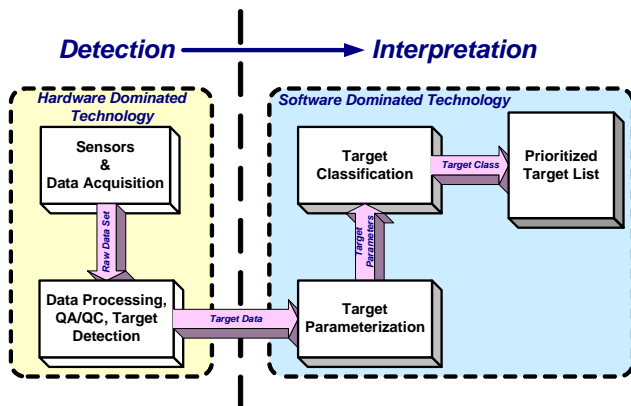


Vehicle-towed deployed at SLO ( June '09)

This instrument brings advanced SERDP and ESTCP supported technology from the laboratory into the field. This instrument is capable of fully interrogating a target item, making a complete 3-axis polarizability measurement, allowing the operator to characterize the target. The targets depth and shape may be determined, allowing for scrap metal to be distinguished from UXO. A rugged instrument and antenna platform may be deployed by man or machine.



In-field data analysis tools are useful to obtain QC analysis of instrument operation, and support both detection and discrimination modes of data acquisition.



- ❑ Two modes of acquisition
  - Detection mode, detecting anomalies for complete interrogation
  - Discrimination mode, for gathering more complete information about the target item

## Specifications:

**Configurations:** One to three transmitter loops, one to seven 3-component receiver cubes/loops, field modifiable configuration for skid or wheel transport of antenna assembly at different heights, instrument package deployed by backpack, cart, or machine. Data acquisition system is a fully featured industrial grade PC manufactured and supported by National Instruments, instrument control is via a ruggedized touch-screen display wirelessly connected to PC.

**A/D Conversion:** Up to 24, 16-bit A/D channels simultaneously sampled and operation at 250 KHz.

**Bandwidth:** DC to 50 KHz for purposes of anti-aliasing. Effective bandwidth is dependent of data collection parameters.

**Noise Floor:**  $4 \text{ nT/s}/\sqrt{\text{Hz}}$  1t 1000 Hz.

**Stacking Trigger Accuracy:** All timing accurate to one sample interval (4  $\mu\text{s}$ ).

**Maximum Input Signal:** Receivers withstand any transient capable of being produced by the transmitter.

**Effective area of each receiving loop / preamplifier:** 100.00 m<sup>2</sup>

**Transmitter loops:** Three orthogonally oriented loops, each 1 m x 1 m.

**Transmitter loop moment:** Up to 200 A-m<sup>2</sup>, 120 A-m<sup>2</sup> typical

**Receiver loops:** Each receive cube contains three 10cm x 10cm orthogonally-oriented, co-located loops.

**Data acquisition time blocks:** 33.33 ms, 100 ms, 300 ms, 900 ms, 2.7s

**Data point acquisition and storage rate:** 30, 10, 3.33, 1, 0.37 data points/s.

**Cycles of time-domain signal in each data-acquisition block:** 1, 3, 9, 27, 81, 243.

**Transient-decay length:** Selectable based on data-acquisition block time and cycles within that block. Useful decay lengths can vary from 103  $\mu\text{s}$  to 675 ms long.



### Availability

#### Purchase:

- Configuration of choice:
  - Bare-bones
  - Intermediate
  - Complete system with navigation and tow vehicle
- Includes real-time acquisition software with exports to Oasis Montaj and text files
- 2 month delivery
- Contact Geometrics for details

**Data acquisition modes:** Full wave (stores all data samples for each channel, i.e. 4 us samples), Decays (stores data samples in one decay curve after stacking multiple decays from a data-acquisition block, Decimated decays (stores decays after stacking time gated decays and computing average amplitude in each time gate).

**Transmitter turn-off and primary die-away time including receivers' response:** 100  $\mu\text{s}$  maximum after initiating transmitter turn-off. After background subtraction, secondary decay transients can typically be observed at 50 us. Transmitter turn-off to 1% is on the order of 10 us.

**Decimation time gates:** The gate widths are determined by applying an (operator selectable) fraction of the delay time at each gate, with a one sample minimum. Gating begins after a selectable hold-off time.

**Transmit Current Monitoring channel:** One digital channel records digitized transmitter current to same sampling specifications as receiver channels.

**Data Storage and Format:** Data are acquired to a hard disk in the instrument itself and stored in binary form as a Microsoft .Net serialized object. Following acquisition, data can be transferred to alternative storage media via any method used to access another PC (USB, LAN, wireless, remote terminal).

**Data Export Format:** After acquisition, the user can manually or automatically/sequentially re-read the data and export it to text-based CSV files.

**Acquisition Software:** Standard operating/acquisition software (Programs EM3DAcquire and EM3DPlot) provide capabilities for acquisition and display/QC. Acquisition controls parameters and starting/stopping acquisition. Display options during acquisition include display of a map of data points that have been collected in a series, and a novel display of the vertical and horizontal components of each receiver-sensor. Display/QC options include capabilities for graphical displays of decay transients on Log, Linear, and Log/Linear scales, of selected components for any or all receivers.

**Interface Software:** EM3DData is a binary program (DLL) file that provides an efficient interface to the MM data files. It is intended for users who wish to access the data to develop their own processing software.

**Parameter Extraction Software:** MM/RMP is a Windows program used for target parameter extraction. It is based on the point dipole model of a UXO. The program also includes capabilities for management and review of target lists within an MS-Access data base.

**Operating System:** Windows XP SP2.

**Data Terminal/Display:** Panasonic CF-08 Toughbook, touch-screen.

**Power:** Four 12 A-h Li-Ion batteries. Requires +12V supply for data acquisition and  $\pm 12\text{V}$  supplies for the transmitter.

**Operating time on full battery charge:** Six hours.

**Environmental:** 0 to 50 degrees C.

**Instrument Physical:** 19.75"L x 8.5"W x 14.5"H. Weighs 48 lb including batteries.

**Warranty:** Three year standard, extended warranty available.

#### Rental:

- Includes system as deployed as San Luis Obispo:
  - EM Antennas, data acquisition system
  - RTK GPS system
  - Sled and tow vehicle
- Includes operator/trainer for both data acquisition and mapping data-reduction
- Available on 2-week notice
- Contact Geometrics for details

GEOMETRICS INC.

2190 Fortune Drive, San Jose, California 95131, USA

Tel: 408-954-0522 – Fax: 408-954-0902 – Email: [sales@geometrics.com](mailto:sales@geometrics.com)