



High Sensitivity Potassium Airborne Magnetometer

Since 1980

Leading the World of Magnetics

GEM Systems is the global leader in the manufacture and sale of high precision magnetometers.

GEM Systems is the only commercial manufacturer of Overhauser magnetometers, that are accepted and used at Magnetic Observatories over the world.

Our Potassium Magnetometers are the most precise magnetometers in the world.

Our Proton sensors are considered the most practical and robust magnetometers for general field use.

Proven reliability based on R+D since 1980.

We deliver fully integrated systems with GPS and additional survey capability with VLF-EM for convenience and high productivity.

Today we are creating the absolute best in airborne sensors and are leading the way with smaller and lighter sensors for practical UAV applications.

GEM Systems large potassium sensors offer the highest sensitivity (20-50 fT) for use in natural hazard research and global ionospheric studies.

Our Leadership and Success in the World of Magnetics is your key to success in applications from Archeology, Volcanology and UXO detection to Exploration and Magnetic Observations Globally.



Optically pumped Potassium Airborne Magnetometers (GSMP-35A) are the most precise airborne magnetometers with sensitivity of .0002nT and heading error of ± 0.05 nT. Installations can be for fixed wing platforms and towed birds (TriaxBIRD and GradBIRD shown).

GEM Systems GSMP-35A Airborne Potassium Vapour Magnetometer

The Potassium Airborne Magnetometer (GSMP-35A) is based on the unique optically pumped Potassium sensor - a technology that offers an order of magnitude increase in resolution over other systems. It also provides:

- Reduced "heading" errors
- Highest absolute accuracy
- Decreased maintenance costs

These advantages plus GEM Systems reputation as a proven supplier of advanced and reliable Magnetometer technology since 1980 make the GSMP-35A a key solution for any airborne application.

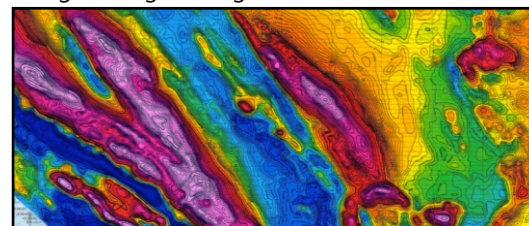


GSMP-35A Potassium Magnetometer sensor and electronics

High Sensitivity and Absolute Accuracy Produce the Highest Quality Data

The worldwide application of airborne magnetic and gradiometric data is extensive. Ensure your data is collected with the highest Sensitivity Magnetometer.

- Map targets, geology and geologic structure in mineral exploration
- Perform frontier evaluation, augment seismic data in hydrocarbon exploration
- Detect Unexploded Ordnance (UXO)
- Map pipelines and other cultural objects in environmental and engineering investigations



GEM Systems GSMP-35A Airborne Data

GEM Systems introduced the Potassium Vapour Magnetometer to the industry in the late 1990's. This magnetometer exceeds all other magnetometers for heading error, absolute accuracy and precision.

Our World is Magnetics.

GEM Systems, Inc.

135 Spy Court Markham, ON Canada L3R 5H6

Phone: 1 905 752 2202 • Fax: 1 905 752 2205

Email: info@gemsystems.ca • Web: www.gemsystems.ca



The system provides a light weight, high precision solution for a variety of applications. White Eagle multiple gradient helicopter system is shown on right with 10 Potassium sensors.



GSMP-35A Key Components

The GSMP-35A technology comprises:

- Sensor head
- Radio Frequency (RF) pre-amplifier and drive electronics module
- Cable (1 to 10m - standard 5m) to separate sensor and electronics for noise elimination
- Optional signal processor / console and cable

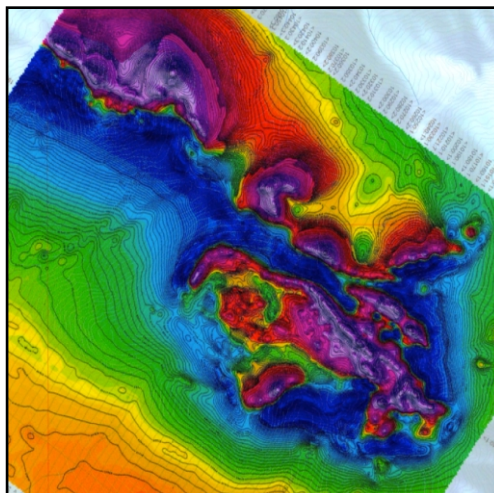
The sensor deploys as a single unit, or in combination with other sensors for magnetic gradient measurements.

In the example below, the sensor is deployed in a multi-sensor configuration for gradient and total field magnetic measurements. Here, three Potassium units are installed in a "Triaxial bird" for measuring multiple gradients.



GSMP-35A Triaxial towed bird system

High absolute accuracy between the sensors make the GSMP-35 the best magnetometer for gradiometer surveying. With minimal heading error, the Potassium magnetometer is relatively insensitive to aircraft and bird orientation.



Raw unfiltered and un-leveled airborne data collected with a GSMP-35A high sensitivity Potassium Magnetometer.

Implementing Your Solution

The GSMP-35A system can be interfaced to GEM's signal processing console, which provides memory for over 2.5 million readings or to other data recorders.

GEM's technicians can provide set-up and interfacing help, such as:

- Installation assistance for "fixed-wing" or "stinger" configurations
- Custom "bird" design and development for "towed" configurations
- Conversion of output voltages into corresponding frequency and magnetic field values
- Electronics interfacing to on-board recording and navigation systems

Magnetometer Specifications

Performance

Sensitivity: 0.0002 nT @ 1 Hz
 *(optional 0.0001 nT @ 1 Hz GSMP-30A)
 Resolution: 0.0001 nT
 Absolute Accuracy: ± 0.1 nT
 Dynamic Range: 20,000 to 120,000 nT
 Low/High Field Options: 3000 to 350,000 nT
 Gradient Tolerance: 50,000 nT/m
 Sampling Rate: 1, 5, 10, 20 Hz

Orientation

Sensor Angle: optimum angle 35° between sensor head axis & field vector.
 Orientation: 10° to 80° & 100° to 170°
 Heading Error: ± 0.05 nT between 10° to 80° and 360° full rotation about axis.

Environmental

Operating Temperature: -40°C to +55°C
 Storage Temperature: -70°C to +55°C
 Humidity: 0 to 100%, splashproof

Dimensions & Weights

Sensor: 141mm x 64mm (external dia.); 1.3 kg
 Electronics Box: 229mm x 56mm x 39mm; 0.63 kg

Power

Power Supply: 22 to 32 V DC
 Power Requirements: approx. 50 W at start up, dropping to 12 W after warm-up
 Power Consumption: 12 W typical at 20°C
 Warm-up Time: <10 minutes at 20°C

Outputs

20 Hz RS-232 output with comprehensive Windows Personal Computer (PC) software for data acquisition and display.
 Outputs UTC time, magnetic field, lock indication, heater, field reversal, position (latitude, longitude or UTM), GPS altitude, number of satellites and differential GPS

Components

Sensor, pre-amplifier box, 5m sensor / pre-amplifier cable, manual & ship case.

All components are backed by GEM's industry leading three-year warranty.

GEM
SYSTEMS
 ADVANCED MAGNETOMETERS

GEM Systems, Inc.

135 Spy Court Markham, ON Canada L3R 5H6
 Phone: 1 905 752 2202 • Fax: 1 905 752 2205
 Email: info@gemsystems.ca • Web: www.gemsystems.ca