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GEM Advanced Magnetometers Releases New <1.5m Embedded GPS Solution for Portable Magnetometers and Gradiometers – May 6, 2004. Richmond Hill, Ontario, Canada. GEM today announced the implementation of a custom-designed GPS-based positioning system for its industry-leading line of portable magnetometers and gradiometers. The new <1.5m resolution GPS solution is a compact GPS receiver for customers seeking high-quality GPS data in a small, embedded (i.e. built-in) package.

Customers will note that the system replaces GEM's previous <3.0m GPS option and is provided at the same price as the <3.0m option. In addition to attractive pricing, a key advantage is that the new solution provides high reliability, outstanding performance under severe conditions (foliage, urban canyons, etc.).

GEM's GPS implementation comprises a complete sensor with 3D navigation on a single embedded board with full differential capability. The sensor is a 12 channel GPS receiver that tracks all in-view satellites. It is fully autonomous such that once power is applied, the system automatically searches, acquires and tracks GPS satellites.

The custom-developed system also features Satellite Based Augmentation System (SBAS) capability. SBAS is a type of geostationary satellite system that improves the accuracy, integrity and availability of GPS signals.

With SBAS, accuracy is enhanced through the use of wide area corrections for GPS satellite orbits and ionospheric errors. Integrity is enhanced through the SBAS network quickly detecting satellite signal errors and sending alerts to not use the failed satellite. Availability is improved by providing an additional ranging signal to each SBAS geostationary satellite. SBAS includes the Wide-Area Augmentation System (WAAS), the European Geo-Stationary Navigation System (EGNOS) and the MTSAT Satellite-Based Augmentation System (MSAS).



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The primary functions of SBAS include:

- Data collection
- Determining ionospheric corrections
- Determining satellite orbits
- Determining satellite clock corrections
- Determining the satellite integrity
- Verifying data independently
- Providing SBAS message broadcast and ranging
- Performing system operations and maintenance

The new GPS solution also features:

- Timing option, which provides an accurate 1PPS timing pulse aligned with UTC for use in precise synchronization applications.
- Operating temperature range of -30 degrees C to +75 degrees C
- Retention of satellite almanac data (set of orbit parameters that allows calculation of approximate GPS positions and velocities) and ephemeris data (set of orbit parameters that is used by a GPS receiver to calculate precise GPS satellite positions) for rapid time-to-first-fix after power interruption.

GEM Advanced Magnetometers delivers the only commercially-available magnetometers and gradiometers with embedded GPS for high-sensitivity, accurately-positioned ground surveys. The company's products include high-sensitivity Overhauser, very-high sensitivity optically pumped Potassium (K-Mag); and latest-technology GSM-19T proton precession instruments. GEM is the global standard in mineral exploration, near surface and observatory systems, and also delivers leading airborne magnetometers. With a 23-year history of innovation in Research and Development (R&D), the company is known for personable sales and service. Visit www.gemsys.ca to learn how GEM's systems can save you time and money in your earth science applications. Our World is Magnetic.

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