Description:
Originally developed to meet the needs of automotive testing professionals, the Dynamic Measurement System (DMS) was designed for monitoring the drive and handling characteristics of vehicles. The DMS may be used in almost any application where triaxial angular rate and acceleration data is required. The sensor provides both angular rate and acceleration outputs in analog and digital formats. The DMS features six accelerometer outputs. The X, Y, and Z axis outputs represent the accelerations in the plane of the vehicle body, while the second set of three outputs measure the acceleration aligned with an earth-level coordinate system. This allows forward and lateral acceleration measurements that are essentially free of gravity influences. The triaxial sensor set allows software alignment of sensors, greatly reducing any alignment errors. The serial interface is highly configurable and provides access to almost all operational parameters.

The DMS-EGP01 is used primarily in vehicle applications to integrate the features of a DMS-E604 and a velocity sensor into one unit. This sensor is equipped with a single GPS antenna that provides vehicle velocity data to the DMS. This data enhances the unit's performance during highly dynamic maneuvers such as sharp turns and also makes this inertial gyro sensor a more complete system since it does not require velocity information to be supplied from an external sensor.

Applications:
The DMS-EGP01 is typically used in automotive testing and vehicle dynamics applications. This sensor operates as an enhanced DMS-E604. The GPS antenna provides the DMS with a velocity signal, and also transmits heading data while in motion.

- Solid State, Strap Down System
- Six Accelerometer Outputs
- GPS Velocity Data
- Low Cost
- Rugged, High Reliability
- Vibration Resistant
- Analog and RS-232 Serial Outputs
- Two Year Limited Warranty
- Engineering Support
DMS-EGP01 Specifications

**Attitude**
- Range: Bank \(\pm 180^\circ\)
- Range: Elevation \(\pm 90^\circ\)
- Resolution: \(0.02^\circ\) Binary mode (14 bit)
- Analog Scale Factor: \(18^\circ/V\) \(\pm 10V\) Bank; \(\pm 5V\) Elevation
- Accuracy: Static \(\pm 0.25^\circ\)
* Accuracy: Dynamic 0.5%

**GPS Heading**
- Range: \(0^\circ - 360^\circ\)
- Resolution: \(0.02^\circ\) Binary mode (14 bit)
- Analog Scale Factor: \(18^\circ/V\) \(\pm 10V\) Output
- Accuracy: Static \(\pm 0.5^\circ\) \((\pm 0.05^\circ/\text{sec stationary})\) Relative, based on gyro drift
* Accuracy: Dynamic or Relative 0.5%

**Angular Rate**
- Range: Roll, Pitch, Yaw \(\pm 100^\circ/\text{sec}\)
- Resolution: \(0.025^\circ/\text{sec}\) Binary mode (14 bit)
- Analog Scale Factor: \(10^\circ/\text{sec}/V\) \(\pm 10V\) Output
- Scale Factor Accuracy: 0.5%
- Bias: Roll, Pitch, Yaw \(< 0.2^\circ/\text{sec}\) (Analog) \(\pm 0.02^\circ/\text{sec}\) Binary mode (14 bit)
- Non-Linearity: \(< 0.1\%\) Full scale range
- Bandwidth: 20 Hz
- Noise: \(< 0.03^\circ/\text{sec rms}\)

**Acceleration**
- Range: X, Y, Z \(\pm 10g\)
- Range: Forward, Lateral, Vertical \(\pm 10g\)
- Resolution: 4mg
- Analog Scale Factor: \(1g/V\) \(\pm 10V\) Output
- Scale Factor Accuracy: 1%
- Bias: X, Y, Z \(< 10mg\)
- Non-Linearity: \(< 0.1\%\) Full scale range
- Bandwidth: 3 Hz

**GPS Positioning**
- Range: Latitude \(\pm 90^\circ\)
- Range: Longitude \(\pm 180^\circ\)
- Range: Altitude 0ft to 21500ft
- Resolution: Latitude, Longitude \(0.0000013^\circ\) Binary mode (28 bit)
- Resolution: Altitude 2 ft
- Accuracy: Latitude, Longitude 1.5m rms

**Environmental**
- Temperature: Operating \(-40^\circ\text{C} \text{ to } +85^\circ\text{C}\)
- Temperature: Storage \(-55^\circ\text{C} \text{ to } +85^\circ\text{C}\)
- Vibration: Operating 5g rms
- Vibration: Survival 10g rms
- Shock: Survival 500g
- 10mS \(\frac{1}{2}\) sine wave

**Electrical**
- Frame Rate: 71.1 Hz Maximum
- Startup Time: Data 5 sec
- Startup Time: Satellite Acquisition 5 min Typical
- Input Power: 10 to 35VDC 5.5W
- Input Current: 458mA \@ 12VDC 229mA \@ 24VDC
- Input Velocity: (Optional) \(\pm 10VDC\)
- Digital Output: RS-232
- Analog Output: \(\pm 10VDC\)
- Analog Output Impedance: 300 Ohm Per line

**Physical**
- Axis Alignment: \(< 0.1^\circ\)
- Size: Including Mounting Flanges 6.5"W x 6.5"L x 3.1"H 16.5 x 16.5 x 7.9 (cm)
- Weight: 52oz (3.2lb) 1470 grams (1.5Kg)
- Connection: RS-232 9 pin female "D" subminiature
- Connection: Power / Analog Outputs 25 pin male "D" subminiature
- Connection: Antenna SMA Antenna cable length: 3.0m

* Using velocity data with GPS mode on.

Actual accuracy can be calculated as the listed percentage multiplied by the change in value over the entire dynamic maneuver.

† Acquisition time for GPS units is typical for the contiguous United States. Acquisition time may differ due to interference in your geographic area.

• Specifications are subject to change without notice.
• This product may be subject to export restrictions. Please consult the factory.