Dynamic Measurement System with Dual Antenna GPS

DMS-EGP02

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 triaxial acceleration data is required. These are available in analog and digital output 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-EGP02 is designed for vehicle applications where accurate heading is required, but a magnetic compass is infeasible. This sensor is equipped with a dual GPS antenna system that provides heading data even when the vehicle is not in motion. The addition of the GPS antennas also gives vehicle velocity data to the DMS that enhances the unit's performance during highly dynamic maneuvers such as sharp turns. This makes the DMS-EGP02 inertial gyro sensor a more complete system since it does not require velocity information to be supplied from an external sensor.

- Solid State, Strap Down System
- Six Accelerometer Outputs
- GPS Heading Reference
- Rugged, High Reliability
- Vibration Resistant
- Analog and RS-232 Serial Outputs
- Two Year Limited Warranty
- Engineering Support

Applications:

The DMS-EGP02 is useful in automotive testing, vehicle dynamics, and marine applications. This sensor can be used as a replacement for the Watson IMU-E604, and is most useful in applications where magnetic fields make heading data from a fluxgate magnetometer unreliable.

Watson Industries, Inc.
3035 Melby Street Eau Claire, Wisconsin 54703 U.S.A
Phone: +1 (715) 839-0628 Fax: +1 (715) 839-8248
e-mail: support@watson-gyro.com Website: www.watson-gyro.com

DMS-EGP02 Specifications

Attitude			
	Range: Bank	±180°	
	Range: Elevation	±90°	
	Resolution:	0.02°	Binary mode (14 bit)
	Analog Scale Factor:	18°/V	±10V Bank; ±5V Elevation
	Accuracy: Static	±0.25°	
*	Accuracy: Dynamic	0.5%	
GPS Heading			
	Range:	0° - 360°	
	Resolution:	0.02°	Binary mode (14 bit)
	Analog Scale Factor:	18°/V	±10V Output
	Accuracy: Static	0.5°	Based on antenna spacing.
*	Accuracy: Dynamic or Relative	0.5%	
Angular Rate			
	Range: Roll, Pitch, Yaw	±100°/sec	
	Resolution:	0.025°/sec	Binary mode (14 bit)
	Analog Scale Factor:	10°/sec/V	±10V Output
	Scale Factor Accuracy:	0.5%	
	Bias: Roll, Pitch, Yaw	< 0.2°/sec (Analog)	±0.02°/sec Binary mode (14 bit)
	Non-Linearity:	< 0.1%	Full scale range
	Bandwidth:	20 Hz	
	Noise:	< 0.03°/sec rms	
Acceleration			
	Range: X, Y, Z	±10g	
	Range: Forward, Lateral, Vertical	±10g	
	Resolution:	4mg	
	Analog Scale Factor:	1g/V	±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	±90°	
	Range: Longitude	±180°	
	Range: Altitude	0ft to 21500ft	
	Resolution: Latitude, Longitude	0.0000013°	Binary mode (28 bit)
	Resolution: Altitude	2 ft	
	Accuracy: Latitude, Longitude	±0.6m (with DGPS)	±2.5m (without DGPS)
Environmental			
	Temperature: Operating	-40°C to +85°C	
	Temperature: Storage	-55°C to +85°C	
	Vibration: Operating	5g rms	20 Hz to 2 KHz
	Vibration: Survival	10g rms	20 Hz to 2 KHz
	Shock: Survival	500g	10mS ½ 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	6.6W
	Input Current:	540mA @ 12VDC	270mA @ 24VDC
	Input Velocity: (Optional)	±10VDC	Full scale (±400kph)
	Digital Output:	RS-232	
	Analog Output:	±10VDC	
	Analog Output Impedance:	300 Ohm	Per line
Physical			
	Axis Alignment:	< 0.1°	
	Size: Including Mounting Flanges	6.5"W x 6.5"L x 3.84"H	16.5 x 16.5 x 9.8 (cm)
	Weight:	54oz (3.4lb)	1531 grams (1.5Kg)
	Connection: RS-232	9 pin female "D" subminiature	
	Connection: Power / Analog Outputs	25 pin male "D" subminiature	
	Connection: Antenna (Qty 2)	SMA	Antenna cable length: 3.0m

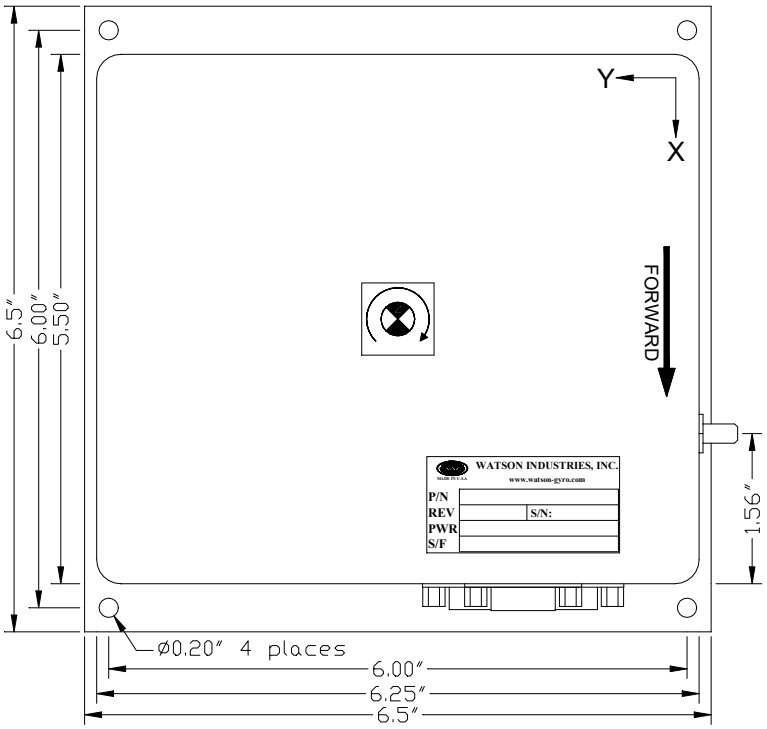
* Using velocity data with GPS mode on.
Actual accuracy can be calculated as the listed percentage multiplied by the change in value over the entire dynamic maneuver.

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

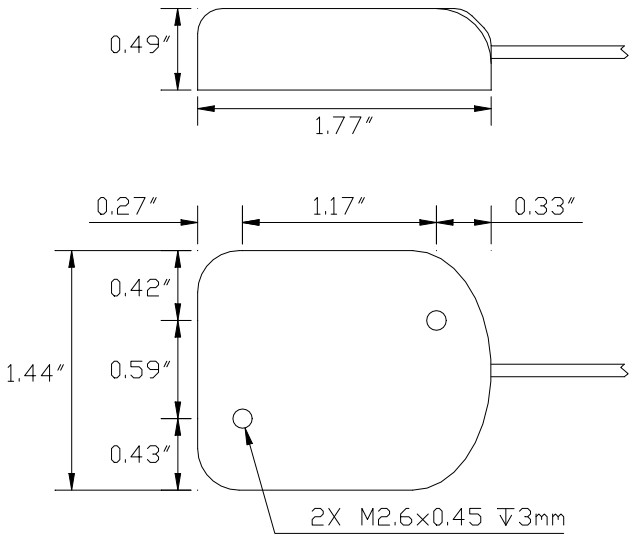
- Specifications are subject to change without notice.
- This product may be subject to export restrictions. Export Classification ECCN 7A994.

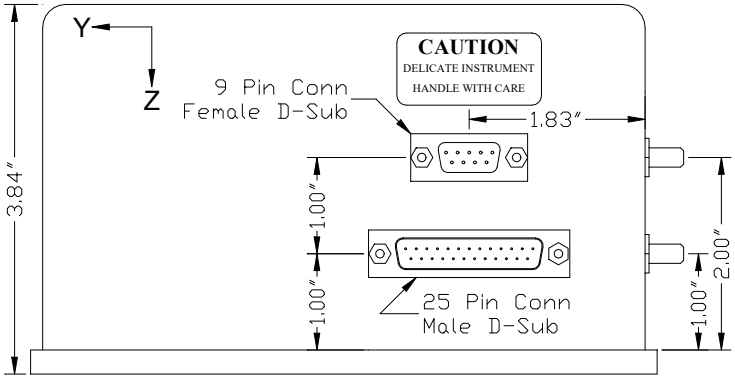
Watson Industries, Inc.
3035 Melby Street Eau Claire, Wisconsin 54703 U.S.A
Phone: +1 (715) 839-0628 Fax: +1 (715) 839-8248
e-mail: support@watson-gyro.com Website: www.watson-gyro.com

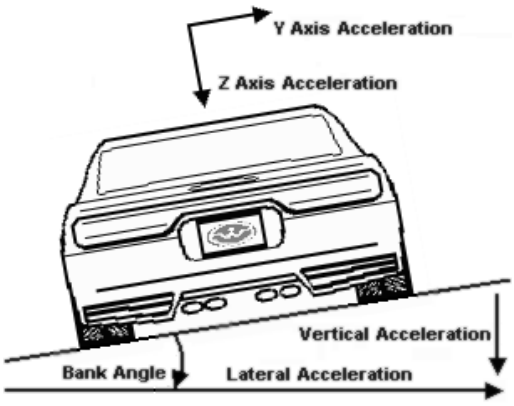
Dimensions:
DMS-EGP02

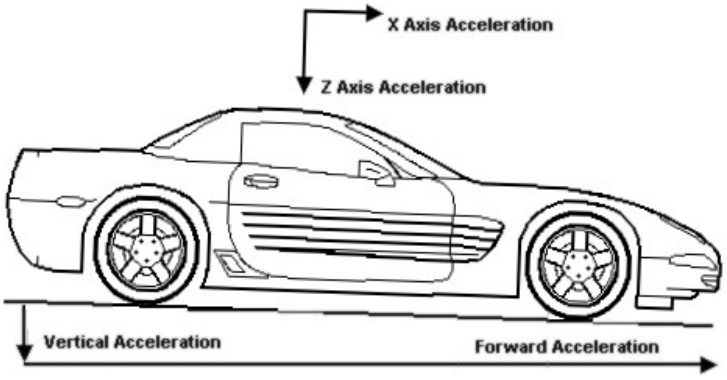


GPS Antenna









06/24 DAO

Watson Industries, Inc.
3035 Melby Street Eau Claire, Wisconsin 54703 U.S.A
Phone: +1 (715) 839-0628 Fax: +1 (715) 839-8248
e-mail: support@watson-gyro.com Website: www.watson-gyro.com