# Dynamic Measurement System

## DMS-S605

### Description:

Originally developed to meet the needs of automotive testing professionals, the Dynamic Measurement System (DMS) was designed for instrumenting 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-S605 is a miniaturized version of the DMS-E604. This sensor uses MEMS gyros to make the instruments smaller and more economical. The E-series line of sensors uses our larger VSG gyros for enhanced accuracy and signal stability.

The DMS uses an input of forward velocity to compensate the long term references, allowing the error correction system to work continuously. Other companies manufacture sensor packages that turn off their corrections during high dynamic conditions causing a drift in accuracy over time. The DMS-S605 is much more useable in highly dynamic conditions, and has been designed to provide the best possible combination of reliable data and low cost.

- Solid State, Strapdown System
- Six Accelerometer Outputs
- Small Size
- Low Cost, Low Power
- Rugged, High Reliability
- Analog and RS-232 Serial Outputs
- One Year Limited Warranty
- Engineering Support

### Applications:

The DMS-S605 is useful for automotive testing and land vehicle dynamics applications.

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## 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 | ±0.5° | |
| * Accuracy: Dynamic | 2% | |

## Relative Heading

| | | |
|---|---|---|
| Range: | 0° - 360° | |
| Resolution: | 0.02° | Binary mode (14 bit) |
| Analog Scale Factor: | 18°/V | ±10V Output |
| * Accuracy: Dynamic | 2% | |

## 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: | 2% | |
| Bias: Roll, Pitch, Yaw | < 0.3°/sec | |
| Non-Linearity: | < 0.05% | Full scale range |
| Bandwidth: | 20 Hz | |

## 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: | < 10mg | |
| Non-Linearity: | 0.1% | Full scale range |
| Bandwidth: | 3 Hz | |

## Environmental

| | | |
|---|---|---|
| Temperature: Operating | -40°C to +85°C | |
| Temperature: Storage | -55°C to +85°C | |
| Vibration: Operating | 2.5g 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: Fully operational | 10 sec | |
| Input Power: | 10 to 35VDC | 2.7W |
| Input Current: | 225mA @ 12VDC | 112mA @ 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: | < 0.25° | |
| Size: Including Mounting Flanges | 3.24"W x 5.78"L x 3.50"H | 8.2 x 14.7 x 8.9 (cm) |
| Weight: | 23oz (1.4lb) | 652 grams (0.7Kg) |
| Connection: RS-232 | 9 pin female "D" subminiature | |
| Connection: Power / Analog Outputs | 25 pin male "D" subminiature | |

* Assumes accurate velocity data.
Actual accuracy can be calculated as the listed percentage multiplied by the change in value over the entire dynamic maneuver.

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

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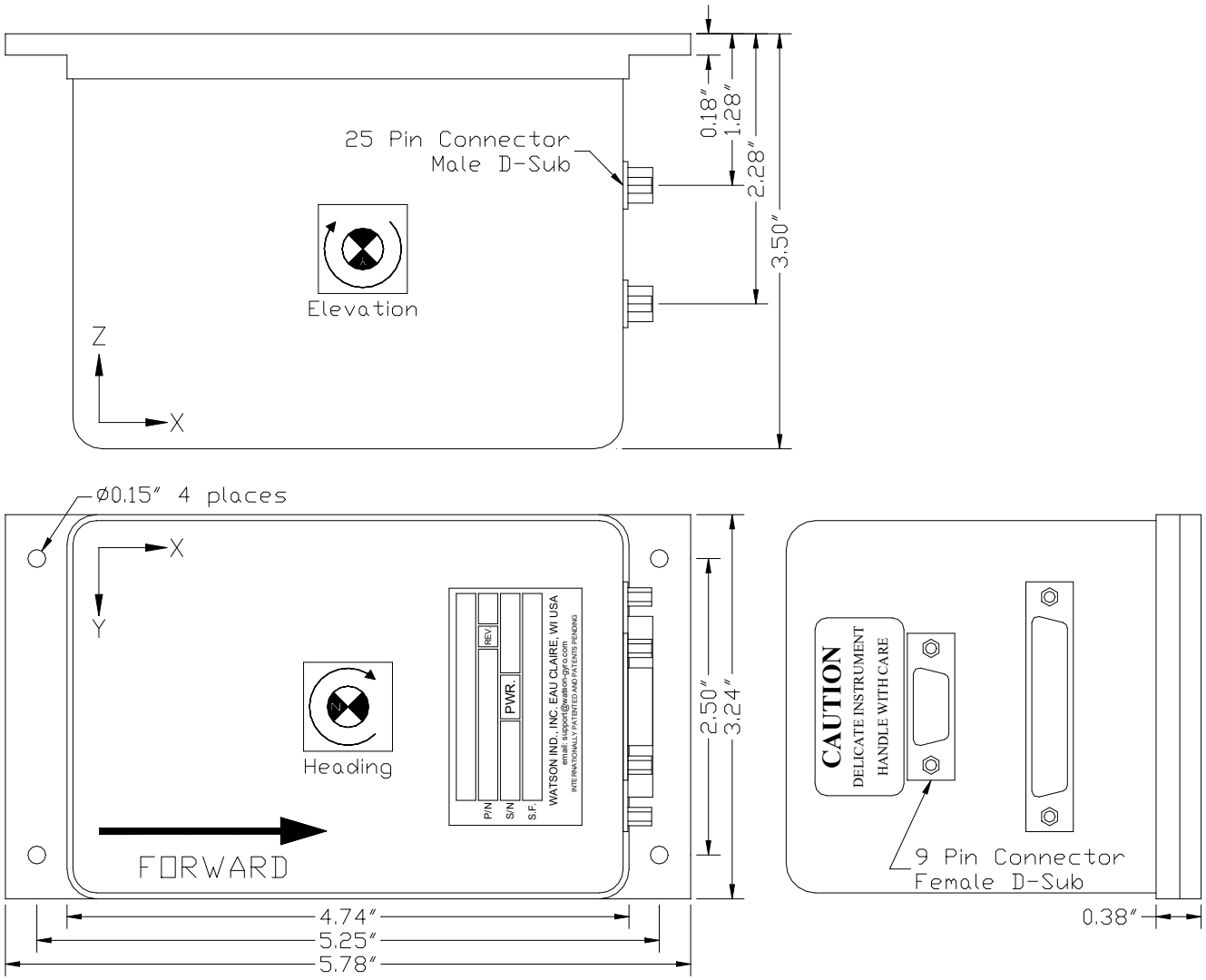
## Dimensions:

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