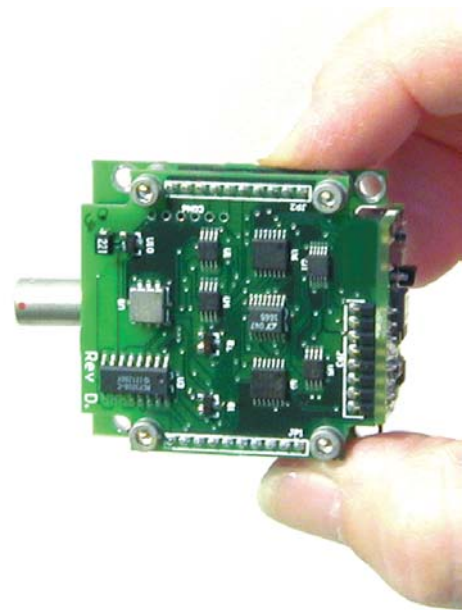


3DM-G combines three angular rate gyros with three orthogonal DC accelerometers, three orthogonal magnetometers, multiplexer, 12 bit A/D converter, and embedded microcontroller, to output its orientation in dynamic and static environments.

Operating over the full 360 degrees of angular motion on all three axes, 3DM-G provides orientation in either matrix or quaternion formats, which are easily converted to Euler angles. The digital serial output can also be programmed to provide scaled sensor data from all nine sensors.

APPLICATIONS

- ▲ unmanned aerial /underwater vehicles, robotics
navigation, artificial horizon
- ▲ computer science, biomedical
animation, linkage free tracking/control
- ▲ mobile cameras, sonar scanners
image reconstruction
- ▲ mobile radio antennas
aiming optimization, dynamic correction, antenna shaping
- ▲ manufacturing
container handling, hydraulic lift systems, machine tools



Networks of 3DM-G nodes can be deployed by using the built-in RS-485 network protocol. Embedded microcontrollers relieve the host system from the burden of orientation calculations, allowing deployment of dozens of 3DM-G nodes with no significant decrease in system throughput.

Output modes and software filter parameters are user programmable. Programmed parameters and calibration data are stored in nonvolatile memory.

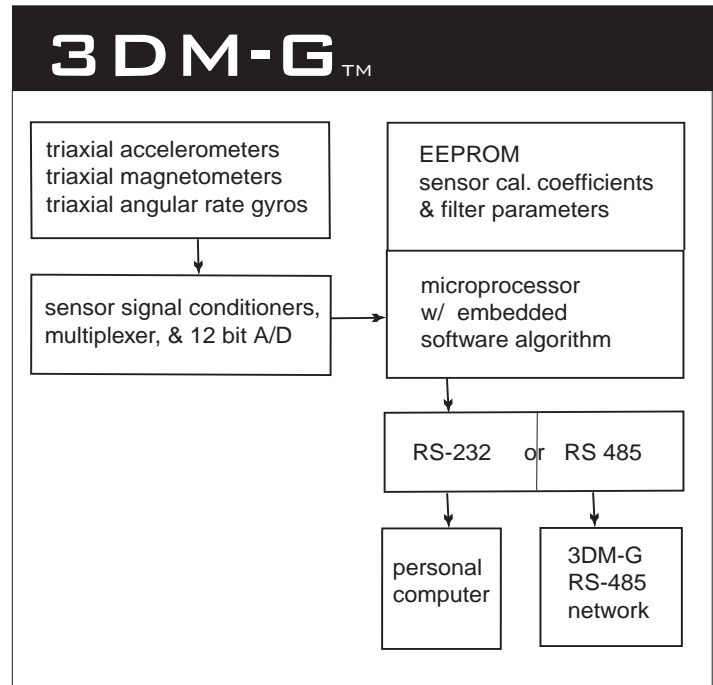
As with all MicroStrain products, every module is carefully tested prior to shipment, and calibration data are included with each order.

To place an order, or for more information, call us today at 800-449-3878.

How it works

3DM-G utilizes the triaxial gyros to track dynamic orientation and the triaxial DC accelerometers along with the triaxial magnetometers to track static orientation. The embedded microprocessor contains a unique control algorithm which performs the requisite dynamic compensation in real-time. Filter settings may be programmed for specific applications and reside in non-volatile memory.

This provides a fast response in the face of vibration and quick movements, but the system does not drift when motion stops. The compensated output is an easy to use digital signal.



SPECIFICATIONS

▲ Orientation Range	360 deg. full scale (FS), all axes (Matrix, Quaternion modes)	▲ Output Modes	matrix, quaternion, scaled sensors (PC Euler conversions provided)
▲ Angular Velocity Range	+/- 300 degrees/second (max.)	▲ Sensor Range	gyros: +/- 300 deg./sec FS accelerometers: +/- 2 G's FS magnetometers: +/- 1 Gauss FS
▲ A/D Resolution	12 bits	▲ Digital Outputs	serial RS-232 & RS-485 optional with software programming
▲ Dynamic Compensation	closed loop digital control (0 to 50 Hz)	▲ Output Data Rate	100 Hz (digital RS-232)
▲ Orientation Angle Resolution	< 0.1 degrees (angle resolution specs. taken at most aggressive filter setting)	▲ Serial Data Rate	19.2/38.4/115.2 kbaud, software prog.
▲ Temperature Drift	single axis: ±0.025 %/deg.C	▲ Supply Voltage:	5.2 VDC min., 12 VDC max.
▲ Nonlinearity	0.23% full scale (tested in static conditions)	▲ Supply Current:	90 milliamps
▲ Repeatability	0.10 degrees	▲ Connectors:	one keyed LEMO, two for RS-485 option
▲ Accuracy	±5 degrees typical for an arbitrary angular orientation (accuracy specs. taken at constant ambient temp., tested with known sine and step inputs including angular rates to 300 deg/s)	▲ Operating Temp.	- 40 to +70 deg C with enclosure -40 to +85 deg Celsius w/o enclosure
		▲ Enclosure (w / tabs)	64 mm by 90 mm by 25 mm
		▲ Weight	40 gr. with encl., 18 gr. without
		▲ Shock limit	1000g (unpowered), 500g (powered)



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Patents Pending