

LORD APPLICATION NOTE

Platform Stabilization on Dynamic Vehicles

Inertial sensors for surveillance, stabilization of airborne intelligence, and reconnaissance

Dynamic Platform Challenges

Imaging systems operating from dynamic platforms are subject to angular motion and jitter that undermine performance. Countering low frequency disturbances and actively stabilizing platforms requires precise orientation feedback. LORD MicroStrain's 3DM-GX4 -25™ AHRS inertial sensor is ideally suited for this purpose.



LORD Microstrain Inertial Sensors provide:

- Low gyro white noise
- High-output option
- Precise gimbal feedback
- Miniature, lightweight solution
- Cost-effective line-of sight surveillance
- Identical performance between devices



3DM-GX4-25™ AHRS

Attitude Reference Heading System

The 3DM-GX4 -25™ is a miniature industrial-grade attitude heading reference system (AHRS) with integrated magnetometers, high noise immunity, and exceptional performance.

- Best in class 10°/hour gyro bias stability
- 0.001°/s/g² rms vibration rectification error
- Gyroscope range: ±75, 150, 300*, 900°/sec
- Accelerometer range: ±5*, 16 g

*standard

LORD MicroStrain Inertial Sensors

ALSO AVAILABLE



3DM-GX4-45™ GPS/INS
GPS-Aided Inertial Navigation System
44 x 24 x 11.3 mm - 20 grams



3DM-GX4-15™ IMU
Inertial Measurement Unit
36 x 24.4 x 11.1 mm - 16.5 grams

PRECISE FEEDBACK UNDER LINEAR ACCELERATION

Currently in use by defense contractors for stabilization applications, the **3DM-GX4-45's** Extended Kalman Filter provides precise stabilization feedback in high linear acceleration environments that can cause typical sensors to report attitude erroneously. The GX4-45 mitigates outer loop tracking errors and provides improved gyro white noise performance.

In low acceleration settings, LORD MicroStrain's **3DM-GX4-25** can be used effectively. Its low latency and high data output rates provide the precision inner-loop feedback necessary to achieve fine stabilizing performance.

LORD MicroStrain's miniature inertial sensors provide a high performance sensing solution where size, weight, and power must be minimized. Factory calibration is performed on each sensor system over its full operating temperature range, correcting for a multitude of MEMS-sensor-related errors, and ensuring identical performance between devices.

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