

## 3DM-GX3-25-OEM™

### OEM Attitude Heading Reference System (AHRS)

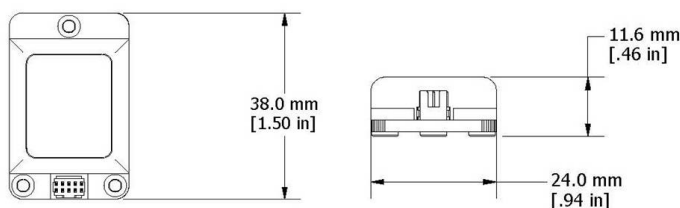


3DM-GX3-25-OEM™ - lower cost, miniature, industrial-grade attitude heading and reference system (AHRS) with integrated magnetometers, and OEM form factor

The LORD MicroStrain® 3DM-GX3® family of industrial grade inertial sensors provides a wide range of triaxial inertial measurements and computed attitude and navigation solutions.

In all models, the Inertial Measurement Unit (IMU) includes direct measurement of acceleration, angular rate, and atmospheric pressure. Sensor measurements are processed through an on-board processor running a sophisticated fusion algorithm to produce high accuracy computed outputs with compensation options for magnetic and linear acceleration anomalies, sensor biases, auto-zero update, and noise offsets. The computed outputs vary between models and can include pitch, roll, yaw, a complete attitude, heading, and reference solution (AHRS) or a complete position, velocity and attitude solution (PVA), as well as integrated GPS outputs. All sensors are fully temperature compensated and calibrated over the operating temperature. The use of Micro-Electro-Mechanical System (MEMS) technology allows for highly accurate, small, lightweight devices.

The LORD MicroStrain® MIP™ Monitor software can be used for device configuration, real time measurement monitoring, and data recording. Alternatively, the MIP™ Data Communications Protocol is available for users who want to develop customized software solutions.



**Best in Class Inertial Measurement**

### Product Highlights

- High performance integrated MEMS sensor technology provide direct and computed AHRS outputs in a small package.
- Triaxial accelerometer, gyroscope, magnetometer, and temperature sensors achieve the best combination of measurement qualities.
- On-board processor runs a sophisticated Complimentary Filter (CF) fusion algorithm for precise attitude estimates and inertial measurements
- Sampling rates up to 30 KHz and data output up to 1 KHz
- Small size, lightweight packaging, and header connector interface ideal for OEM integration

### Features and Benefits

#### Best in Class Performance

- Fully calibrated, temperature compensated, and mathematically aligned to an orthogonal coordinate system for highly accurate outputs
- Bias tracking, error estimation, threshold flags, and adaptive noise modeling allow for fine tuning to conditions in each application.

#### Ease of Use

- Easy integration via comprehensive SDK
- Common protocol with the 3DM-GX4® and 3DM-RQ1™ sensor families for easy migration

#### Cost Effective

- Out-of-the box solution reduces development time.
- Volume discounts

### Applications

- Unmanned vehicle navigation
- Platform stabilization, artificial horizon
- Antenna and camera pointing
- Health and usage monitoring of vehicles

# 3DM-GX3-25-OEM™ OEM Attitude Heading Reference System (AHRS)

## Specifications

General			
<b>Integrated sensors</b>	Triaxial accelerometer, triaxial gyroscope, triaxial magnetometer, and temperature sensors,		
<b>Data outputs</b>	<b>Inertial Measurement Unit (IMU) outputs:</b> acceleration, angular rate, magnetic field, deltaTheta, deltaVelocity  <b>Computed outputs</b> attitude estimates (in Euler angles, quaternion, orientation matrix),		
<b>Resolution</b>	16 bit SAR oversampled to 17 bits		
Inertial Measurement Unit (IMU) Sensor Outputs			
	Accelerometer	Gyroscope	Magnetometer
<b>Measurement range</b>	±5 g (standard) ±1.7±16, and ±50 g (option)	300°/sec (standard) ±50, ±600, ±1200 °/sec (options)	±2.5 Gauss
<b>Non-linearity</b>	±0.1 % fs	±0.03 % fs	±0.4 % fs
<b>Bias instability</b>	±0.04 mg	18°/hr	--
<b>Initial bias error</b>	±0.002 g	±0.25°/sec	±0.003 Gauss
<b>Scale factor stability</b>	±0.05 %	±0.05 %	±0.1 %
<b>Noise density</b>	80 µg/√Hz	0.03°/sec/√Hz	100 µGauss/√Hz
<b>Alignment error</b>	±0.05°	±0.05°	±0.05°
<b>Adjustable bandwidth</b>	225 Hz (max)	440 Hz (max)	230 Hz (max)
<b>IMU filtering</b>	Digitally filtered (user adjustable) and scaled to physical input; coning and sculling integrals computed at 1 kHz		
<b>Sampling rate</b>	30 kHz	30 kHz	7.5 kHz
<b>IMU data output rate</b>	1 Hz to 1000 Hz		

Computed Outputs	
<b>Attitude accuracy</b>	±0.5° roll, pitch, and heading (static, typ), ±2.0° roll, pitch, and heading (dynamic, typ)
<b>Attitude heading range</b>	360° about all axes
<b>Attitude resolution</b>	< 0.01°
<b>Attitude repeatability</b>	0.2° (typ)
<b>Calculation update rate</b>	1000 Hz
<b>Computed data output rate</b>	1 Hz to 500 Hz
Operating Parameters	
<b>Communication</b>	USB 2.0, TTL (3.3 V dc, 9,600 bps to 921,600 bps, default 115,200)
<b>Power source</b>	+ 3.1 to + 5.5 V dc
<b>Power consumption</b>	80 mA at 5 V dc (USB)
<b>Operating temperature</b>	-40 °C to +70 °C
<b>Mechanical shock limit</b>	500 g
Physical Specifications	
<b>Dimensions</b>	38 mm x 24 mm x 11.6 mm
<b>Weight</b>	11.6 grams
<b>Regulatory compliance</b>	ROHS
Integration	
<b>Connectors</b>	Data/power output: Samtec FTSH Series (FTSH-105-01-F-D-K)
<b>Software</b>	MIP™ Monitor, Windows XP/Vista/7/8 compatible
<b>Compatibility</b>	Protocol compatibility with 3DM-RQ1™ and 3DM-GX4® sensor families.
<b>Software development kit (SDK)</b>	MIP™ data communications protocol with sample code available (OS and computing platform independent)