

Inclinometers and Orientation Sensors



Full line of inclinometers and orientation sensors combine MEMS sensors and smart embedded microcontrollers to create angle sensors for static and dynamic applications.

Features and Benefits:

- Full temperature compensation of 3DM-GX1®, Inertia-Link®, 3DM-GX2®, and 3DM-GX3™-25
- Small and Light-Weight
- Low Power
- Low Cost



Specifications						
Model	FAS-A®	3DM®/3DM-DH®	INERTIA-LINK®	3DM-GX1®	3DM-GX2®	3DM-GX3™-25
Application	static/quasi-static	static/quasi-static	dynamic	dynamic	dynamic	dynamic
Sensor Suite	accelerometers	accelerometers, magnetometers, temperature	accelerometers, gyroscopes, temperature	accelerometers, gyroscopes, magnetometers, temperature	accelerometers, gyroscopes, magnetometers, temperature	accelerometers, gyroscopes, magnetometers, temperature
Orientation Range	360° in single axis mode ± 70° in dual axis mode	pitch ± 70°, roll ± 180°, yaw ± 180° (Euler angles)	360° all axes (orientation matrix, quaternion) pitch ± 70°, roll ± 180°, yaw ± 180° (Euler angles)	360° all axes (orientation matrix, quaternion) pitch ± 70°, roll ± 180°, yaw ± 180° (Euler angles)	360° all axes (orientation matrix, quaternion) pitch ± 70°, roll ± 180°, yaw ± 180° (Euler angles)	360° all axes (orientation matrix, quaternion) pitch ± 70°, roll ± 180°, yaw ± 180° (Euler angles)
A/D resolution	12 bits	12 bits	16 bits (6 delta-sigma A/Ds)	16 bits	16 bits (6 delta-sigma A/Ds)	16 bits (SAR)
Resolution	0.15°	0.1° at most aggressive setting	<0.1° minimum	<0.1° minimum	<0.1° minimum	<0.1° minimum
Repeatability	0.1°	pitch and roll 0.7°, yaw 0.26°	0.20°	0.20°	0.20°	0.20°
Accuracy	± 0.7° typical	pitch ± 0.93° typical roll ± 0.33° typical yaw ± 1.0° typical	± 0.5° typical for static test conditions ± 2.0° typical for dynamic (cyclic) test conditions & for arbitrary orientation angles	± 0.5° typical for static test conditions. ± 2.0° typical for dynamic (cyclic) test conditions and for arbitrary orientation angles	± 0.5° typical for static test conditions. ± 2.0° typical for dynamic (cyclic) test conditions and for arbitrary orientation angles	± 0.5° typical for static test conditions. ± 2.0° typical for dynamic (cyclic) test conditions and for arbitrary orientation angles
Output modes	angle	rotation matrix, Euler angles, six scaled sensors with temperature	acceleration and angular rate, deltaAngle and deltaVelocity, Euler angles, rotation matrix	matrix, quaternion, Euler rate, and nine scaled sensors with temperature	acceleration and angular rate, deltaAngle and deltaVelocity, Euler angles, rotation matrix, magnetometer	acceleration and angular rate, deltaAngle and deltaVelocity, Euler angles, rotation matrix, magnetometer
Digital outputs	RS232		USB 2.0, RS232, RS422 and wireless	RS232 RS485 optional	USB 2.0, RS232, RS422 and wireless	USB 2.0, RS232, TTL Serial
Analog Output	4.096 volts FS	N/A	N/A	Optional: 4 programmable analog outputs, 0–5 VOHSFS	N/A	N/A
Digital output rate	40 Hz	45 Hz max in angle mode 30 Hz typical in angle mode 70 Hz raw sensor data	1 to 300 Hz (USB) 1 to 100 Hz (wireless)	100 Hz for Euler, Matrix, Quaternion. 350 Hz for nine orthogonal sensors only	1 to 300 Hz (USB) 1 to 100 Hz (wireless)	1 to 1000 Hz
Serial data rate	9600 baud	1200 baud, 9600 baud, 19200 baud	115200 baud	19.2/38.4/115.2 kbaud	115200 baud	115200-921600 baud
Supply voltage	5.2 to 12 VDC	5.2 to 12 VDC	4.5 to 16 VDC	5.2 to 12 VDC	4.5 to 16 VDC	4.5 to 6 volts
Supply current	40 mA	50 mA	90 mA	65 mA	90 mA	90 mA
Connectors	LEMO	sensor - RJ11 power mini coax	micro DB9	one keyed LEMO, two for RS-485 or analog options	micro DB9	micro DB9
Operating temperature	-40 to +70°C in enclosure -40 to +85°C board only	-25 to +70°C in enclosure -40 to +85°C board only	-40 to +70°C in enclosure -40 to +85°C board only	-40 to +70°C in enclosure -40 to +85°C board only	-40 to +70°C in enclosure -40 to +85°C board only	-40 °C to +75 °C
Dimensions (mm)	64 x 90 x 25 in enclosure	64 x 90 x 25 in enclosure 58 x 60 x 14 board only 28 x 67 x 8 3DM-DH	41 x 63 x 24 in enclosure 32 x 36 x 15 board only	64 x 90 x 25 in enclosure 42 x 40 x 15 board only	41 x 63 x 32 in enclosure 32 x 36 x 24 board only	44 x 37 x 11 USB/RS-232 enclosure
Weight (grams)	62 in enclosure 14 board only	75 in enclosure 27 board only 11 3DM-DH	39 in enclosure 16 board only	75 in enclosure 30 board only	50 grams with enclosure, 21 grams without enclosure	18 RS-232 and USB, 11.5 OEM
Shock limit	1000 g (unpowered), 500 g (powered)	1000 g (unpowered), 500 g (powered)	1000 g (unpowered), 500 g (powered)	1000 g (unpowered), 500 g (powered)	1000 g (unpowered), 500g (powered)	1000 g (unpowered), 500 g (powered)

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