



AXO[®]315

High Performance Closed-Loop MEMS Accelerometer With Digital Interface

1 mg composite bias repeatability under severe environments

KEY FEATURES

- ± 14 g range in-plane linear accelerometer
- Hermetic SMD ceramic package for reliable assembly on FR4
- Fully hard-coded electronic, no embedded software
- Built-in temperature compensation and self-test
- Complementarity with GYPRO[®] high performance gyros which share the same digital interface

KEY PERFORMANCES

- Best in-class 1 year composite bias repeatability of 1 mg under -55°C to 105°C and > 4 g environment
- Unmatched vibration rejection (20 µg/g²)
- Excellent 1 year composite scale factor repeatability of 600 ppm over temperature
- Very low noise of 15 µg/√Hz, non-linearity of 100 ppm
- Non classified under dual-use export control

GENERAL DESCRIPTION

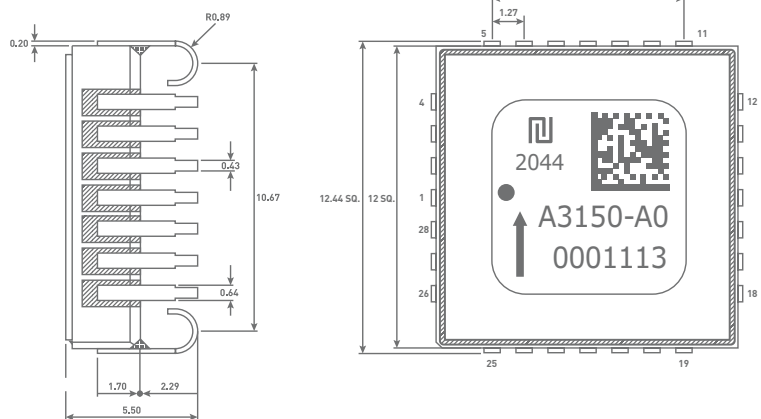
The AXO[®]315 high performance closed-loop MEMS accelerometer offers a performance-equivalent alternative to incumbent analog force-rebalance quartz and mechanical servo-accelerometers at a fraction of their size, weight and cost. Its 24 bit SPI interface eases its integration and reduces the e-BOM.

With a 1 year composite bias repeatability of 1 mg under demanding temperature and vibrations conditions, the AXO[®]315 overpasses all commercially available MEMS accelerometers and is free from dual-use export control, according to Annex 1 of Council Regulation (EC) No 428/2009. AXO[®] acceleration sensors are ideally complemented by GYPRO[®] high performance digital gyrometers and are REACH and RoHS compliant.

AXO[®]315 is a very low noise sensor which provides an excellent linearity and 1 year composite scale factor repeatability over an extended temperature range. Our accelerometer is well suited to precision attitude, guidance and motion control and GNSS-aided positioning applications in demanding industrial, land, railway and naval environments.

TARGETED APPLICATIONS

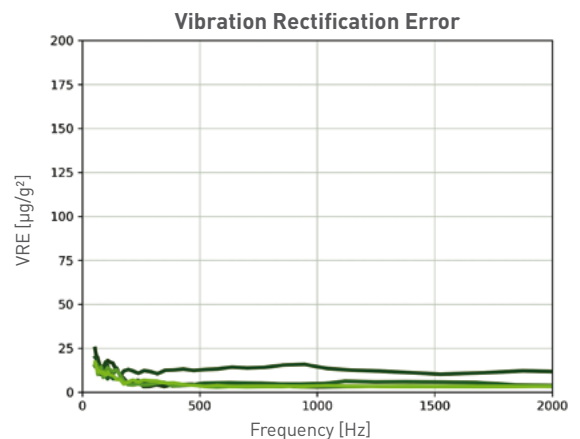
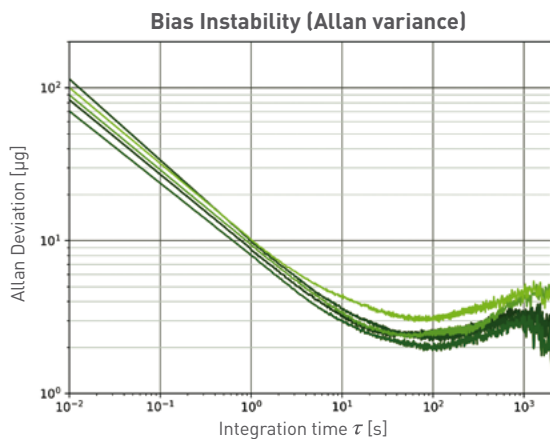
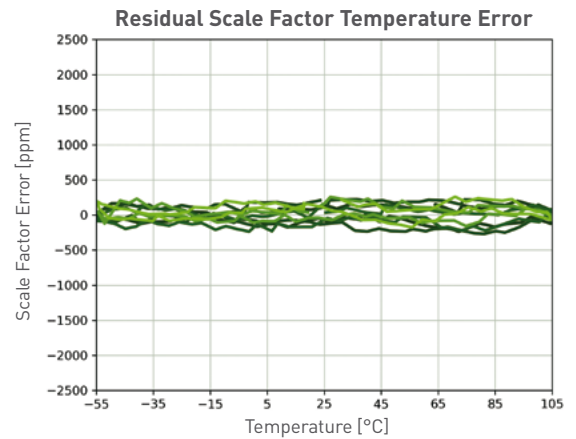
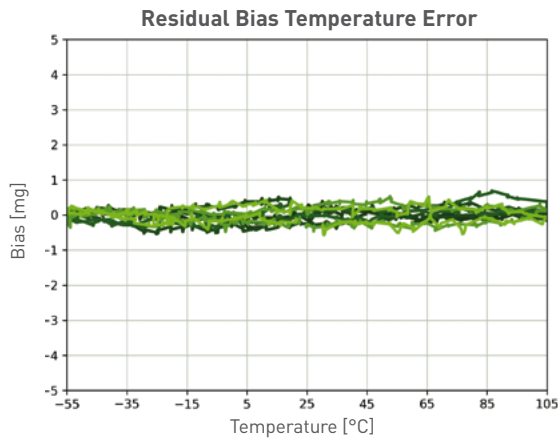
- Dynamic inclinometers
- Servo-inclinometers
- IMU [Inertial Measurement Unit] for precision robotics and remotely operated vehicles (ROV)
- INS [Inertial Navigation System] for manned and unmanned ground vehicle (UGV) & train positioning
- Test instrumentation
- North-finding/Gyro-compassing



12 x 12 x 5.5 mm³, 1.4 g, J-Lead ceramic package



TYPICAL PERFORMANCES



KEY SPECIFICATIONS

Parameter	Typical values	Unit	Note
Full scale acceleration range	± 14	g	
Operating temperature range	-55 to +105	°C	
1 year composite bias repeatability	1	mg	
Vibration Rectification Error	20	µg/g ²	4.12 g rms (10-2000 Hz)
Bias instability (Allan variance)	4	µg	
Velocity Random Walk (Allan variance)	0.006	m/s/√hr	
Residual bias temperature error	± 0.5	mg	Compensated
Noise density	15	µg/√Hz	(0-300 Hz)
1 year composite scale factor repeatability	600	ppm	
Scale factor non linearity	100	ppm	
Residual scale factor temperature error	± 400	ppm	Compensated
Bandwidth	> 300	Hz	
Data rate	2500	Hz	
Latency	< 1	ms	
Survival shock	2000 0.3	g ms	
Power supply	5	V	
Size (L x l x h)	12 x 12 x 5.5	mm	

Sensors are factory calibrated and compensated for temperature effects to provide a high-accuracy digital output over the temperature range. Raw data output can also be chosen to enable compensations at the IMU or at the system level. Different programming (e.g. BW, data rate, latency...) and calibration can be made on demand.

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