

# QUARTZ ACCELEROMETER

# AI-Q-2051

### General description

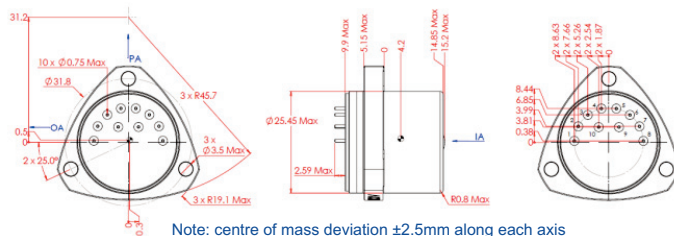
InnaLabs® AI-Q-2051 is a single-axis closed loop quartz pendulous lateral accelerometer. The proven quartz flexure technology inside InnaLabs® accelerometers provides an analogue voltage output and an excellent long-term repeatability, which make the AI-Q-2051 an ideal ITAR free choice for demanding navigation and flight control systems.

The AI-Q-2051 features an internal temperature sensor that allows the user to carry out temperature calibration and compensation, enhancing the bias, scale factor and axis misalignment performance over temperature.



In addition to navigation applications, the AI-Q-2051 can be used to calculate speed, distance and inclination in a wide range of applications, ranging from industrial control, test and measurement, transport, oil and gas and civil engineering.

State-of-the-art manufacturing processes enable InnaLabs® to offer AI-Q-2051 accelerometers at competitive prices.



**Accelerometer Dimensions (mm)**

### Features

- Navigation grade performance (<550  $\mu$ g one year bias composite repeatability)
- High input range (up to  $\pm 4.5$ g)
- Analogue current output
- Compact, rugged design
- High stability under temperature changes
- High reliability
- Internal temperature sensor for thermal compensation
- Dual built-in self test
- ITAR-Free

### Applications

- Flight Control Computers (FCC)
- Inertial Navigation Systems (INS)
- Inertial Measurement Units (IMU)
- Attitude and Heading Reference Systems (AHRS)
- Commercial and military aircraft
- Unmanned systems and helicopters
- Land vehicles
- Marine vehicles
- Orientation systems for oil drilling industry
- Train and rail measurement systems
- Robotic systems control

### Related Products

InnaLabs® offers a range of accelerometers based on the same design and production processes, including the AI-Q-700, AI-Q-1400, and AI-Q-2000 series.

Contact your local InnaLabs® Sales Agent for further details, or visit [www.innalabs.com](http://www.innalabs.com)

If you wish to be automatically updated on future releases of this product datasheet, please contact your local InnaLabs® Sales Agent.

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## SPECIFICATION

Parameter	Unit	Value
Input Range	g	±4.5
Bias (Note 1)	mg	<  ±5
One-year Composite Repeatability	µg	<  ±550
Temperature Sensitivity	µg/°C	<  ±40
Scale Factor (Note 1)	V/g	1 ± (2% of nominal)
One-year Composite Repeatability	ppm	<  ±600
Temperature Sensitivity	ppm/°C	<  ±180
Axis Misalignment	µrad	<  ±2000
One-year Composite Repeatability	µrad	<  ±100
Vibration Rectification	µg/g <sup>2</sup> <sub>RMS</sub>	<  ±40  (50-500 Hz) <  ±150  (500-2000 Hz)
Intrinsic Noise	µg <sub>RMS</sub>	<7 (0-10 Hz) <70 (10-500 Hz) <1500 (500-10000 Hz)
Operating Temperature	°C	-55 to +95
Shock	g <sub>PEAK</sub> , ms	50, 18
Vibration Peak Sine	g, Hz	2.5, 20 to 2000Hz
Resolution/Threshold	µg	<1
Bandwidth (@90°)	Hz	>300
Temperature Model		Yes
MTBF	years	>10
Service/Storage Life	years	>20
Quiescent Current per Supply	mA	<16
Quiescent Power @ ±15V <sub>DC</sub>	mW	<480
Electrical interface		Temp Sensor Voltage Self Test Current Self Test Power/Signal Ground -10 V <sub>DC</sub> Output +10 V <sub>DC</sub> Output
Input Voltage	V <sub>DC</sub>	±13 to ±28
Weight	g	71 ±4
Diameter below mounting surface	mm	Ø 25.45 Max
Height – bottom to mounting surface	mm	14.85 Max
MTBF	years	> 10
Service/Storage Life	years	> 20
Case Material		300 Series Stainless Steel

Note 1: Bias and Scale Factor values depend on specific load conditions

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InnaLabs® Global Headquarters, Blanchardstown Industrial Park, Snugborough Road, Blanchardstown, Dublin 15, Ireland  
T: +353 1 8096200 | F: +353 1 8096202 | E: contact.sales@innalabs.com | W: www.innalabs.com