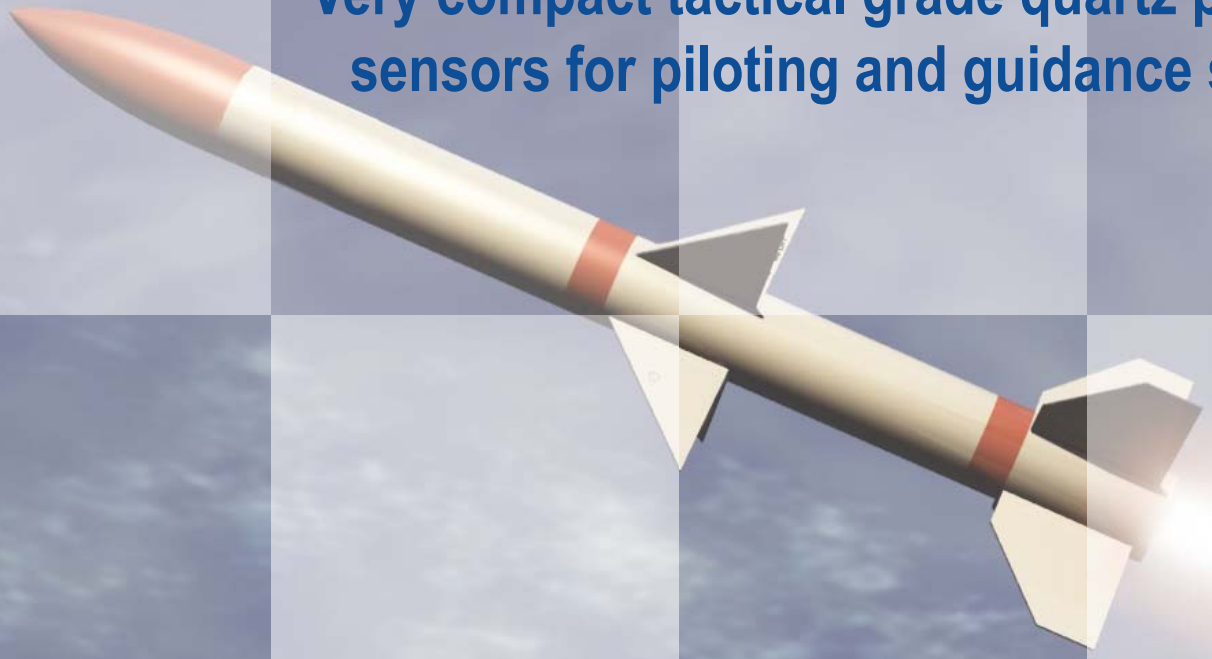
ACCELEROMETER

AI-Q-550 Series

Very compact tactical grade quartz pendulous sensors for piloting and guidance systems



InnaLabs®
www.innalabs.com

A world leader in the development and manufacture of cutting-edge sensor technology

AI-Q-550 Series Accelerometers

In Strapdown Inertial Measurement Systems, accelerometers are the primary tool for measuring both gravitational and inertial accelerations and providing the host vehicle with Guidance and Flight-Control parameters in a self-contained manner. Ultimately, the success of the mission highly depends on how well the Strapdown system performs and this is to a large extent determined by the performance capabilities of the accelerometers.

In modern high-tech Unmanned Aerial Vehicles (UAV) and Precision Guided Systems, the requirements for smaller size, lower power consumption and lower cost have largely promoted and supported the development of MEMS inertial sensors. However, the performance of MEMS-based sensors still lags well behind that of more mature technologies, such as force-rebalance quartz pendulous accelerometers.

Recent technological advances in Control Systems are increasingly leading to more stringent mission profiles for these applications which may comprise, for example, high-dynamic manoeuvres in GPS denied environments and harsh vibration levels. The limited accuracy and precision afforded by MEMS-based platforms create a gap in the market requiring low size and high performance at a competitive price point. The AI-Q-550 accelerometer from InnaLabs® bridges this gap.

The AI-Q-550 is the latest addition to InnaLabs® line of high quality, high performance, built in Europe, ITAR-Free sensors aimed at tactical, control, measurement and navigation markets.

The InnaLabs® AI-Q-550 offers industry-leading ±80g dynamic range in a 5cm^3 form factor with extremely low vibration rectification errors. The AI-Q-550 can operate under the harshest of environments and offers exceptionally low output noise, and long-term stability with one-year composite repeatability errors of better than 1mg and 600ppm (bias and scale factor respectively).

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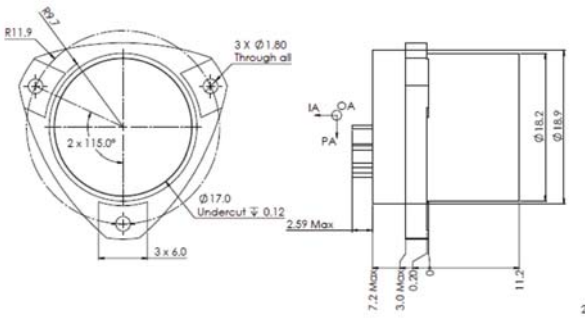

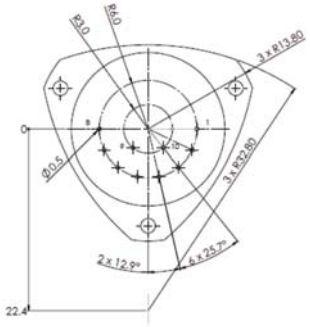

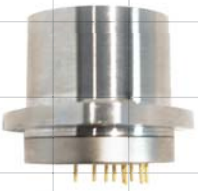

Actual Size

Parameter	Units	Values
Performance		
Input Range (10 Ω load resistor)	g	±80
Bias	mg	≤4
One-year Composite Repeatability (3σ)	µg	≤1,000
Temperature Sensitivity	µg/°C	≤50
Scale Factor	mA/g	0.65 to 0.85
One-year Composite Repeatability (3σ)	ppm	≤600
Temperature Sensitivity	ppm/°C	≤100
Axis Misalignment	µrad	≤1,500
One-year Composite Repeatability (3σ)	µrad	≤100
Vibration Rectification	$\mu g/g^2_{RMS}$	≤25 (50-200 Hz) ≤50 (200-750 Hz) ≤100 (750-2000 Hz)
Intrinsic Noise (1kΩ load resistor)	μg_{RMS}	≤7 (0-10 Hz) ≤70 (10-500 Hz) ≤1,500 (500-10 kHz)
Environment		
Operating Temperature	°C	-55 to +105
Shock half-sine (4 ms)	g	250
Vibration peak sine (≤ 2 kHz)	g	35 peak
Resolution/Threshold	µg	≤1
Bandwidth	Hz	≥300
Thermal Modelling		
Temperature Model		Yes
Electrical		
Quiescent Current per Supply (0 g)	mA	≤6
Quiescent Power @ ±15V^{DC} (0 g)	mW	≤180
Interface	- - - -	Temperature sensor Voltage Self-Test Current Self-Test Power / Signal Ground
Input Voltage	V_{DC}	±13 to ±18
Physical		
Mass	gm	25.8
Diameter below mounting surface	mm	Ø 18.2
Height – bottom to mounting surface	mm	11.2
Case Material	-	300 series Stainless Steel

InnaLabs® high-performance accelerometers and gyroscopes meet the stringent requirements of our customers for precision guidance, stabilisation, navigation and orientation applications. InnaLabs® provides high-quality robust solutions to industrial, oil and gas, marine, subsea, aerospace, land, civil engineering, transportation and space applications.

Production Facilities

Our best in class production facility consists of 6000m2 plant room with four separate foundations containing ISO- Class 7 and ISO - Class 5 clean rooms. We have invested in state-of-the-art equipment including rate tables, temperature & pressure chambers, shakers, high precision soldering and etching machines to ensure our finished products are manufactured and tested to the highest quality.

Quality Policy

InnaLabs® Ireland is world class in everything we do: including product quality, customer fulfilment, ease of doing business and value to our customers.

Our primary goal is continual improvement in quality, cost, delivery and customer satisfaction.

We achieve this by:

- Every individual is responsible for the quality of their work, following basic principles and striving for defect-free product quality.
- Creating a culture to continually meet and exceed our customers current and future expectations.
- Pursuing sensor design and manufacturing excellence in a safe, healthy and enjoyable environment.

The InnaLabs® Quality Management System is certified under the ISO 9001 standard for the design and manufacture of precision electromechanical sensors.

Our quality system has been independently audited by NSAI (National Standards Authority of Ireland). NSAI is a member of IQNet (the International Certification Network) based in Bern, Switzerland which gives NSAI certification worldwide recognition. Quality is a top strategic priority for InnaLabs® and ISO 9001 certification as an internationally recognised standard for quality management systems help us to strengthen our leadership in this area. The certification reflects our continued efforts to improve and our commitment to on-going investment in technology, development and process maturity.

Why choose InnaLabs®

European Supplier

ITAR-free Products

Value

Competitive pricing and supply chain flexibility

Quality

Independently audited by NSAI with worldwide IQNet worldwide recognition

Support

Excellent pre and post sale customer support

Flexibility

Custom solutions to meet your project needs

Innovation

Highly skilled and experienced engineering team committed to ongoing research and development





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