

### General description

The **InnaLabs® AI-Q-550** quartz-based servo accelerometer is an ideal, ITAR-Free choice for defense, aerospace, industrial, transport, and civil engineering applications where tactical grade performance, small dimensions, and a robust and reliable design are required.

By using a customer supplied output load resistor appropriately selected for the required acceleration range, the output current is converted into a voltage proportional to the input acceleration.

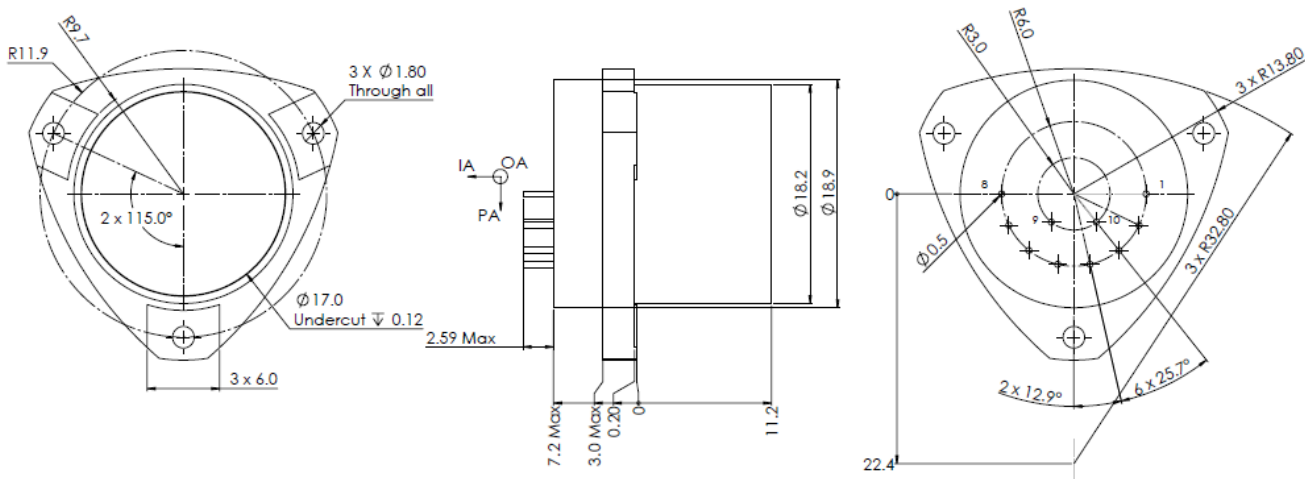
The AI-Q-550 accelerometer offers an input range of  $\pm 80$  g with a one-year bias composite repeatability better than  $1,000 \mu\text{g}$  in a compact and ruggedized casing that provides a high shock and vibration resistance matching the highest industry standards.



The AI-Q-550 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.

State-of-the-art manufacturing processes enable InnaLabs® to offer AI-Q-550 accelerometers at competitive prices.

### Accelerometer dimensions (mm)



### Features

- Bias one-year composite repeatability  $\leq 1,000 \mu\text{g}$
- Input Range:  $\pm 80$  g ( $10 \Omega$ )
- High thermal stability
- Internal temperature sensor for thermal compensation
- Environmentally rugged
- Analogue Current output
- Miniaturised design
- ITAR-Free

### Applications

- Tactical grade Inertial Measurement Units
- Flight control systems
- Unmanned systems, ROV, UAV
- Platform levelling
- Structural health and maintenance
- Land vehicles
- Inclinerometers for industrial and drilling
- Train and rail measurement systems
- Robotic systems
- Seismic sensing

## Specifications

Parameters	Units	Values
<b>Performance</b>		
Input Range (10 $\Omega$ load resistor)	g	$\pm 80$
Bias	mg	$\leq 4$
One-year Composite Repeatability (3 $\sigma$ )	$\mu\text{g}$	$\leq 1,000$
Temperature Sensitivity	$\mu\text{g}/^\circ\text{C}$	$\leq 50$
Scale Factor	mA/g	0.65 to 0.85
One-year Composite Repeatability (3 $\sigma$ )	ppm	$\leq 600$
Temperature Sensitivity	ppm/ $^\circ\text{C}$	$\leq 100$
Axis Misalignment	$\mu\text{rad}$	$\leq 1,500$
One-year Composite Repeatability (3 $\sigma$ )	$\mu\text{rad}$	$\leq 100$
Vibration Rectification	$\mu\text{g}/\text{g}^2_{\text{RMS}}$	$\leq 25$ (50-200 Hz) $\leq 50$ (200-750 Hz) $\leq 100$ (750-2000 Hz)
Intrinsic Noise (1k $\Omega$ load resistor)	$\mu\text{g}_{\text{RMS}}$	$\leq 7$ (0.1-10 Hz) $\leq 70$ (10-500 Hz) $\leq 1,500$ (500-10 kHz)
<b>Environment</b>		
Operating Temperature	$^\circ\text{C}$	-55 to +105
Shock half-sine (4 ms)	g	250
Vibration peak sine ( $\leq 2$ kHz)	g	35 peak
Resolution/Threshold	$\mu\text{g}$	$\leq 1$
Bandwidth	Hz	$\geq 300$
<b>Thermal Modelling</b>		
Temperature Model		Yes
<b>Electrical</b>		
Quiescent Current per Supply (0 g)	mA	$\leq 6$
Quiescent Power @ $\pm 15\text{V}_{\text{DC}}$ (0 g)	mW	$\leq 180$
Interface	-	Temperature sensor
	-	Voltage Self-Test
	-	Current Self-Test
	-	Power / Signal Ground
Input Voltage	$\text{V}_{\text{DC}}$	$\pm 13$ to $\pm 18$
<b>Physical</b>		
Mass	gm	25.8
Diameter below mounting surface	mm	$\varnothing 18.2$
Height – bottom to mounting surface	mm	11.2
Case Material	-	Stainless Steel (300 series)

## How to order

AI-Q-550 is orderable under part number AI-Q-550-001 from InnaLabs® and our worldwide network of Agents and Distributors.

## Related Products

InnaLabs® offers a range of accelerometers based on the same design and production processes, including the AI-Q-710, AI-Q-1410 and AI-Q-20X0 families.

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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