Quartz Accelerometer AI-Q-550 Datasheet

General description

The **InnaLabs®** **AI-Q-550** quartz-based servo accelerometer is an ideal, ITAR-Free choice for defence, 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 ±80 g with a one-year bias composite repeatability better than 1,000 μg 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.

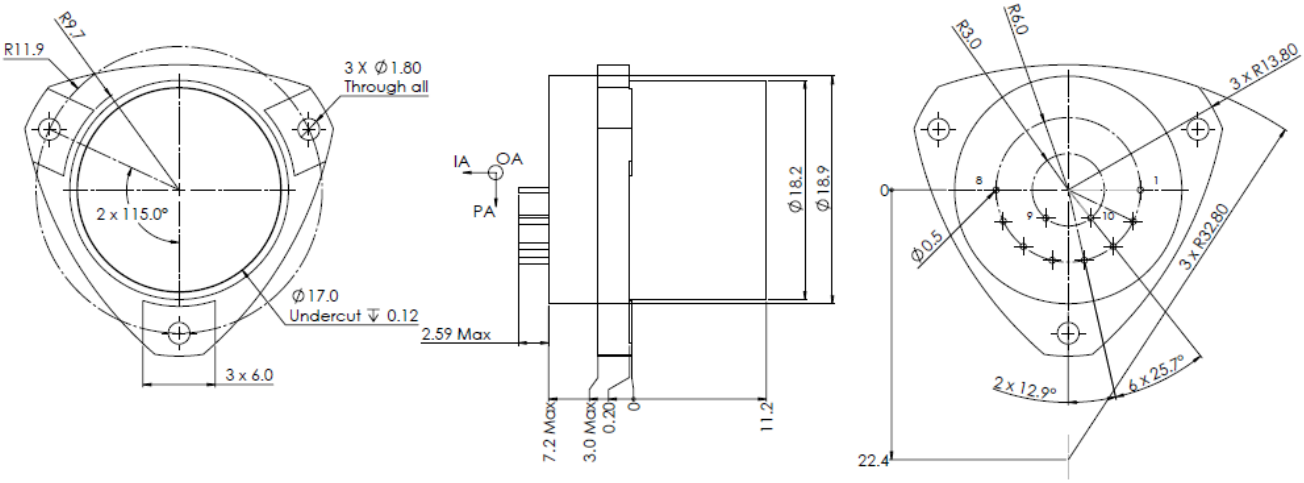
Features

- Bias one-year composite repeatability ≤1,000 μg
- Input Range: ±80 g (10 Ω)
- 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
- Inclinometers for industrial and drilling
- Train and rail measurement systems
- Robotic systems
- Seismic sensing

Accelerometer dimensions (mm)



Specifications

Parameters	Units	Values
Input Range (10 Ω load resistor)	g	±80
Bias	mg	≤4
One-year Composite Repeatability	µg	≤1000
Temperature Sensitivity	µg/°C	≤50
Scale Factor	mA/g	0.65 to 0.85
One-year Composite Repeatability	ppm	≤600
Temperature Sensitivity	ppm/°C	≤100
Axis Misalignment	µrad	≤1500
One-year Composite Repeatability	µrad	≤100
Vibration Rectification	$\mu g/g^2_{RMS}$	≤25 (50-200 Hz) ≤50 (200-750 Hz) ≤100 (750-2000 Hz)
Intrinsic Noise	μg_{RMS}	≤7 (0-10 Hz) ≤70 (10-500 Hz) ≤1500 (500-10000 Hz)
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
Temperature Model		Yes
Quiescent Current per Supply (0 g)	mA	≤6
Quiescent Power @ ±15 V_{DC} (0 g)	mW	≤180
Interface	-	Temperature Sensor
	-	Voltage Self-Test
	-	Current Self-Test
		Power/Signal Ground
Input Voltage	V_{DC}	±13 to ±18
Weight	g	25.8
Diameter below mounting surface	mm	Ø 18.2
Height – bottom to mounting surface	mm	11.2
Case Material		300 Series Stainless Steel

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

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

Revision History

1.0 – First Release (04 April 2016)

1.1 – Update of the drawing, ICD, and measures in the table (22 April 2016)

2.0 – Update of the photograph, the ICD (pins dimensions, pins location, size reduction for the mounting base, diameter for mounting holes), and measures in the table (scale factor, scale factor slope, input voltage, mass) (09 June 2016)

2.1 – Extended input range (80g), new photograph, smaller dimensions for the lid, performance table with a new format, scale factor range up to 0.85mA/g

2.2 – Add (10Ω load resistor) to Intrinsic Noise Parameter

2.3 – VRE with improved performance, operating temperature extended to 105°C, Vibration peak sine extended to 35g, Quiescent current reduced to 6mA, Quiescent power reduced to 180mW, Mass reduced to 25.8gm