The inertial navigation standard

Proven time and time again, the Honeywell QA-2000 is the ubiquitous inertial navigation standard by which others are measured. It is used in commercial and military aircraft strap-down inertial navigation systems and a whole host of other challenging applications where performance, size and ruggedness are paramount. The long-term repeatability and superior reliability characteristics of the QA-2000 make it the best value inertial-grade accelerometer available on the market today.

As with the entire Q-Flex family of accelerometers, the QA-2000 features a patented etched quartz flexture. An amorphous quartz proof-mass structure provides excellent bias, scale factor and axis alignment repeatability.

The integral electronics develops an acceleration-proportional output current providing both static and dynamic acceleration measurement. By use of customer supplied output load resistor, appropriately scaled for the acceleration range of the application, the output current can be converted into a voltage.

The QA-2000 also includes a current-output, internal temperature sensor. By applying temperature-compensating algorithms, bias, scale factor and axis misalignment performance are dramatically improved. The QA-2000 has three performance grades to best meet customers’ performance requirements.

FEATURES

- Excellent turn-on repeatability performance
- Environmentally rugged
- Analog output
- Field-adjustable range
- Three fastener precision mounting flange
- Internal temperature sensor for thermal compensation
- Dual built-in self-test

CONFIGURATION DRAWINGS
<table>
<thead>
<tr>
<th>Performance</th>
<th>QA2000-030</th>
<th>QA2000-020</th>
<th>QA2000-010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Range</td>
<td>±60 g</td>
<td>±60 g</td>
<td>±60 g</td>
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<tr>
<td>Bias</td>
<td>&lt;4 mg</td>
<td>&lt;4 mg</td>
<td>&lt;4 mg</td>
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<tr>
<td>One-year Composite Repeatability</td>
<td>&lt;160 µg</td>
<td>&lt;220 µg</td>
<td>&lt;550 µg</td>
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<tr>
<td>Temperature Sensitivity</td>
<td>&lt;30 µg/ºC</td>
<td>&lt;30 µg/ºC</td>
<td>&lt;30 µg/ºC</td>
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<tr>
<td>Scale Factor</td>
<td>1.20 to 1.46 mA/g</td>
<td>1.20 to 1.46 mA/g</td>
<td>1.20 to 1.46 mA/g</td>
</tr>
<tr>
<td>One-year Composite Repeatability</td>
<td>&lt;180 ppm</td>
<td>&lt;220 ppm</td>
<td>&lt;550 ppm</td>
</tr>
<tr>
<td>Temperature Sensitivity</td>
<td>&lt;180 ppm/ºC</td>
<td>&lt;180 ppm/ºC</td>
<td>&lt;180 ppm/ºC</td>
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<tr>
<td>Axis Misalignment</td>
<td>&lt;2000 µrad</td>
<td>&lt;2000 µrad</td>
<td>&lt;2000 µrad</td>
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<tr>
<td>Vibration Rectification</td>
<td>&lt;20 µg/g^2rms (50-500 Hz)</td>
<td>&lt;40 µg/g^2rms (50-500 Hz)</td>
<td>&lt;40 µg/g^2rms (50-500 Hz)</td>
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<tr>
<td>Intrinsic Noise</td>
<td>&lt;7 µg-rms (0-10 Hz)</td>
<td>&lt;7 µg-rms (0-10 Hz)</td>
<td>&lt;7 µg-rms (0-10 Hz)</td>
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<tr>
<td>Environment</td>
<td>QA2000-030</td>
<td>QA2000-020</td>
<td>QA2000-010</td>
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<tr>
<td>Operating Temperature Range</td>
<td>-55 to +95 ºC</td>
<td>-55 to +95 ºC</td>
<td>-55 to +95 ºC</td>
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<tr>
<td>Shock</td>
<td>250 g</td>
<td>250 g</td>
<td>250 g</td>
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<tr>
<td>Vibration Peak Sine</td>
<td>15 g @ 20-2000 Hz</td>
<td>15 g @ 20-2000 Hz</td>
<td>15 g @ 20-2000 Hz</td>
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<tr>
<td>Resolution/Threshold</td>
<td>&lt;1 µg</td>
<td>&lt;1 µg</td>
<td>&lt;1 µg</td>
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<tr>
<td>Bandwidth</td>
<td>&gt;300 Hz</td>
<td>&gt;300 Hz</td>
<td>&gt;300 Hz</td>
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<tr>
<td>Thermal Modeling</td>
<td>QA2000-030</td>
<td>QA2000-020</td>
<td>QA2000-010</td>
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<tr>
<td>Electrical</td>
<td>QA2000-030</td>
<td>QA2000-020</td>
<td>QA2000-010</td>
</tr>
<tr>
<td>Quiescent Current per Supply</td>
<td>&lt;16 mA</td>
<td>&lt;16 mA</td>
<td>&lt;16 mA</td>
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<tr>
<td>Quiescent Power</td>
<td>&lt;480 mW @ ±15 VDC</td>
<td>&lt;480 mW @ ±15 VDC</td>
<td>&lt;480 mW @ ±15 VDC</td>
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<tr>
<td>Electrical Interface</td>
<td>Temperature Sensor</td>
<td>Temperature Sensor</td>
<td>Temperature Sensor</td>
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<tr>
<td>Voltage Self Test</td>
<td>Current Self Test</td>
<td>Current Self Test</td>
<td>Current Self Test</td>
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<td>Power / Signal Ground</td>
<td>-10 VDC Output</td>
<td>-10 VDC Output</td>
<td>-10 VDC Output</td>
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<tr>
<td>Input Voltage</td>
<td>±13 to ±18 VDC</td>
<td>±13 to ±18 VDC</td>
<td>±13 to ±18 VDC</td>
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<tr>
<td>Physical</td>
<td>QA2000-030</td>
<td>QA2000-020</td>
<td>QA2000-010</td>
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<tr>
<td>Weight</td>
<td>71 ±4 grams</td>
<td>71 ±4 grams</td>
<td>71 ±4 grams</td>
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<tr>
<td>Diameter below mounting surface</td>
<td>Ø1.005 in. Max</td>
<td>Ø1.005 in. Max</td>
<td>Ø1.005 in. Max</td>
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<tr>
<td>Height bottom to mounting surface</td>
<td>.585 in. Max</td>
<td>.585 in. Max</td>
<td>.585 in. Max</td>
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<tr>
<td>Case Material</td>
<td>300 Series Stainless Steel</td>
<td>300 Series Stainless Steel</td>
<td>300 Series Stainless Steel</td>
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Additional product specifications, outline drawings and block diagrams, and test data are available on request.

**ISO-9001 CERTIFICATION SINCE 1995**

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Accelerometers exported from the United States must be done in accordance with the Export Administration Regulations (EAR) and/or the International Traffic in Arms Regulations (ITAR) as applicable.

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