

# Q-FLEX QA-3000 ACCELEROMETER

## I A cut above the rest

For the highest inertial navigation-grade performance available in today's market, Honeywell offers the QA-3000. In the same form factor as the QA-2000, Honeywell packs a lot of performance and value into this small package. Produced on the same manufacturing line as the QA-2000, the QA-3000 has the same inherent quality and reliability customers have come to know from Honeywell Q-flex accelerometers.

As with the entire Q-Flex family of accelerometers, the QA-3000 features a patented Q-Flex etched-quartz-flexure seismic system. 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-3000 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-3000 has three performance grades to best meet customer's performance requirements.

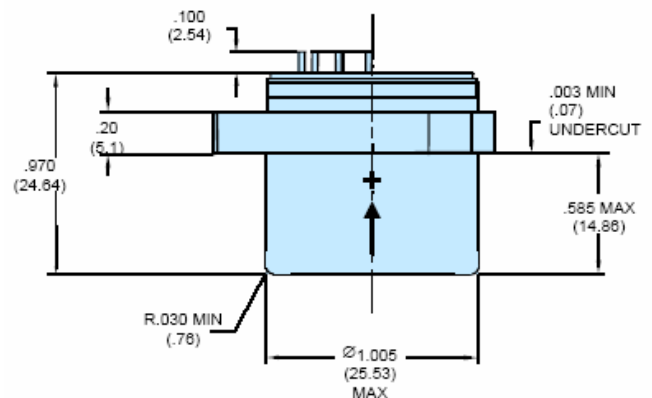
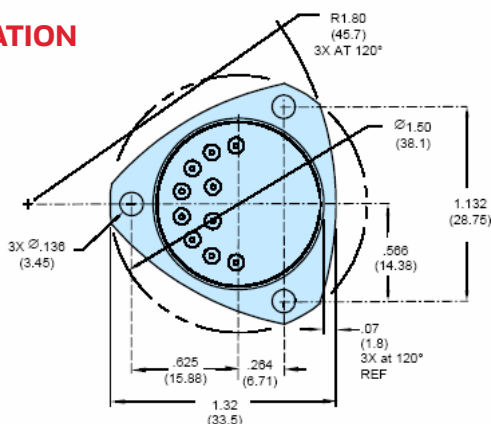


Q-Flex QA-3000

## FEATURES

- Excellent turn-on repeatability performance
- Form, fit, function compatible with QA-2000, easy to upgrade for the most performance demanding applications
- Remarkably low bias and scale factor repeatability
- 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



**Honeywell**



**MORE THAN  
3M QUARTZ  
ACCELEROMETERS  
SHIPPED OVER THE  
PAST TWO DECADES**

| PERFORMANCE CHARACTERISTICS             |                                                                                                                                         |                                                                                                                                         |                                                                                                                                         |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Performance                             | QA3000-030                                                                                                                              | QA3000-020                                                                                                                              | QA3000-010                                                                                                                              |
| Input Range                             | ±60 g                                                                                                                                   | ±60 g                                                                                                                                   | ±60 g                                                                                                                                   |
| Bias                                    | <4 mg                                                                                                                                   | <4 mg                                                                                                                                   | <4 mg                                                                                                                                   |
| - One-year Composite Repeatability      | <40 µg                                                                                                                                  | <80 µg                                                                                                                                  | <125 µg                                                                                                                                 |
| - Temperature Sensitivity               | <15 µg/°C                                                                                                                               | <15 µg/°C                                                                                                                               | <25 µg/°C                                                                                                                               |
| Scale Factor                            | 1.20 to 1.46 mA/g                                                                                                                       | 1.20 to 1.46 mA/g                                                                                                                       | 1.20 to 1.46 mA/g                                                                                                                       |
| - One-year Composite Repeatability      | <80 ppm                                                                                                                                 | <160 ppm                                                                                                                                | <250 ppm                                                                                                                                |
| - Temperature Sensitivity               | <120 ppm/°C                                                                                                                             | <120 ppm/°C                                                                                                                             | <120 ppm/°C                                                                                                                             |
| Axis Misalignment                       | <1000 µrad                                                                                                                              | <1000 µrad                                                                                                                              | <1500 µrad                                                                                                                              |
| - One-year Composite Repeatability      | <70 µrad                                                                                                                                | <80 µrad                                                                                                                                | <100 µrad                                                                                                                               |
| Vibration Rectification                 | <10 µg/g <sup>2</sup> rms (50-500 Hz)<br><35 µg/g <sup>2</sup> rms (500-2000 Hz)                                                        | <15 µg/g <sup>2</sup> rms (50-500 Hz)<br><40 µg/g <sup>2</sup> rms (500-2000 Hz)                                                        | <20 µg/g <sup>2</sup> rms (50-500 Hz)<br><50 µg/g <sup>2</sup> rms (500-2000 Hz)                                                        |
| Intrinsic Noise                         | <7 µg-rms (0-10 Hz)<br><70 µg-rms (10-500 Hz)<br><1500 µg-rms (500-10,000 Hz)                                                           | <7 µg-rms (0-10 Hz)<br><70 µg-rms (10-500 Hz)<br><1500 µg-rms (500-10,000 Hz)                                                           | <7 µg-rms (0-10 Hz)<br><70 µg-rms (10-500 Hz)<br><1500 µg-rms (500-10,000 Hz)                                                           |
| Environment                             | QA3000-030                                                                                                                              | QA3000-020                                                                                                                              | QA3000-010                                                                                                                              |
| Operating Temperature Range             | -28 to +78 °C                                                                                                                           | -55 to +95 °C                                                                                                                           | -55 to +95 °C                                                                                                                           |
| Shock                                   | 100 g                                                                                                                                   | 150 g                                                                                                                                   | 150 g                                                                                                                                   |
| Vibration Peak Sine                     | 15 g @ 20-2000 Hz                                                                                                                       | 15 g @ 20-2000 Hz                                                                                                                       | 15 g @ 20-2000 Hz                                                                                                                       |
| Resolution/Threshold                    | <1 µg                                                                                                                                   | <1 µg                                                                                                                                   | <1 µg                                                                                                                                   |
| Bandwidth                               | >300 Hz                                                                                                                                 | >300 Hz                                                                                                                                 | >300 Hz                                                                                                                                 |
| Thermal Modeling                        | QA3000-030                                                                                                                              | QA3000-020                                                                                                                              | QA3000-010                                                                                                                              |
|                                         | Yes                                                                                                                                     | Yes                                                                                                                                     | Yes                                                                                                                                     |
| Electrical                              | QA3000-030                                                                                                                              | QA3000-020                                                                                                                              | QA3000-010                                                                                                                              |
| Quiescent Current per Supply            | <16 mA                                                                                                                                  | <16 mA                                                                                                                                  | <16 mA                                                                                                                                  |
| Quiescent Power<br>Electrical Interface | <480 mW @ ±15 VDC<br>Temp Sensor<br>Voltage Self Test<br>Current Self Test<br>Power / Signal Ground<br>-10 VDC Output<br>+10 VDC Output | <480 mW @ ±15 VDC<br>Temp Sensor<br>Voltage Self Test<br>Current Self Test<br>Power / Signal Ground<br>-10 VDC Output<br>+10 VDC Output | <480 mW @ ±15 VDC<br>Temp Sensor<br>Voltage Self Test<br>Current Self Test<br>Power / Signal Ground<br>-10 VDC Output<br>+10 VDC Output |
| Input Voltage                           | ±13 to ±28 VDC                                                                                                                          | ±13 to ±28 VDC                                                                                                                          | ±13 to ±28 VDC                                                                                                                          |
| Physical                                | QA3000-030                                                                                                                              | QA3000-020                                                                                                                              | QA3000-010                                                                                                                              |
| Weight                                  | 71 ±4 grams                                                                                                                             | 71 ±4 grams                                                                                                                             | 71 ±4 grams                                                                                                                             |
| Diameter below mounting surface         | Ø1.005 in. Max                                                                                                                          | Ø1.005 in. Max                                                                                                                          | Ø1.005 in. Max                                                                                                                          |
| Height bottom to mounting surface       | .585 in. Max                                                                                                                            | .585 in. Max                                                                                                                            | .585 in. Max                                                                                                                            |
| Case Material                           | 300 Series Stainless Steel                                                                                                              | 300 Series Stainless Steel                                                                                                              | 300 Series Stainless Steel                                                                                                              |

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.

## For More Information

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