EMCORE-Hawkeye™ Series
EG-120 Fiber Optic Gyroscopes (FOG)

Suitable for Demanding Applications

The EMCORE-Hawkeye™ Series EG-120 FOG module is an ultra-compact, state-of-the-art design that is the smallest, most affordable closed-loop FOG available on the market today. At approximately 1/2 the weight with 1/3 the power requirements of current generation FOGs, the EG-120 delivers the industry’s best Size, Weight and Power (SwAP) compared to competing products and is 35% smaller than EMCORE’s previous generation FOGs. The EMCORE-Hawkeye™ EG-120 incorporates advanced, next-generation Field Programmable Gate Array (FPGA) electronics that deliver increased performance and reliability combined with low cost.

The EMCORE-Hawkeye™ series features performance specifications that are ideal for medium accuracy platform stabilization applications such as camera systems used in aircraft, Unmanned Aerial Vehicles (UAVs) and gun stabilization systems. A wide variety of other guidance, navigation and aeronautics applications are supported. The EMCORE-Hawkeye™ FOG platform allows greater selection of performance capabilities to meet a broad range of customer requirements including a low-power (LP) version.

Performance Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>EG-120</th>
<th>EG-120LP (Low-Power)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gyro Performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber Optic Gyro Type</td>
<td>Closed-Loop</td>
<td>Closed-Loop</td>
</tr>
<tr>
<td>Input Rate (maximum)</td>
<td>±250°/sec</td>
<td>±250°/sec</td>
</tr>
<tr>
<td>Bias In-Run Stability (25 °C)</td>
<td>Digital: ±1.0 deg/hr, 1σ(max)</td>
<td>Analog: ±10.0 deg/hr, 1σ</td>
</tr>
<tr>
<td>Bias vs. Temp (± 1 °C/min); no compensation</td>
<td>Digital: ±20°/hr, 1σ</td>
<td>Analog: ±50°/hr, 1σ</td>
</tr>
<tr>
<td>Scale Factor Non-Linearity (max rate, 25 °C)</td>
<td>≤250 ppm, 1σ</td>
<td>≤500 ppm, 1σ</td>
</tr>
<tr>
<td>Scale Factor Change Over Temperature</td>
<td>&lt;100 ppm, 1σ</td>
<td>&lt;10,000 ppm, 1σ</td>
</tr>
<tr>
<td>ARW (Angle Random Walk) (25 °C)</td>
<td>Digital: ±0.04°/√hr</td>
<td>Analog: ±0.1°/√hr</td>
</tr>
<tr>
<td>Bandwidth (45 Degrees, Minimum)</td>
<td>Digital: 300 Hz</td>
<td>Analog: 300 Hz</td>
</tr>
<tr>
<td><strong>Electrical/Mechanical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initialization Time (valid data)</td>
<td>≤0.3 secs</td>
<td>≤0.3 secs</td>
</tr>
<tr>
<td>Data Interface</td>
<td>Asynchronous Digital Output</td>
<td>N/A</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>Up to 1 Mbps</td>
<td>N/A</td>
</tr>
<tr>
<td>Data Rate</td>
<td>30K samples/sec data rate (16 bit data)</td>
<td>N/A</td>
</tr>
<tr>
<td>Dimensions</td>
<td>2.36” Diameter x 0.83” High (60 mm Diameter x 21 mm High)</td>
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</tr>
<tr>
<td>Weight, Max</td>
<td>1 Axis: Non-Mag. shielded: 0.09 kg (0.13 lbs)</td>
<td>1 Axis: Non-Mag. shielded: 0.09 kg (0.13 lbs)</td>
</tr>
<tr>
<td>Power Consumption, Max (typical)</td>
<td>1 Axis: 4.5W</td>
<td>1 Axis: 1.3W (max w/o TEC) &lt; 1.1W (typical)</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>+5 VDC</td>
<td>+5, +15, -15 VDC</td>
</tr>
</tbody>
</table>

Applications

- Platform Stabilization Applications
- Camera Systems in Aircraft
- Unmanned Aerial Vehicles (UAV)
- Gun Stabilization Systems
- Aeronautics and Aviation

Features

- Industry’s Best CSWaP with 1/2 the Weight and 1/3 the Power Requirements of Current Generation FOGs
- Most Affordable Closed-Loop FOG Available
- Fully-Integrated Optics and Electronics
- Next-Generation Field Programmable Gate Array (FPGA) Electronics
- Closed-Loop Design for Improved Drift Stability, Higher Linearity, and Greater Flexibility

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### Performance Specifications (continued)

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<tr>
<th>Parameter</th>
<th>EG-120</th>
<th>EG-120LP (Low-Power)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature: Operating</td>
<td>-40 °C to +75 °C (-40 °F to +167 °F)</td>
<td>-40 °C to +65 °C (-40 °F to +149 °F)</td>
</tr>
<tr>
<td>Shock: Operating</td>
<td>800 g, 1 msec</td>
<td>800 g, 1 msec</td>
</tr>
<tr>
<td>Vibration: Operating</td>
<td>25 g rms, 20-2000 Hz</td>
<td>25 g rms, 20-2000 Hz</td>
</tr>
<tr>
<td><strong>Performance Physical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Axes</td>
<td>1 Axis</td>
<td>1 Axis</td>
</tr>
<tr>
<td>Housing</td>
<td>Anodized Aluminum</td>
<td>Anodized Aluminum</td>
</tr>
<tr>
<td>MTBF</td>
<td>100,000 hr</td>
<td>100,000 hr</td>
</tr>
</tbody>
</table>

Scale Compared to U.S. Quarter:

![U.S. Quarter Scale](image)