

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

emcore®

DATASHEET | JANUARY 2019

NAVIGATION SYSTEMS



## 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

U.S. Patent No. 7,746,476; 8,773,665; 8,798,405; 8,823,946

## 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

Parameter	EG-120	EG-120LP (Low-Power)
<b>Gyro Performance</b>		
Fiber Optic Gyro Type	Closed-Loop	Closed-Loop
Input Rate (maximum)	±250°/sec	±250°/sec
Bias In-Run Stability (25 °C)	Digital: ≤1.0 deg/hr, 1σ (max)	Analog: ≤10.0 deg/hr, 1σ
Bias vs. Temp (≤ 1 °C/min); no compensation	Digital: ≤20°/hr, 1σ	Analog: ≤50°/hr, 1σ
Scale Factor Non-Linearity (max rate, 25 °C)	≤250 ppm, 1σ	≤500 ppm, 1σ
Scale Factor vs. Temp. (≤ 1 °C/min); with compensation	≤100 ppm, 1σ	≤1000 ppm, 1σ
ARW (Angle Random Walk) (25 °C)	Digital: ≤0.02°/√hr	Analog: ≤0.1°/√hr
Bandwidth (-3 dB)	Digital: 1000 Hz	Analog: 1000 Hz
<b>Electrical/Mechanical</b>		
Initialization Time (valid data)	≤0.3 secs	≤0.3 secs
Data Interface	Asynchronous Digital Output	N/A
Baud Rate	Up to 1 Mbps	N/A
Data Rate	30K samples/sec data rate (16 bit data)	N/A
Dimensions	2.36" Diameter x 0.83" High (60 mm Diameter x 21 mm High)	2.36" Diameter x 0.83" High (60 mm Diameter x 21 mm High)
Weight, Max	<b>1 Axis:</b> Non-Mag. shielded: 0.09 kg (0.13 lbs)	<b>1 Axis:</b> Non-Mag. shielded: 0.09 kg (0.13 lbs)
Power Consumption, Max (typical)	<b>1 Axis:</b> 4.5W	<b>1 Axis:</b> 1.3W (max w/o TEC) < 1.1W (typical)
Input Voltage	+5, +15, -15 VDC	+5, +15, -15 VDC

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## Performance Specifications (continued)

Parameter	EG-120	EG-120LP (Low-Power)
<b>Environmental</b>		
Temperature: Operating	-40 °C to +75 °C (-40 °F to +167 °F)	-40 °C to +85 °C (-40 °F to +185 °F)
Shock: Operating	800 g, 1 msec	800 g, 1 msec
Vibration: Operating	25 g rms, 20-2000 Hz	25 g rms, 20-2000 Hz
<b>Performance Physical</b>		
Number of Axes	1 Axis	1 Axis
Housing	Anodized Aluminum	Anodized Aluminum
MTBF	100,000 hr	100,000 hr

## Scale Compared to U.S. Quarter



**MADE IN  
USA**