EG-120

Lithium-Niobate Fiber Optic Gyroscope (FOG)

emcore®

DATASHEET | DECEMBER 2023

A New Era in Navigation

Applications

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

Key Performance 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
- Next-Generation, Fully-Integrated Optics and Field Programmable Gate Array (FPGA) Electronics
- Closed-Loop Design for Improved Drift Stability, Higher Linearity, and Greater Flexibility

Suitable for Demanding Applications

The EMCORE 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 EG-120 incorporates advanced, next-generation Field Programmable Gate Array (FPGA) electronics that deliver increased performance and reliability combined with low cost.

The EMCORE closed-loop FOG 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 closed-loop FOG platform allows greater selection of performance capabilities to meet a broad range of customer requirements including a low-power (LP) version.

Performance Highlights

Parameter	EG-120	EG-120LP (Low-Power)
Gyro Performance		
Fiber Optic Gyro Type	Closed-Loop	
Input Rate (maximum)	±500°/sec	±250°/sec;
Bias In-Run Stability (25 °C)	Digital: ≤1.0 deg/hr, 1σ (max)	Analog: ≤4.0 deg/hr, 1σ
Bias vs. Temp (≤ 1 °C/min); no compensation	Digital: ≤20°/hr, 1σ	Analog: ≤400°/hr, 1σ
ARW (Angle Random Walk) (25 °C)	Digital: ≤0.04°/√hr	Analog: ≤0.2°/√hr
Bandwidth (45 Degrees, Minimum)	Digital: 250 Hz	Analog: 175 Hz

NON ITAR

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Performance Specifications

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Input Rate (maximum)	±500°/sec	±250°/sec;
Bias In-Run Stability (25 °C)	Digital: ≤1.0 deg/hr, 1σ (max)	Analog: ≤4.0 deg/hr, 1σ
Bias vs. Temp (≤ 1 °C/min); no compensation	Digital: ≤20°/hr, 1σ	Analog: ≤400°/hr, 1σ
Scale Factor Non-Linearity (max rate, 25 °C)	≤250 ppm, 1σ	≤800 ppm, 1σ
Scale Factor Change Over Temperature	500 ppm, 1σ	≤10,000 ppm, 1σ
ARW (Angle Random Walk) (25 °C)	Digital: ≤0.04°/√hr	Analog: ≤0.2°/√hr
Bandwidth (45 Degrees, Minimum)	Digital: 250 Hz	Analog: 175 Hz
Electrical/Mechanical		
Initialization Time (valid data)	≤0.5 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)	
Weight, Max	**1 Axis:** Non-Mag. shielded: 0.08 kg (0.17 lbs)	
Power Consumption, Max (typical)	**1 Axis:** 1.8W at room temp., 5W over temp.	**1 Axis:** 2.0W (max w/o TEC) <1.1W (typical)
Input Voltage	+5 VDC	+5, +15, -15 VDC
Environmental		
Temperature: Operating	-40 °C to +75 °C (-40 °F to +167 °F)	-40 °C to +85 °C (-40 °F to +185 °F)
Shock: Non-Operating	800 g, 1 msec	
Vibration: Operating	25 g rms, 20-2000 Hz	25 g rms, 20-2000 Hz
Performance Physical		
Number of Axes	1 Axis	
Housing	Anodized Aluminum	
MTBF	100,000 hr	

Dimensions/Scale

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For More Information

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MADE IN USA

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