



DATASHEET | DECEMBER 2023

A New Era in Navigation



Applications

- Navigational Grade Applications
- Unmanned Aerial Vehicle (UAV) Guidance
- Missile Guidance
- Aeronautics and Aviation
- Robotics

Key Performance Features

- Advanced, Fully-Integrated Optics and FPGA Electronics for Higher Accuracy, Lower Noise and Greater Efficiency
- FPGA-Based Closed- Loop Design with Improved Drift Stability, Higher Linearity, and Greater Flexibility
- Precise Navigation (1 mile/hour without GPS)
- Fast, Precise Gyrocompassing to 1 Milliradian
- Bandwidth to 500 Hz
- Separate Electronics and Sensor Modules
- More Economical than Competing Systems

Suitable for Demanding Applications

EMCORE's Fiber Optic Gyroscope (FOG) technology is designed for fast, accurate navigation and gyrocompassing, and low-noise line-of-sight stabilization. Our long-standing leadership in the development of highly-accurate defense and military grade fiber optic components and systems has paved the way for the development of more accurate and economical fiber optic gyro components. EMCORE's FOGs are setting the new benchmark for tactical and navigational grade gyros for a wide variety of guidance, navigation and aeronautics applications.

The EMCORE EG-1300 Fiber Optic Gyro features fully-integrated optics and electronics, and is a superior device in regards to weight and form-factor for navigational applications. Its advanced integrated optics and closed-loop Field Programmable Gate Array (FPGA) electronics deliver much higher accuracy, lower noise and greater efficiency than competing technologies. In addition, the EG-1300 can be calibrated internally for better thermal effect and has both digital and analog outputs, along with separation of the electronics from the FOG's sensing coil assembly to accommodate the widest variety of installation parameters.

EMCORE's EG-1300 is the clear choice when selecting a precision solid-state gyroscope component for navigational grade applications.

Performance Highlights

Parameter	EG-1300
Gyro Performance	
Fiber Optic Gyro Type	Closed-Loop
Input Rate (maximum)	$\pm 300^\circ/\text{sec}$
Bias Over Temperature	0.1°/hr (Typical)
Bias In-Run Stability (25 °C)	Digital: $\leq 0.01^\circ/\text{hr}$, 1 σ (max)
ARW (Angle Random Walk) (25 °C)	Digital: $\leq 0.002^\circ/\sqrt{\text{hr}}$
Bandwidth (-3 dB)	Digital: 500 Hz



EG-1300

Lithium-Niobate Fiber Optic Gyroscope (FOG)

Performance Specifications

Parameter	EG-1300
Gyro Performance	
Fiber Optic Gyro Type	Closed-Loop
Input Rate (maximum)	$\pm 300^\circ/\text{sec}$
Bias Over Temperature	$0.1^\circ/\text{hr}$ (Typical)
Bias In-Run Stability (25 °C)	Digital: $\leq 0.01^\circ/\text{hr}$, 1σ (max)
Scale Factor Non-Linearity (max rate, 25 °C)	≤ 25 ppm, 1σ
Scale Factor vs. Temp. ($\leq 1^\circ\text{C}/\text{min}$); with compensation	≤ 50 ppm, 1σ
ARW (Angle Random Walk) (25 °C)	Digital: $\leq 0.002^\circ/\sqrt{\text{hr}}$
Bandwidth (-3 dB)	Digital: 500 Hz
Electrical/Mechanical	
Initialization Time (valid data)	≤ 0.3 secs
Data Interface: Asynchronous Digital Output	Clock Out/Delta Out
Data Rate	2K samples/sec data rate (16 bit data)
Sensor Dimensions	3.6" Diameter x 1.3" High, 91.4 mm Diameter x 33 mm High
Electronics Dimensions	3.3" x 3.3" x 0.8", 83.8 mm x 83.8 mm x 20.3 mm
Weight, Max	0.38 kg, 0.83 lbs
Power Consumption, Max	5W
Input Voltage	+5 VDC
Environmental	
Temperature: Operating	-40 °C to +70 °C, (-40 °F to +158 °F)
Shock: Non-Operating	45 g, 1 msec
Vibration: Non-Operating	12 g rms, 10-2000 Hz
Physical	
Number of Axes	1 Axis
Housing	Anodized Aluminum
MTBF	100,000 hr

Dimensions/Scale



EMCORE P/N 966800 Rev A1

For More Information

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MADE IN USA

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