

DSP-1760 FOGs

emcore®

Single- or Multi-axis, High-Performance Fiber Optic Gyros



Key Features

- Superior bias instability of $\leq 0.05^\circ/\text{hr}$, 1σ (typical); $\leq 0.1^\circ/\text{hr}$, 1σ (max)
- Single- or multi-axis high performance FOGs
- All housed variants available with either Micro-D connector or circular connector
- Unhoused variants available with Micro-D connector
- Angle Random Walk (ARW) $\leq 0.012^\circ/\sqrt{\text{hr}}$ ($0.7^\circ/\text{hr}/\sqrt{\text{Hz}}$)
- Bandwidth (Housed): ≥ 440 Hz
Bandwidth (Unhoused): ≥ 1000 Hz
- Available in nine configurations:
 - Housed 1-, 2-, or 3-axis
 - Unhoused 1-, 2-, or 3-axis tethered to PCBs, with Micro-D connector
- Now with EMCORE's breakthrough PIC technology

Applications

- Platform stabilization for land, sea, and aerial systems
- Navigation, guidance, and control systems
- Stabilization and navigation for unmanned and manned applications

Compact Single- or Multi-axis Fiber Optic Gyros Designed for Maximum Ease of Integration

EMCORE's DSP-1760 Fiber Optic Gyros (FOGs) combine single- or multi-axes of the world's smallest high performance FOGs within easy-to-integrate housings, or unhoused for OEM configurations. The DSP-1760 FOG offers exceptional performance in bias stability, scale factor, and angle random walk, and is available in nine configurations to solve the most challenging design projects. The DSP-1760 FOG is ideal for air, land, or maritime stabilization and pointing applications. Due to its versatility, and accurate, reliable output, it can also be utilized in navigation, guidance, and control systems.

Designed for Flexibility and Performance

Available in single- or multi-axis gyro configurations, the DSP-1760 FOG is a high bandwidth, extremely low noise sensor. The DSP-1760 FOG offers customers a choice of two interfaces: a Micro-D or a circular connector. In addition, the DSP-1760 FOG integrates magnetic shielding within the gyro housing, providing improved performance in systems with problematic magnetic environments.

PIC Technology Improves Reliability



A key element of the DSP-1760 is EMCORE's new, groundbreaking integrated planar optical chip. Replacing individual fiber optic components, the DSP-1760 with PIC Inside™ offer improved reliability, unit-to-unit repeatability, and easier integration. The result is a precision photonic fiber optic gyro sensor that is more durable, reliable, and designed for a high level of repeatability.

Precision Gyros Designed for Ultimate Flexibility

The DSP-1760 FOG provides unmatched versatility to meet the demands of the most challenging design projects. Choose a 1-, 2-, or 3-axis configuration, each employing the world's smallest precision FOG, and either the housed design or the unhoused OEM variant. All variants offer ease of use and high adaptability, featuring flexible communication options allowing for user-programmable data output rates up to 5000 Hz. The OEM packaged version enable ease of integration into even the smallest of systems.



Ideal for the stabilization and orientation of high-speed gimbals, the versatile and lightweight DSP-1760 FOG offers nine configurations for ultimate integration flexibility.



Pipelines deliver massive amounts of crude daily and ensuring safe operation is key. The EMCORE DSP-1760, coupled to additional sensors, provides these inspection robots with extremely accurate angular data.

EMCORE DSP-1760 Fiber Optic Gyro

Performance Specifications

Input Rate (max)	±490°/sec
Bias Instability (25°C)	≤0.1°/hr, 1σ (max), ≤0.05°/hr, 1σ (typical)
Bias vs. Temperature (≤1°C/min)	≤1.5°/hr, 1σ (max), ≤1°/hr, 1σ (typical)
Bias Offset (25°C)	±2°/hr
Scale Factor Non-linearity (full rate, 25°C)	≤50 ppm, 1σ
Scale Factor vs. Temperature (≤1°C/min)	≤200 ppm, 1σ (max), ≤100 ppm, 1σ (typical)
Angle Random Walk (25°C)	≤0.012°/√hr (0.7°/hr/√Hz)
Bandwidth (-3 dB)	Housed: ≥440 Hz Unhoused: ≥1000 Hz

Electrical/Mechanical Interface

Initialization Time	≤1.25 secs housed, ≤1.5 secs unhoused
Data Interface	Asynchronous or Synchronous RS-422
Baud Rate	User Selectable 9.6 Kbps to 921.6 Kbps (housed) User Selectable 9.6 kbps to 4147 Kbps (unhoused)
Data Rate	User Selectable 1 to 1000 Hz (housed) User Selectable 1 to 5000 Hz (unhoused)

Physical Specifications

Dimensions - Housed (max)	88.9 mm Dia x 73.7 mm H (3.5" x 2.9")
Dimensions - Unhoused	PCB stack: 81 mm Dia x 24.8 mm H (3.19" x 0.978") (nominal) Gyro sensor: 44.7 mm Dia x 21.8 mm H (1.76" x 0.86")
Weight - Housed (max)	Single-axis: 0.50 kg (1.1 lbs.) Dual-axis: 0.54 kg (1.2 lbs.) 3-axis: 0.60 kg (1.3 lbs.)
Weight - Unhoused (nominal)	PCB stack: 0.11 kg (0.25 lbs.) Gyro sensor: 0.07 kg (0.16 lbs.) Flex cables: 0.0005 kg (0.001 lbs.)
Power Consumption	Single-axis: 6 W (max), 3W (typical) Dual-axis: 7 W (max), 4W (typical) 3-axis: 8 W (max), 5W (typical)
Input Voltage	+9 to +36 VDC

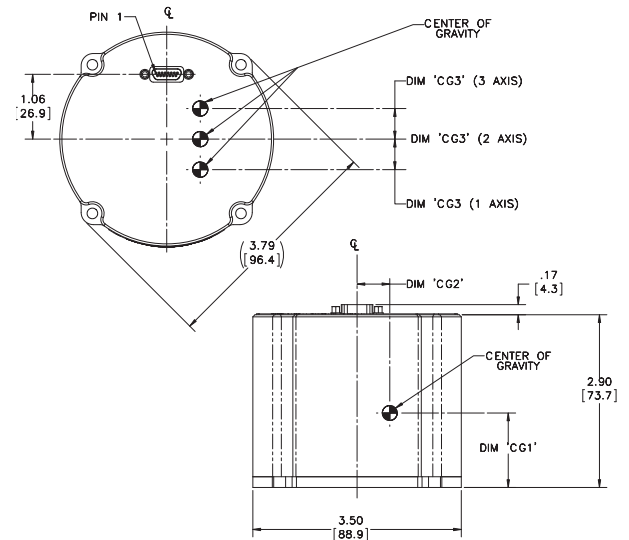
Environmental Specifications

Temperature (operating)	-40°C to +75°C (-40°F to +167°F)
Shock (operating)	25 g, 11 msec, sawtooth
Vibration (operating)	8 g rms, 20-2000 Hz, random

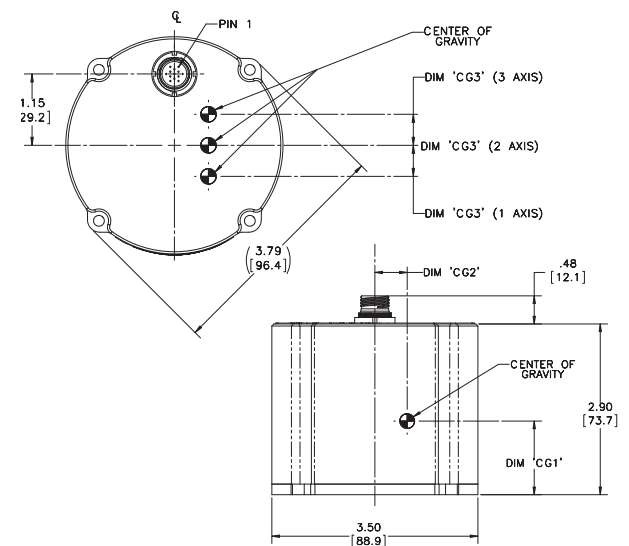
For detailed interface control drawings (ICD) and technical information on this product, please visit emcore.com/nav/support

Housed DSP-1760s

Micro-D Connector Option

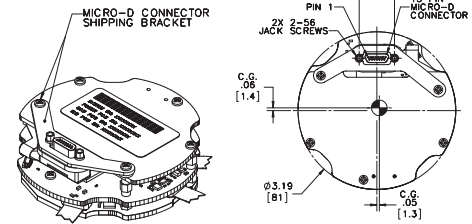


Circular Connector Option

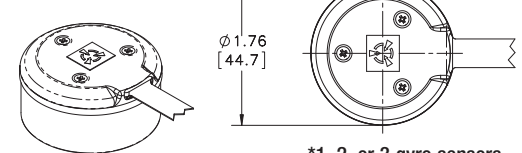


Unhoused DSP-1760s

PCB Stack



Gyro Sensor(s)*



For More Information

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