emcore®

DATA SHEET

TAC-450 FOG

Single- or Multi-axis Fiber Optic Gyroscope

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

EMCORE's TAC-450 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 TAC-450 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 TAC-450 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 TAC-450 FOG is a high bandwidth, extremely low noise sensor. The TAC-450 FOG offers customers a choice of two interfaces: a Micro-D or a circular connector. In addition, the TAC-450 FOG integrates magnetic shielding within the gyro housing, providing improved performance in systems with problematic magnetic environments.

PIC INSIDE

PIC Technology Improves Reliability

A key element of the TAC-450 is EMCORE's new, groundbreaking integrated planar optical chip. Replacing individual fiber optic components, the TAC-450 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 for a high level of repeatability.

Precision Gyros Designed for Ultimate Flexibility

The TAC-450 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.

Available in 1-, 2- or 3 axes

APPLICATIONS

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

KEY FEATURES

- Superior bias instability of ≤0.05°/hr, 1 (typical); ≤0.1°/hr, 1 (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 and integrated heat-sink
- Angle Random Walk (ARW) ≤0.012°/√hr (0.7°/hr/√Hz)
- Bandwidth: ≥1000 Hz
- Available in nine configurations:
  - Housed 1-, 2-, or 3-axis
  - Unhoused 1-, 2-, or 3-axis tethered to PCB, with Micro-D connector
- Now with EMCORE's breakthrough PIC technology

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Protected by one or more of the following patents: US 7,317,847, US 6,763,153, US 6,718,097, US 6,707,558, US 6,429,939, US 6,370,289 B1, US 6,134,356, US 6,041,149, US 5,768,462, US 5,739,944, US 5,552,887. Additional patents pending.

TAC-450 Single- or Multi-axis Fiber Optic Gyroscope (FOG)

PERFORMANCE HIGHLIGHTS

PARAMETERS	TAC-450
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)	≤75 ppm, 1σ (typical)
Scale Factor vs. Temperature (≤1°C/min)	≤250 ppm, 1σ (max), ≤100 ppm, 1σ (typical)
Angle Random Walk (25°C)	≤0.012°/√hr (0.7°/hr/√Hz)
Bandwidth (-3 dB)	Housed: ≥1000 Hz
ELECTRICAL/MECHANICAL	
Initialization Time	≤5 seconds
Data Interface	Asynchronous or Synchronous RS-422
Baud Rate	User Selectable 9.6 kbps to 4147 Kbps (unhoused)
Data Rate	User Selectable 1 to 5000 Hz (unhoused)
PHYSICAL SPECIFICATIONS	
Dimensions Housed	88.9 mm Dia x 63.5 mm H (3.5" x 2.5")
Dimensions Unhoused	Electronics Assembly: 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: 0.47 kg (1.04 lbs.) Dual-axis: 0.55 kg (1.21 lbs.) 3-axis: 0.63 kg (1.38 lbs.)
Weight - Unhoused (nominal)	Electronics Assembly : 0.11 kg (0.24 lbs.) Gyro sensor: 0.07 kg (0.16 lbs.
Power Consumption	Single-axis: 6W (max), 3W (typical) Dual-axis: 7W (max), 4W (typical) 3-axis: 8W (max), 5W (typical)
Input Voltage	+9 to +36 VDC
ENVIRONMENTAL	
Temperature (operating)	-40°C to +75°C (-40°F to +167°F)
Shock (operating)	30 g, 11 msec, sawtooth
Vibration (operating)	17 g rms, 20-2000 Hz, random

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MADE IN USA

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