

# TAC-DSP-1750 FOG emcore®

The World's Smallest, High-Performance Single or Dual-Axis FOG



Available in single or dual axes

## Key Features

- Superior bias stability of  $0.05^\circ/\text{hr}$ , 1 (typical)
- Single or Dual-Axis high performance FOGs
- 15 pin Molex connector
- Integrated heatsink
- Angle Random Walk (ARW)  $0.013^\circ/\text{hr}$  ( $0.8^\circ/\text{hr}/\text{Hz}$ )
- Available in two configurations:
  - Unhoused single axis
  - Unhoused dual axis
- Commercial off-the-shelf (COTS) product
- Available with 6", 8", 10" flex circuits, or custom shape.
- Backwards compatible with legacy DSP-1750 hardware

## Applications

- Gimbals
- Optical/antenna stabilization
- Long-range optical and sensor systems
- Equipment platform stabilization
- Payloads for UAVs
- Weapons platform stabilization
- GPS/INS, IMU integration

## Engineered for the Tightest Spaces

EMCORE takes fiber optic gyro (FOG) technology to a new level of performance with the TAC-450 series based DSP-1750, the world's smallest high-accuracy FOG. Available in both single and dual-axis configurations, the TAC-DSP-1750 is designed for a wide range of precision navigation, stabilization, and pointing applications where low noise and high performance across the entire range of operating temperatures are critical. Ideal applications include long-range optical and sensor systems, gimbals, tactical missiles, autonomous vehicle navigation, and the stabilization of virtually all types of commercial equipment platforms.

## Trusted for the Toughest Missions

The TAC-DSP-1750 delivers performance never before achieved in FOGs of similar size. Available in single or dual-axis gyro configurations, the TAC-DSP-1750 is a high bandwidth, extremely low noise sensor. The TAC-DSP-1750 integrates magnetic shielding within the gyro housing, providing improved performance in systems with problematic magnetic environments. It delivers extremely low noise coupled with high bandwidth.

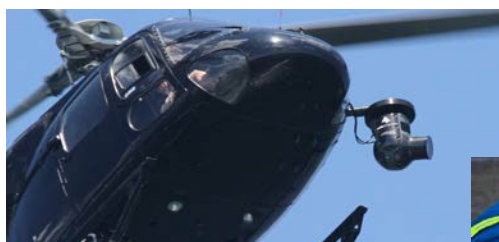
## PIC Technology Improves Reliability



A key element of the TAC-DSP-1750 is EMCORE's new, groundbreaking integrated planar optical chip. Replacing individual fiber optic components, the TAC-DSP-1750 with PIC Inside™ offers 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-DSP-1750 provides unmatched versatility to meet the demands of the most challenging design projects. Choose a single or dual-axis configuration, each employing the world's smallest precision FOG. All variants offer ease of use and high adaptability, featuring flexible communication options allowing for user-programmable data output rates up to 1000 Hz. This OEM package enables ease of integration into even the smallest of systems.



Ideal for the stabilization and orientation of high-speed gimbals.



Pipelines deliver massive amounts of crude daily and ensuring safe operation is key. The EMCORE TAC-450-DSP1750, coupled to additional sensors, provides these inspection robots with extremely accurate angular data.



## EMCORE TAC-DSP-1750 Fiber Optic Gyro

### Performance Specifications

|                                                                      |                                          |
|----------------------------------------------------------------------|------------------------------------------|
| Input Rate ( <i>max</i> )                                            | ±490°/sec                                |
| Bias Instability (25°C)                                              | 0.05°/hr, 1σ (typical)                   |
| Bias vs. Temperature ( $\leq 1^{\circ}\text{C}/\text{min}$ )         | 3°/hr, 1σ (typical)                      |
| Bias Offset (25°C)                                                   | ±2°/hr                                   |
| Scale Factor Non-linearity ( <i>full rate, 25°C</i> )                | ≤200 ppm, 1σ (typical)                   |
| Scale Factor vs. Temperature ( $\leq 1^{\circ}\text{C}/\text{min}$ ) | ≤300 ppm, 1σ (typical)                   |
| Angle Random Walk (25°C)                                             | ≤0.013°/√hr (≤0.8°/hr/√Hz)               |
| Bandwidth (-3 dB)                                                    | ≥440 Hz Single Axis<br>≥790 Hz Dual Axis |

### Electrical/Mechanical Interface

|                     |                     |
|---------------------|---------------------|
| Initialization Time | ≤5 seconds          |
| Data Interface      | Asynchronous RS-422 |
| Baud Rate           | 115.2 Kbps          |
| Data Rate           | 1000 Hz             |

### Physical Specifications

|                                |                                                                              |
|--------------------------------|------------------------------------------------------------------------------|
| Processor Dimensions           | 58.4 mm Dia x 27.9 mm H (2.3" x 1.1")                                        |
| Gyro Sensor Dimensions         | 44.7 mm Dia x 21.8 mm H (1.76" x 0.86")                                      |
| Weight - Processor             | 0.10 lbs (.45 kg) NOMINAL                                                    |
| Weight – Gyro Sensor (nominal) | 0.16 lbs (.072 kg)                                                           |
| Power Consumption              | Single-axis: 4W (max), 3.2w (typical)<br>Dual-axis: 5W (max), 4.1W (typical) |
| Input Voltage                  | +9 to +36 VDC                                                                |

### Environmental Specifications

|                                  |                                  |
|----------------------------------|----------------------------------|
| Temperature ( <i>operating</i> ) | -40°C to +75°C (-40°F to +167°F) |
| Shock ( <i>operating</i> )       | 30 g, 11 msec, sawtooth          |
| Vibration ( <i>operating</i> )   | 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](http://emcore.com/nav/support)



## For More Information

+1 866.234.4976 | [emcore.com](http://emcore.com) | [navigation-sales@emcore.com](mailto:navigation-sales@emcore.com)

EMCORE Corporation  
450 Clark Dr, Budd Lake, NJ U.S.A.  
P +1 626-293-3400 F +1 626.293.3429

