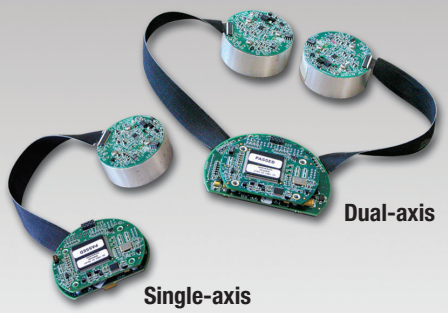
DSP-1750 FOG Analog Output

World's Smallest High-performance Fiber Optic Gyro



Key Features

- EMCORE E•Core® ThinFiber technology
- Extremely low noise, high bandwidth
- Angle random walk ≤0.05°/√hr
- Superior bias instability of ≤2°/hr
- Input rate of ±200°/sec
- Analog output; single- and dual-axis
- Magnetic shielding optional
- Commercial off-the-shelf (COTS) product
- Proven reliability – MTBF >36,000 hrs (Ground Mobile)

Applications

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

Super-compact Single- or Dual-axis Package

EMCORE takes fiber optic gyro (FOG) technology to a new level of performance with the DSP-1750, the world's smallest high-accuracy FOG. Available in both single- and dual-axis configurations, the 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.

Delivering Groundbreaking Performance

The DSP-1750 delivers performance never before achieved in FOGs of similar size. Utilizing EMCORE's 170-micron E•Core ThinFiber, the world's smallest D-shaped optical fiber, it delivers extremely low noise coupled with high bandwidth. This super-compact FOG offers superior performance in angle random walk and bias stability, as well as over shock and vibration.

Innovative, Versatile Design

Featuring a flexible design in which the optical sensor is separate from the control electronics, the DSP-1750 has a 45.7 mm (1.8") diameter optical sensor housing connected to its power and processing electronics via a robust interlocking tether. This two-piece design allows the sensor to be installed directly on the sensitive axis, while the control circuit cards can be integrated elsewhere, such as in an existing board stack assembly. This innovative design makes the DSP-1750 easy to integrate into customer platforms where space and payload weight are at a premium.

Unmatched Quality and Reliability

EMCORE is the only U.S. FOG manufacturer that draws its own optical fiber, ensuring consistent quality, performance, and instant turn-on to turn-on repeatability in every FOG. And like all of EMCORE's precision FOGs, the solid state DSP-1750 is built using EMCORE's patented Digital Signal Processing (DSP) electronics design which offers significant improvements in such critical areas as scale factor and bias stability, scale factor non-linearity, and maximum input rate.

Gimbals such as SpaceCam's gyro-stabilized camera system use internal DSP-1750 gyros from EMCORE to maintain highly stable and focused imagery.

Specifications	EMCORE DSP-1750 Fiber Optic Gyro - Analog Output	
Number of Axes	**Single-Axis (Analog)**	**Dual-Axis (Analog)**
Input Rate *(max)*	±200°/sec	±200°/sec
Bias Instability *(25°C)*	≤2°/hr, 1σ	≤2°/hr, 1σ
Bias vs. Temperature *(≤1°C/min)*	≤15°/hr, 1	≤15°/hr, 1
Bias Offset *(25°C)*	±22°/hr	±22°/hr
Scale Factor Non-linearity *(max rate, 25°C)*	≤500 ppm, 1	≤500 ppm, 1
Scale Factor vs. Temperature *(≤1°C/min)*	≤500 ppm, 1	≤500 ppm, 1
Angle Random Walk *(25°C)*	≤0.05°/√hr (≤3°/hr/√Hz)	≤0.05°/√hr (≤3°/hr/√Hz)
Electrical/Mechanical Interface		
Bandwidth *(-3 dB)*	≥1000 Hz ±10%	≥1000 Hz ±10%
Initialization Time *(valid data)*	≤3 secs	≤3 secs
Data Interface	9 kHz/3800 Hz; ±12.5 VDC single-ended	9 kHz/3800 Hz; ±12.5 VDC single-ended
Baud Rate	9 kHz/3800 Hz; ±12.5 VDC single-ended	9 kHz/3800 Hz; ±12.5 VDC single-ended
Data Rate	9 kHz/3800 Hz; ±12.5 VDC single-ended	9 kHz/3800 Hz; ±12.5 VDC single-ended
Physical Specifications		
Dimensions *(max)*	45.7 mm Dia x 22.9 mm H (1.8" x 0.9")	45.7 mm Dia x 22.9 mm H (1.8" x 0.9")
Weight *(max)*	Non-magnetically shielded: 0.11 kg (0.24 lbs) Magnetically shielded: 0.13 kg (0.28 lbs)	Non-magnetically shielded: 0.14 kg (0.30 lbs) Magnetically shielded: 0.17 kg (0.34 lbs)
Power Consumption	4 W (max), <3 (typical)	5.5 W (max), <3.75 (typical)
Input Voltage	+5 & ±8 to ±15, ±5% VDC	+5 & ±8 to ±15, ±5% VDC
Environmental Specifications		
Temperature *(operating)*	-40°C to +75°C (-40°F to +167°F)	-40°C to +75°C (-40°F to +167°F)
Shock *(operating)*	25 g, 11 msec, sawtooth	25 g, 11 ms, sawtooth
Vibration *(operating)*	8 g rms, 20-2000 Hz	8 g rms, 20-2000 Hz
MTBF	≥36,000 hours	≥22,000 hours

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

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Made in the U.S.A.

ISO9001 CERTIFIED

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