DSP-3400 FOG

High-performance, Single-axis Fiber Optic Gyro

emcore®

Key Features

- Rugged, modular design
- Patented Digital Signal Processing (DSP)
- Exceptional bias stability and linearity
- Single-axis, modular design for multi-axis configurations
- Commercial off-the-shelf (COTS) product

Applications

- Automated inventory tracking
- Antenna/radar/optics stabilization
- Gun/turret stabilization
- IMU, GPS/INS integration
- AHRS integration

EMCORE's DSP-3400 helps to stabilize gimbaled cameras on law enforcement helicopters, aiding in aerial surveillance and emergency response

High-speed Point-to-Point Data Communications

The EMCORE DSP-3400 offers the reliability and robust design found in all members of the DSP-3000 series, but adds the benefits of a true RS-422 interface and a 1000 Hz synchronous output in a durable, shielded package. As a result, the DSP-3400, with its robust, modular design, is a powerful option for use in applications requiring FOG output to be transmitted over a longer distance.

The entire DSP-3000 series uses EMCORE's patented Digital Signal Processing (DSP) electronics. EMCORE's breakthrough DSP design overcomes the limitations of analog signal processing, virtually eliminating temperature-sensitive drift and rotation errors. In addition, EMCORE's DSP technology offers significant performance improvements in such critical areas as scale factor and bias stability, scale factor linearity, turn-on to turn-on repeatability, and maximum input rate. Exceptional low noise (ARW), insensitivity to cross-axis error, and shock and vibration robustness make the DSP-3000 series a perfect fit for demanding industrial applications. This performance, combined with the inherent simplicity and reliability of our mature all-fiber optical circuit, establish the DSP-3000 series as an affordable, outstanding solution for motion sensing, stabilization, navigation, and precision pointing applications.

EMCORE FOGs are used in automated inventory tracking systems to ensure that products are transported quickly and safely inside warehouses.

Precision, Performance, and Price

Fabricated from EMCORE's proprietary E•Core® polarization maintaining fiber, the EMCORE DSP-3400 delivers superior precision and reliable performance at a lower cost than other comparable fiber optic and mechanical gyroscopes. Its temperature stability and repeatability make it particularly well-suited for precision stabilization, GPS integration, and multi-axis tactical-grade inertial measurement systems. The noise spectrum of the DSP-3400 is exceptionally flat, lacking the discrete noise components of mechanical gyros. With no moving parts to maintain or replace, the DSP-3400 lasts longer, functions better, and yields significant product life cycle savings.

Specifications	EMCORE DSP-3400 Single-axis Fiber Optic Gyro
	Digital
Input Rate *(max)*	±375°/sec
Bias Instability *(25°C)*	≤1°/hr, 1σ
Bias vs. Temperature *(≤1°C/min)*	≤6°/hr, 1σ
Bias Offset *(25°C)*	±20°/hr
Scale Factor Non-linearity *(max rate, 25°C)*	≤500 ppm, 1σ
Scale Factor vs. Temperature *(≤1°C/min)*	≤500 ppm, 1σ
Angle Random Walk *(25°C)*	≤0.067°/√hr (≤4°/hr/√Hz)
Electrical/Mechanical Interface	**Digital**
Bandwidth *(-3 dB)*	440 Hz
Initialization Time *(valid data)*	≤5 secs
Data Interface	Synchronous RS-422
Baud Rate	115.2 Kbps
Data Rate	1000 Hz Synchronous
Physical Specifications	**Digital**
Dimensions *(max)*	88.9 mm L x 58.4 mm W x 43.5 mm H (3.5" x 2.3" x 1.7")
Weight *(max)*	0.3 kg (0.66 lbs)
Power Consumption	3 W (max), 1.25 W (typical)
Input Voltage	+5, ±10% VDC
Environmental Specifications	**Digital**
Temperature *(operating)*	-40°C to +75°C (-40°F to +167°F)
Shock *(operating)*	40 g, 10 msec, half-sine
Vibration *(operating)*	8 g rms, 20-2000 Hz
MTBF	≥55,000 hours

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

For More Information

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Made in the U.S.A.

ISO9001 CERTIFIED