

KVH DSP-3000

High-performance Fiber Optic Gyro



Key Features

- Patented Digital Signal Processing (DSP) FOG design
- True tactical-grade performance
- Scale factor accuracy of 500 ppm
- Exceptional bias stability and linearity—minimal temperature and power-up errors
- Excellent reliability: >55,000 hours MTBF, Ground Mobile
- Reduced noise, high bandwidth
- Smallest KVH FOG
- Robust for a wide variety of applications including gun/turret stabilization
- Modular design for 1-, 2-, or 3-axis configurations
- Digital or analog outputs

Applications

- IMU, GPS/INS
- AHRS
- Industrial Robotics/Autonomous Vehicles
- Antenna/Radar/Optics Stabilization

Introducing the KVH DSP-3000 – Offering precision stabilization and control at an affordable price

The new KVH DSP-3000 fiber optic gyro sets a new standard of performance and price. Its reduced package size and robust, modular design make low-cost inertial measurement units (IMUs), integrated GPS/INS, and AHRS a reality. The Digital Signal Processing (DSP) electronics offer significant performance improvements in such critical areas as scale factor and bias versus temperature, 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 a perfect fit for demanding industrial and military applications. This performance, combined with the inherent simplicity and reliability of our mature all-fiber optical circuit, establish the DSP-3000 as the ideal solution for motion sensing, stabilization, navigation, and precision pointing applications.

The DSP-3000 is the second in a series of gyros that employ KVH's patented DSP technology. KVH's breakthrough DSP design overcomes the limitations of analog signal processing, virtually eliminating temperature-sensitive drift and rotation errors. The DSP-3000 achieves these performance breakthroughs while remaining affordable. It is suitable for applications in which gyros and accelerometers are combined to determine vehicle dynamic motions as well as any application that requires precise measurement of rate and turning angle.



KVH® DSP-3000

Precision, Performance, and Price

Fabricated from KVH's proprietary E•Core® polarization maintaining fiber, the KVH DSP-3000 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-3000 is exceptionally flat, lacking the discrete noise components of mechanical gyros. With no moving parts to maintain or replace, the DSP-3000 lasts longer, functions better, and yields significant product life cycle savings.

Technical Specifications

Physical

Input Voltage:	+5 VDC ±10%
Power Consumption:	3 watts (2 watts typical)
Weight:	0.6 lbs (0.27 kg)
Size:	3.5" x 2.3" x 1.3" (88.9 mm x 58.42 mm x 33.02 mm)

Output

Digital:	Baud 38,400 (RS-232 Asynch) 3.072 MHz Synch Serial
Analog:	±2 VDC differential
Data Rate:	Asynchronous: 100/sec Synchronous: 1000/sec ¹ Analog: 100/sec
Format (selectable):	Rate, Incremental Angle, or Integrated Angle

Environmental

Operating Temperature:	-40°C to +75°C
Storage Temperature:	-50°C to +85°C
Shock:	Functional sawtooth 40 g, 6-10 msec
MTBF:	>55,000 hours, Ground Mobile
Random Vibration:	20 to 2000 Hz, 8 g rms, operational

Performance

Maximum Input Rate:	±375°/s	±100°/s
Bias:		
Offset (room temp):	±20°/h	±100°/h
Stability (room temp) ² :	1°/h, 1σ	3°/h, 1σ
Temp. Sensitivity (<1°C/min):	6°/h, 1σ	20°/h, 1σ
Angle Random Walk (noise):	4°/h/√Hz 0.0667°/√h	6°/h/√Hz 0.1°/√h
Instantaneous Bandwidth (Hz):	50, 500 ¹	100
Scale Factor:		20mV/°sec, nominal
Linearity (room temp, full scale):	1000 ppm, 1σ ³	500 ppm, 1σ
Linearity (room temp, full scale):	500 ppm, 1σ ⁴	500 ppm, 1σ
Temperature Sensitivity:	500 ppm, 1σ	500 ppm, 1σ
Error (full rate & temp):	1500 ppm, 1σ	1000 ppm, 1σ
Activation Time (valid data):	<5 sec	<5 sec

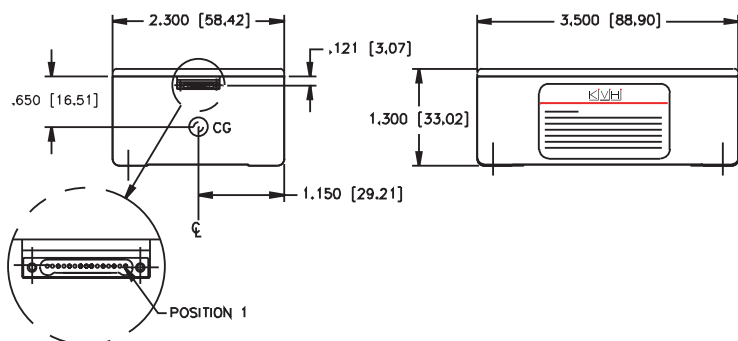
¹Available as an option with synchronous serial output, other interface options available

²Bias Stability and Angle Random Walk determined by Allan variance method

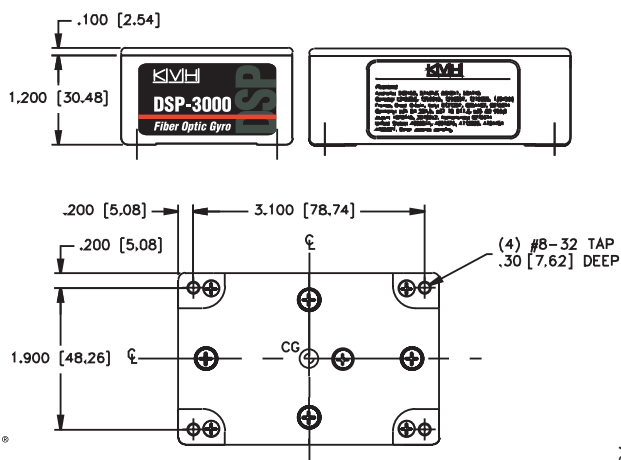
³For input rates up to ±375°/s

⁴For input rates up to ±150°/s

Package Dimensions: inches (mm)



MATING CONNECTOR:
KVH p/n: 32-0780 - C/A DUALOBE PIGTAIL, 12"
Tyco Electronics p/n: SSL015PC2DCXXXN
(XXX indicates length in inches)



Visit www.kvh.com

KVH Industries, Inc.



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