P-1725 IMU

Photonic Inertial Measurement Unit

Affordable, Reliable FOG-based IMU with **Photonic Integrated Chip (PIC) Technology** for Improved Performance in Challenging Stabilization and Navigation Applications

The new KVH P-1725 IMU is a compact, commercial IMU featuring breakthrough PIC technology for increased reliability, and upgraded high-performance 10g accelerometers for outstanding FOG performance as affordable as MEMS alternatives. An advanced inertial sensor, the P-1725 IMU is designed to meet the demanding needs of a wide range of navigation and stabilization applications. Leveraging KVH's revolutionary PIC technology, the P-1725 includes three photonic FOGs integrated with three high-performance, low-noise 10g accelerometers. The resulting low-cost/high-performance IMU is ideal for manned and unmanned platforms, as well as navigation or stabilization systems where low cost, high performance, and high bandwidth are critical for success.

Key Features

- All new, exclusive KVH photonic integrated chip (PIC) technology
- High bandwidth for demanding dynamic applications
- Low noise
- Superior shock and vibration performance
- 3 high-performance photonic FOGs provide superior, reliable performance
- 3 high-performance 10g accelerometers
- High accuracy 6-degrees-of-freedom angular rate and acceleration data
- Versatile interfaces
- Compact size

Applications

- Autonomous and unmanned commercial and defense platforms (ground/aerial/marine surface/submersible)
- Antenna and camera system stabilization
- EO/FLIR system stabilization
- GPS/GNSS-aiding inertial navigation
- Mobile mapping systems
- Motion sensing systems
- Targeting and pointing systems
- Autonomous navigation, guidance, and positioning

PIC Technology for Superior Performance

PIC INSIDE

KVH's new PIC technology reinvents FOG technology with improved reliability, unit-to-unit repeatability, and easier integration with an integrated planar optical chip that replaces individual fiber optic components. The result is a precision photonic fiber optic gyro sensor that is more durable and reliable with increased performance designed for a high level of repeatability.

No Compromise Between High Performance and Low Price

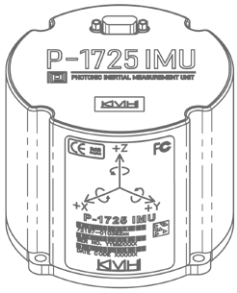
With its high bandwidth and low noise, the P-1725 IMU can provide the data output required for challenging applications such as autonomous navigation systems, precision pointing and stabilization systems, as well as mobile mapping systems and still help keep program costs low. KVH's P-1725 IMU makes the traditional trade-off between performance and price obsolete. Get both advanced photonic FOG-based quality performance and affordability with the KVH P-1725 IMU. The compact P-1725 is designed for easy integration into new or existing systems.

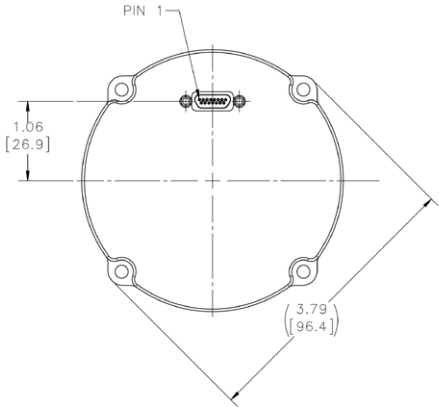
The P-1725 offers high bandwidth and excellent shock and vibration resistance for autonomous applications.

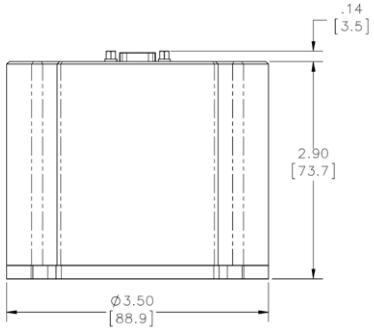
Protected by U.S. Patent 10,274,319. Additional patents pending.

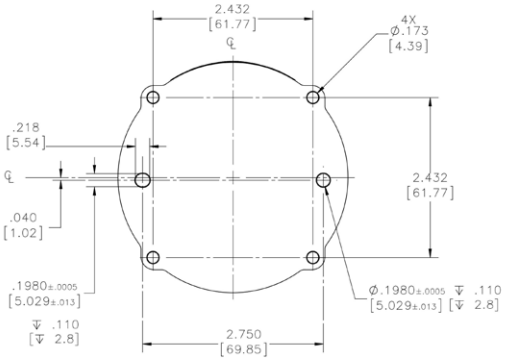
KVH P-1725 IMU

Performance Specifications – Gyros	
Input Rate	±490°/sec (max)
Bias Instability (25°C)	≤0.05°/hr, 1σ (typical) ≤0.1°/hr, 1σ (max)
Bias Temperature Sensitivity*	≤1.5°/hr, 1σ (typical)
Bias Offset (25°C)	±5°/hr (max)
Scale Factor Non-linearity (full rate, 25°C)	≤75 ppm, 1σ (typical)
Scale Factor Temperature Sensitivity*	≤300 ppm, 1σ (typical)
Angle Random Walk (ARW) (25°C)	≤0.017°/√hr (≤1.0°/hr/√Hz)
Bandwidth (-3 dB)	≥440 Hz
Performance Specifications – Accelerometers	
Input Range	±10g (max)
Bias Instability (25°C)	15 µg, 1σ
Bias Offset (25°C)	±110 µg, 1σ
Bias Temperature Sensitivity*	≤375 µg, 1σ
Scale Factor Temperature Sensitivity*	≤120 ppm/°C (typical)
Velocity Random Walk (25°C)	34 µg/√Hz
Bandwidth (-3 dB)	≥200 Hz
Environment	
Temperature (operating)	-40°C to +75°C (-40°F to +167°F)
Shock (operating)	9g (11 ms, sawtooth)
Vibration (operating)	8g rms (20-2000 Hz, random)
Electrical/Mechanical	
Initialization Time (25°C)	≤3 sec
Data Interface	RS-422 Full Differential, Asynchronous or Synchronous
Baud Rate	9.6 Kbps to 921.6 Kbps, User-selectable
Data Rate	1 to 1000 Hz, User-selectable
Dimensions	88.9 mm Dia x 73.7 mm H (3.5" x 2.9")
Weight	0.7 kg (1.54 lbs)
Power Consumption	5 W (typical), 8 W (max)
Input Voltage	+9 to +36 VDC









For technical manuals on this product, please visit kvh.com/P1725docs

* *≤1°C/min ramp rate*

kvh.com/P1725

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Made in the U.S.A.