

P-1750 IMU

Photonic Inertial Measurement Unit



Key Features

- All new, exclusive KVH photonic integrated chip (PIC) technology
- Available with either 10g or 30g high-performance accelerometers
- Highly accurate 6-degrees-of-freedom angular rate and acceleration data
- Affordable commercial off-the-shelf (COTS) system
- Flexible interfaces and compact design
- Excellent shock, vibration, and thermal performance

Applications

- Autonomous vehicle navigation
- Antenna, camera, laser pointing, and stabilization
- GNSS-aiding
- AHRS, EO/FLIR stabilization
- Flight controls
- Mapping/surveying
- Oil and gas exploration
- Autonomous navigation, guidance, and positioning
- Motion sensing

Versatile, Highly Accurate FOG-based IMU with Photonic Integrated Chip (PIC) Technology for Demanding Autonomous and Manned Applications

The new KVH P-1750 IMU delivers outstanding performance thanks to KVH's breakthrough PIC technology for increased reliability and upgraded high-performance accelerometers for the precision that autonomous platforms demand. The P-1750 is available with a choice of 10g or 30g high-end accelerometers that augment performance for autonomous and manned systems with improved Bias Instability, Scale Factor, and Velocity Random Walk.

PIC Technology for Superior Performance

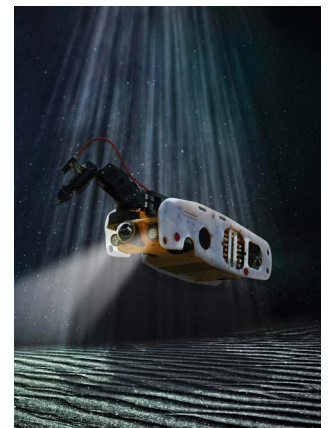


KVH's new photonic chip technology reinvents fiber optic gyro (FOG) technology with improved reliability, unit-to-unit repeatability, and easier integration with an integrated planar optical chip that replaces individual fiber optic components. The result is a precision photonic fiber optic gyro sensor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

Maximum Flexibility for Challenging Platforms

The KVH P-1750 IMU offers ease of use and high adaptability, featuring flexible RS-422 asynchronous communication with user-programmable data output rates from 1 to 1000 Hz. The package dimensions and mounting features enable easy drop-in replacement.

As the ability to tailor the output to exactly what the end user requires is key, KVH enables users to customize the desired message output from both the P-1750 IMU's photonic FOGs and integrated high-performance accelerometers. In addition, the P-1750 IMU offers users a high degree of flexibility, as the baud and data rates can be adjusted. This enables the user to minimize the communication latency, delivering accurate information even faster.



KVH P-1750 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*	≤0.7°/hr, 1σ (typical)
Bias Offset (25°C)	±2°/hr (max)
Scale Factor Non-linearity (full rate, 25°C)	≤50 ppm, 1σ (typical)
Scale Factor Temperature Sensitivity*	≤200 ppm, 1σ (typical)
Angle Random Walk (ARW) (25°C)	≤0.012°/√hr (≤0.7°/hr/√Hz)
Bandwidth (-3 dB)	≥440 Hz

Performance Specifications – Accelerometers

	10g	30g
Input Range	±10g (max)	±30g (max)
Bias Instability (25°C)	15 μg, 1σ	45 μg, 1σ
Bias Offset (25°C)	±110 μg, 1σ	±325 μg, 1σ
Bias Temperature Sensitivity*	≤375 μg, 1σ	≤1125 μg, 1σ
Scale Factor Temperature Sensitivity*	≤120 ppm/°C (typical)	≤120 ppm/°C (typical)
Velocity Random Walk (25°C)	34 μg/√Hz	102 μg/√Hz
Bandwidth (-3 dB)	≥200 Hz	≥200 Hz

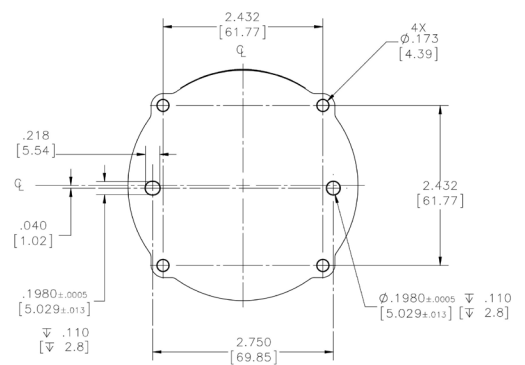
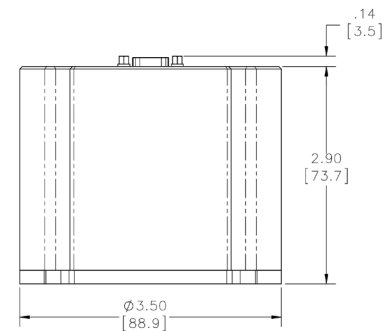
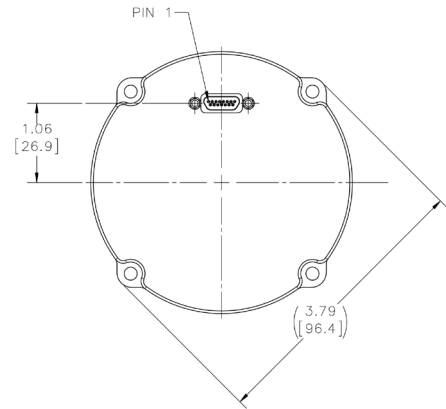
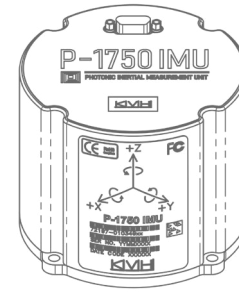
Environment

	10g	30g
Temperature (operating)	-40°C to +75°C (-40°F to +167°F)	-40°C to +75°C (-40°F to +167°F)
Shock (operating)	9g (11 ms, sawtooth)	28g (11 ms, sawtooth)
Vibration (operating)	8g rms (20-2000 Hz, random)	12g 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

* ≤1°C/min ramp rate



For technical manuals on this product,
please visit kvh.com/P1750docs

kvh.com/P1750



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