IMU-P1750

P-1750 IMU from KVH with SPAN GNSS+INS technology from Hexagon | NovAtel provides continuous 3D position, velocity and attitude solution

World-leading GNSS+INS technology

SPAN GNSS+INS technology brings together two different but complementary technologies: Global Navigation Satellite System (GNSS) positioning and Inertial Navigation System (INS). The absolute accuracy of GNSS positioning with the stability of inertial measurement unit (IMU) gyro and accelerometer measurements generate a 3D navigation solution that is stable and continuously available. Deeply coupling the GNSS and inertial measurements through SPAN technology enables better bridging through GNSS interruptions and rapid reacquisition of signals.

Overview

The P-1750 is designed to be paired with receivers from NovAtel. Commercially exportable, it is comprised of photonic Fibre Optic Gyros (FOG) and Micro Electromechanical Systems (MEMS) accelerometers. FOGs offer exceptionally long life and stable performance compared to similar gyro technologies.

Advantages of P-1750

The P-1750 offers tactical-grade performance in a compact and rugged package with minimal power consumption. Paired with a receiver from NovAtel, the P-1750 offers a fully integrated, deeply coupled GNSS and IMU system that delivers a continuous position, velocity and attitude solution.

Improve P-1750 accuracy

Receivers from NovAtel provide your choice of accuracy and performance, from decimetre to RTK-level positioning. For more demanding applications, Waypoint Inertial Explorer post-processing software can be used to post-process data to provide the system's highest level of accuracy.

Benefits

- High performance IMU
- Optimised for aerial, hydrographic survey and industrial applications
- Easy integration with SPAN capable GNSS+INS receivers from NovAtel
- Commercially exportable
- Ideal for a control reference system

Features

- Photonic fibre optic gyros and MEMS accelerometers
- Stationary INS alignment capable
- 200 Hz IMU data rate
- Direct UART interface to OEM7 receivers
- SPAN GNSS+INS capability with configurable application profiles

IMU performance[1]

Gyroscope performance

Technology	FOG
Dynamic range	490 °/s
Bias instability[2]	0.05 °/hr
Angular random walk[2]	0.012 °/√hr

Accelerometer performance

Technology	MEMS
Dynamic range	16 g
Bias instability[2]	0.024 mg
Velocity random walk[2]	0.032 m/s/√hr

Physical and electrical

Dimensions	88.9 dia x 73.7 h mm
Weight	0.7 kg

Power

Input voltage	+9 to +36 VDC
Power consumption	8 W max

Input/Output connectors

Power and I/O	15-pin Micro-D

Communication interface	RS-422 UART
Connection to receiver	Receiver serial port

Data rate

IMU raw data rate	200 Hz
INS solution	Up to 200 Hz

Environmental

Temperature

Operating	-40°C to +75°C
Storage	-50°C to +85°C

Vibration

Operational	8 g RMS (20 - 2000 Hz random)
Non-operational	12.5 g RMS (20 - 2000 Hz random)

Shock

Operational	9 g (11 ms sawtooth)
Non-operational	40 g (11 ms sawtooth)

Included accessories

- Combined I/O and power cable

Performance during GNSS outages[3,4,5]

Outage duration	Positioning mode	Position accuracy (m) RMS		Velocity accuracy (m/s) RMS		Attitude accuracy (degrees) RMS	
		Horizontal	Vertical	Horizontal	Vertical	Roll	Heading
0 s	RTK[6]	0.02	0.03	0.010	0.010	0.015	0.040
	TerraStar-C PRO PPP	0.025	0.05				
	Single point	1.00	0.60				
10 s	RTK[6]	0.17	0.13	0.030	0.025	0.020	0.050
	TerraStar-C PRO PPP	0.17	0.15				
	Single point	1.15	0.70				
60 s	RTK[6]	3.30	1.73	0.160	0.070	0.030	0.060
	TerraStar-C PRO PPP	3.30	1.75				
	Single point	4.30	2.30				
	RTK with Land profile and DMI	2.50	1.55	0.110	0.070	0.030	0.060
0 s	Post-Processed using Inertial Explorer	0.01	0.02	0.010	0.010	0.005	0.020
10 s		0.02	0.02	0.020	0.010	0.005	0.020
60 s		0.16	0.09	0.021	0.011	0.006	0.021

1. *Supplied by IMU manufacturer.*
2. *From room temperature Allan variance method.*
3. *Performance may be impacted in conditions with unmitigated vibration or significant temperature variations.*
4. *Performance with one antenna, no DMI, and default SPAN profile unless otherwise specified.*
5. *Typical. Based on mixed urban road vehicle dynamics and benign GNSS conditions.*
6. *1 ppm should be added to all values to account for additional error due to baseline length.*

Contact Hexagon | NovAtel

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For the most recent details of this product: novatel.com

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