ANELLO
The Creator Of The SiPhOG™

PRELIMINARY

ANELLO AERIAL INS

Navigation for Autonomous Aerial Operations in GPS-Denied Environments

ANELLO AERIAL INS

Powered by three ANELLO Silicon Photonics Optical Gyroscopes (SiPhOG™), the ANELLO Aerial INS sets a new standard for precision and reliability in even the most demanding aerial navigation environments.

The ANELLO Aerial INS, powered by our groundbreaking SiPhOG™ technology, delivers resilient and precise navigation for unmanned and manned aerial platforms alike. Designed to perform in GPS-degraded or denied environments, it ensures reliable positioning, stability and safety in the most demanding flight conditions. With its compact, lightweight and low- power design, combined with advanced sensor fusion and GNSS spoofing detection, the ANELLO Aerial INS provides unmatched assurance for critical aerial missions - from defense and security operations to commercial UAV applications.

The ANELLO Aerial INS can output data using Ethernet, RS-232, RS-422 or CAN. The all-digital system also provides high-speed calibrated inertial measurements including 3-axis SiPhOG optical gyroscopes, triple redundant 6-axis MEMS IMUs, and a 3-axis magnetometer. The Aerial INS accepts vehicle air data for improved navigation performance. The dual triple-frequency GNSS receivers ensure that the ANELLO Aerial INS provides superior accuracy, reliability, and performance in challenging environments while providing faster convergence times and improved resistance to interference. Time synchronization is possible using PPS with a high accuracy clock as holdover when GNSS time fix is lost.

FEATURES

Reference-grade 100Hz position, velocity and attitude	Highly accurate dead reckoning solution for GNSS-denied navigation
3-axis SiPhOG™ with < 0.5°/hr unaided heading drift	ANELLO Advanced Sensor Fusion Engine with GNSS spoofing detection
Dual triple-frequency GNSS receivers with static heading capability	Compact and lightweight design with low power consumption < 6 W
Resilience in heavy shock and vibration environments	IP68 – waterproof, resistant to corrosion, salt spray and chemicals

ANELLO Photonics - 4699 Old Ironsides Drive, Ste 150, Santa Clara, CA 95054
For more information contact info@anellophotonics.com or visit www.anellophotonics.com

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TECHNICAL SPECIFICATIONS

Solution Accuracy[1]		
Horizontal Position Accuracy		
SPS	1.2 m rms	
Velocity Accuracy	0.03 m/s rms	
Heading Accuracy [2]	0.2° rms	
Attitude Accuracy (Roll/Pitch)	0.05° rms	
IMU Performance		
Optical Gyroscope (3-Axis)		
Range	+/-400°/s	
Bias Instability	< 0.5°/hr	
Angle Random Walk	< 0.05°/√hr	
MEMS IMU (6-Axis)	Accelerometer	Gyroscope
Range	16g	up to 400°/s
Bias Instability	10ug	1.5°/hr
Random Walk	0.03m/s/√hr	0.3°/√hr
GNSS & Timing		
Constellations	GPS, GLONASS, Beidou, Galileo, QZSS, NavIC, SBAS, all L-band signals	
PVT Output Data Rate	up to 100 Hz	
Synchronization	PPS Out, PPS Sync In	
Environment		
Operating Temperature[3]	-10 to +50°C	
Vibration	5g rms	
Shock Survival	40g	
Electrical		
Input Voltage Power	5 to 30 VDC	
Power Consumption	< 6 W typical	
Digital Interface	Ethernet, RS-232, RS-422, CAN	
Physical		
Size	4.4” x 3.4” x 1.9”	
Weight	0.75 lbs.	

Notes:

1. *After Initialization, with GNSS fix*
2. *Properly Installed Antennae*
3. *Option for -20 to +70°C extended range upgrade*

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