

ANELLO GROUND IMU*

Rugged Optical Gyro IMU for Robotics and Construction Autonomy

*Previously known as ANELLO IMU+

The ANELLO GROUND IMU is a hardened measurement unit with triple-redundant 6 degrees of freedom MEMS and proven optical gyroscope technology.



ANELLO GROUND IMU

The ANELLO GROUND IMU achieves high reliability and performance under harsh environments including shock, vibration, and thermal gradients. The ANELLO GROUND IMU includes the proven, high-performance ANELLO optical gyroscope technology for Z axis in order to enable long-term GNSS-denied dead reckoning.

The ANELLO GROUND IMU provides integrated AHRS functionality for real-time 3D orientation (roll/pitch/yaw) and is intended for Construction, Robotics, Mining, Trucking and Defense applications in harsh applications.

With a power consumption of only 2.5W the ANELLO GROUND IMU can output data using RS-232 interfaces and operates under a wide temperature range of -40 to +70°C.

A hardware built in test (BIT) output line signals fault detection, alongside diagnostic messages and the BIT data word. The internal circuitry uses one ASIL-B ready functionally safe microcontroller, as well as an ASIL-D rated master CPU.

A Sync/PPS input line allows the optical gyroscope and IMU measurements to be time aligned with an external clock such as a pulse per second (PPS) line.

An ASIL-D rated CPU together with the PXROS RTOS are used for added safety which is critical for automotive, autonomy and heavy equipment control applications.

FEATURES

Complete 6 Degrees of Freedom Inertial System

AHRS functionality for real-time 3D orientation - roll/pitch/yaw

High-Performance ANELLO Optical Gyroscope for the Z axis

200 Hz Data Output Rate

Two RS-232 Interfaces

Small Form Factor < 10in³

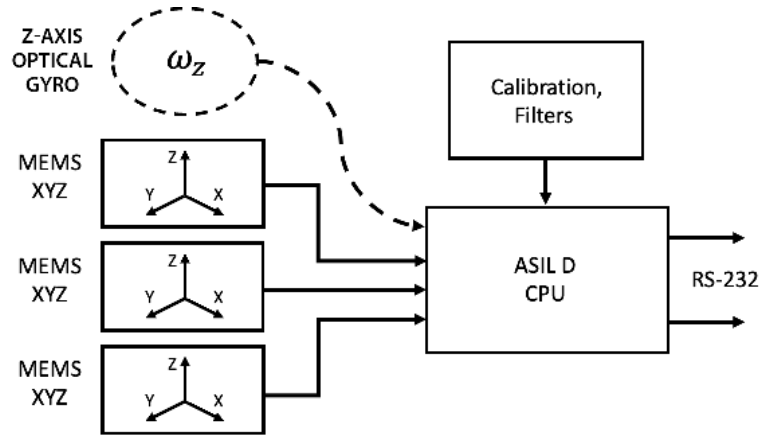
Low Power Consumption of 2.5W

Wide Temperature Range of -40 to +70°C

ASIL-D rated CPU and OS

IP68 - Waterproof, Resistant to Dust, Salt Spray and Chemicals

FUNCTIONAL BLOCK DIAGRAM



TECHNICAL SPECIFICATIONS (COMMERCIAL)

Gyroscope Performance		MEMS	Z-Axis Optical Gyro
Range		up to 400°/s	+/- 200°/s
Angle Random Walk		0.3°/√hr	0.05°/√hr
Bias Instability		1.5°/hr	0.5°/hr
Scale Factor Error		< 0.1% FS	< 0.1% (0 – 200°/s)
Accelerometer Performance			
Range		8g	
Velocity Random Walk		0.03m/s/√hr	
Bias Instability		20μg	
Bias over Temp		5mg	
Environmental			
Operating Temperature		-40 to +70°C	
Vibration		5g rms	
Shock Survival		40g	
Electrical			
Input Voltage		8 to 30 VDC	
Power Consumption		2.5W typical	
Digital Interfaces		RS-232 (2 Ports)	
Timing			
Output Data Rate		200 Hz (Configurable)	
Synchronization		PPS In	
Bandwidth		up to 100 Hz	
Physical			
Size		75 x 75 x 28mm (9.8in ³)	
Weight		< 1lbs.	