

HIGH PERFORMANCE FIBER-OPTIC GYROSCOPES (FOG) INERTIAL MEASUREMENT UNITS



ITAR
FREE

The **IMU-FI-200C Inertial Labs Inertial Measurement Unit** is the latest addition to the Inertial Labs Advanced Inertial Measurement Units (IMU) family. Revolutionary due to its compact, self-contained strapdown, advanced tactical-grade Inertial Measurement Units, that measures linear accelerations and angular rates with three-axis tactical-grade, closed loop Fiber-Optic Gyroscopes (FOG) and three-axis high-precision MEMS accelerometers in motionless and high dynamic applications.



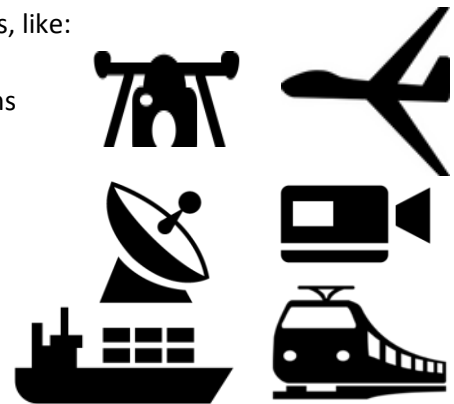
Officially classified as ECCN 7A994 (NLR - No License Required), **IMU-FI-200C** is a breakthrough, fully integrated inertial measurement solution that combines the latest closed-loop FOG and MEMS sensors technologies.

Fully calibrated, temperature compensated, mathematically aligned to an orthogonal coordinate system, the IMU contains up to 0.5 deg/hr gyroscopes and less than 2 mg bias repeatability over operational range accelerometers with very low noise and high reliability.

Continuous Built-in Test (BIT), configurable communications protocols, electromagnetic interference (EMI) protection, and flexible input power requirements make the **Inertial Labs IMU-FI-200C** easy to use in a wide range of higher order integrated system applications.

The **Inertial Labs IMU-FI-200C** models were designed for applications, like:

- ❖ Antenna and Line of Sight Stabilization Systems
- ❖ Passengers trains acceleration / deceleration and jerking systems
- ❖ Motion Reference Units (MRU)
- ❖ Motion Control Sensors (MCS)
- ❖ Gimbals, EOC/IR, platforms orientation and stabilization
- ❖ GPS-Aided Inertial Navigation Systems (INS)
- ❖ Attitude and Heading Reference Systems (AHRS)
- ❖ Land vehicles navigation and motion analysis
- ❖ Buoy or Racing Boat Motion Monitoring
- ❖ UAV & AUV/ROV navigation and control

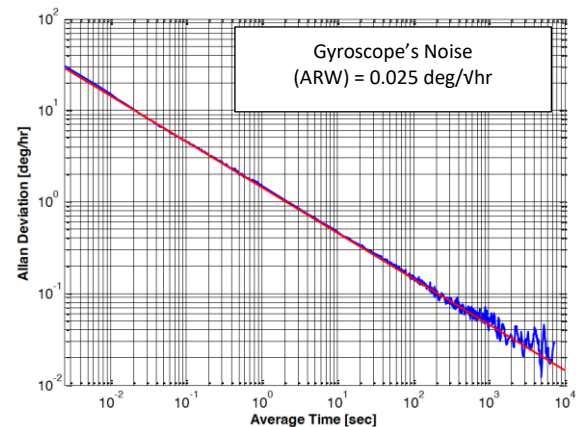
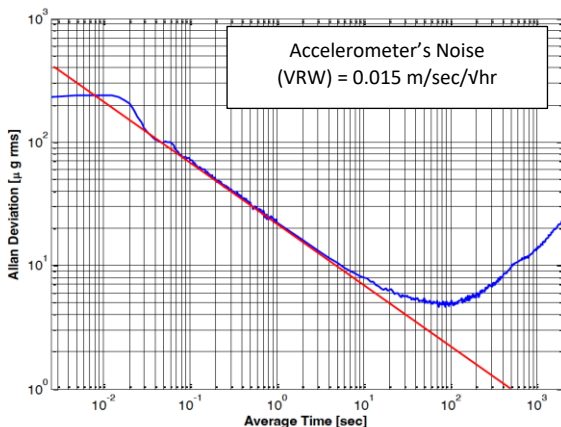


IMU-FI-200C Gyroscopes & Accelerometers Key Performance

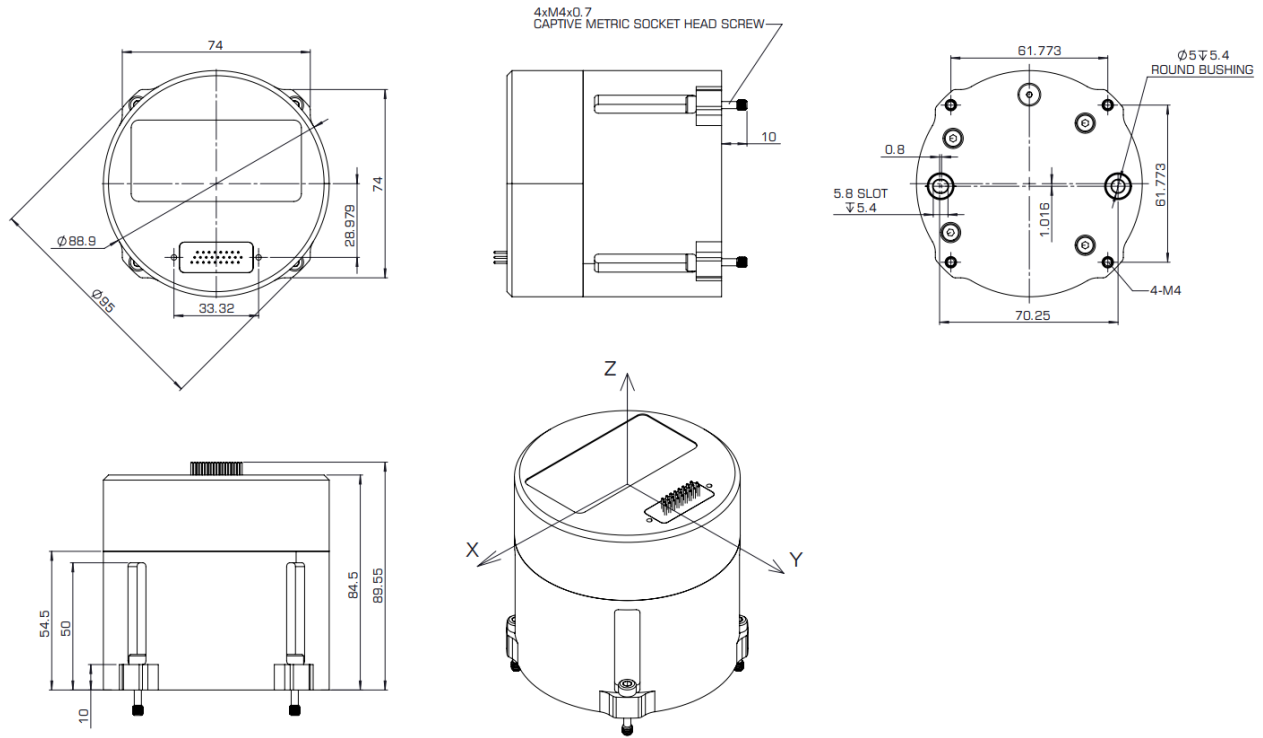
Parameter	IMU-FI-200C
GYROSCOPES	
Gyroscopes technology	Closed-loop FOG
Gyroscopes measurement range	±490 deg/sec
Gyroscopes Bias repeatability over operational temperature range	0.5 deg/hr
Gyroscopes Noise – Angular Random Walk	0.025 deg/vhr
ACCELEROMETERS	
Accelerometers technology	MEMS
Accelerometers measurement range	±10 g
Accelerometers Bias repeatability over operational temperature range	1.2 mg
Accelerometers Noise - Velocity Random Walk	0.015 m/sec/vhr

IMU-FI-200C Specifications

Parameter	Units	IMU-FI-200C
Output signals		Accelerations, Angular Rates, Delta Angle, Delta Velocity, Temperature, Synchronization
Start-up time	sec	<1
GYROSCOPES		
Units		
Technology		Closed-loop FOG
Measurement range	deg/sec	±490
Bandwidth (-3dB)	Hz	200
Data update rate	Hz	400 (1000 is optional)
Bias repeatability (over temperature range)	deg/hr	0.5
SF accuracy (over temperature range)	ppm	100
Noise. Angular Random Walk (ARW)	deg/vhr	0.025 (typical)
Non-linearity	ppm	50
Axis misalignment	mrad	0.1
ACCELEROMETERS		
Units		
Technology		MEMS
Measurement range	g	±10
Bandwidth (-3dB)	Hz	200
Data update rate	Hz	400 (1000 is optional)
Bias in-run stability (RMS, Allan Variance)	mg	0.015
Bias repeatability (over temperature range)	mg	1.2
SF accuracy (over temperature range)	ppm	300
Noise. Velocity Random Walk (VRW)	m/sec/vhr	0.015 (typical)
Non-linearity	ppm	150
Axis misalignment	mrad	0.2
ENVIRONMENT		
Units		
Mechanical shock (MIL-STD-810G)	g	40g, 11ms saw-tooth (operation) 150g, 8ms half-sine (survival)
Vibration (MIL-STD-810G)	gRMS, Hz	7.7g, 20 – 2000 Hz
Operational and storage temperature	deg C	-40 to +71
Low pressure	Pa, min	8400, 30 (55,000 feet altitude)
Humidity	%	up to 95
MTBF (G _M @+65degC, operational)	hours	55,000
Life time (operational)	years	7
Life time (storage)	years	100
ELECTRICAL		
Units		
Supply voltage	V DC	5
Power consumption	Watts	5.5 @ 5V
Output Interface	-	UART (RS-422); SDLC
Output data format	-	Binary
EMC/EMI/ESD		MIL-STD-461G
PHYSICAL		
Units		
Size	mm	D88.9 x H89.55
Weight	grams	790



IMU-FI-200C Mechanical interface



IMU-FI-200C Product Code Description

Model	Gyroscope	Accel	Calibration	Connector	Color	Version	Interface
IMU-FI-200C	G490	A10	TGA	C18	S	V1_	_.2
							_.6

Example: IMU-FI-200C-G490-A10-TGA-C18-S-V1.2

Product code details:

- IMU-FI-200C: FOG Inertial Measurement Unit
- G490: Gyroscopes measurement range = ± 490 deg/sec
- A10: Accelerometers measurement range = ± 10 g
- TGA: Gyroscopes and Accelerometers
- C18: 26-pin male, D-sub connector
- S: Color of enclosure: Silver
- V1: Version 1
- _.2 UART (RS-422) interface
- _.6 SDLC interface