InertialLabs
Attitude is Everything

IMU-FI-200T

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

ITAR FREE

The **Inertial Labs IMU-FI-200T 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 Unit, which 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.

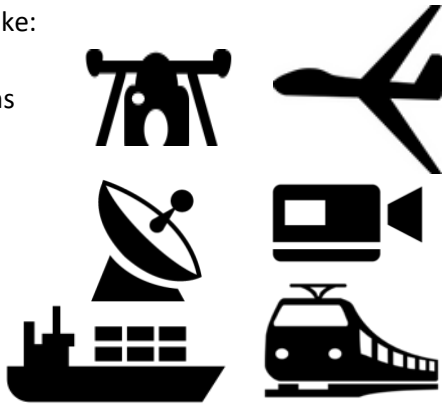
Officially classified as ECCN 7A994 (NLR - No License Required), **IMU-FI-200T** is the breakthrough, fully integrated inertial measurement solution that combines the latest closed-loop FOG and high precision MEMS sensors technologies.

Fully calibrated, temperature compensated, and mathematically aligned to an orthogonal coordinate system, the IMU contains up to 0.5 deg/hr gyroscopes and less than 1 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-200T** easy to use in a wide range of higher order integrated system applications.

The **Inertial Labs IMU-FI-200T** model was designed for applications, like:

- Antenna and Line of Sight Stabilization Systems
- Passenger's 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

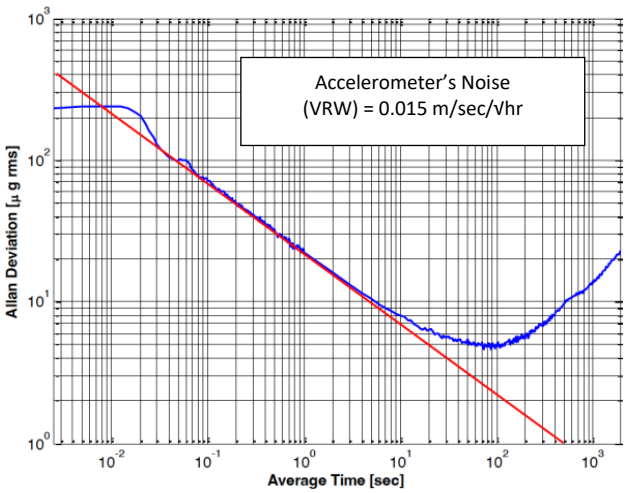


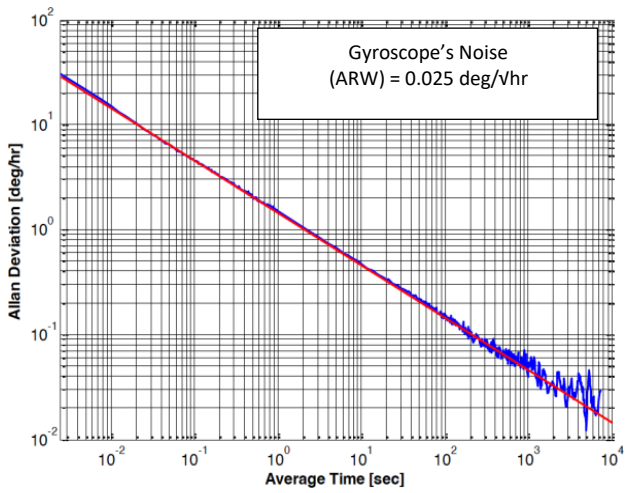
IMU-FI-200T Gyroscopes & Accelerometers Key Performance

Parameter	IMU-FI-200T
GYROSCOPES	
Gyroscopes technology	Closed-loop FOG
Gyroscopes measurement range	±490 deg/sec
Gyroscopes Bias repeatability over temp. range	0.5 deg/hr
Gyroscopes Noise – Angular Random Walk	0.025 deg/√hr
ACCELEROMETERS	
Accelerometers technology	MEMS
Accelerometers measurement range	±8 g / ±40 g
Accelerometers Bias repeatability over temp. range	0.5 mg / 1.2 mg
Accelerometers Noise - Velocity Random Walk	0.015 m/sec/√hr / 0.045 m/sec/√hr

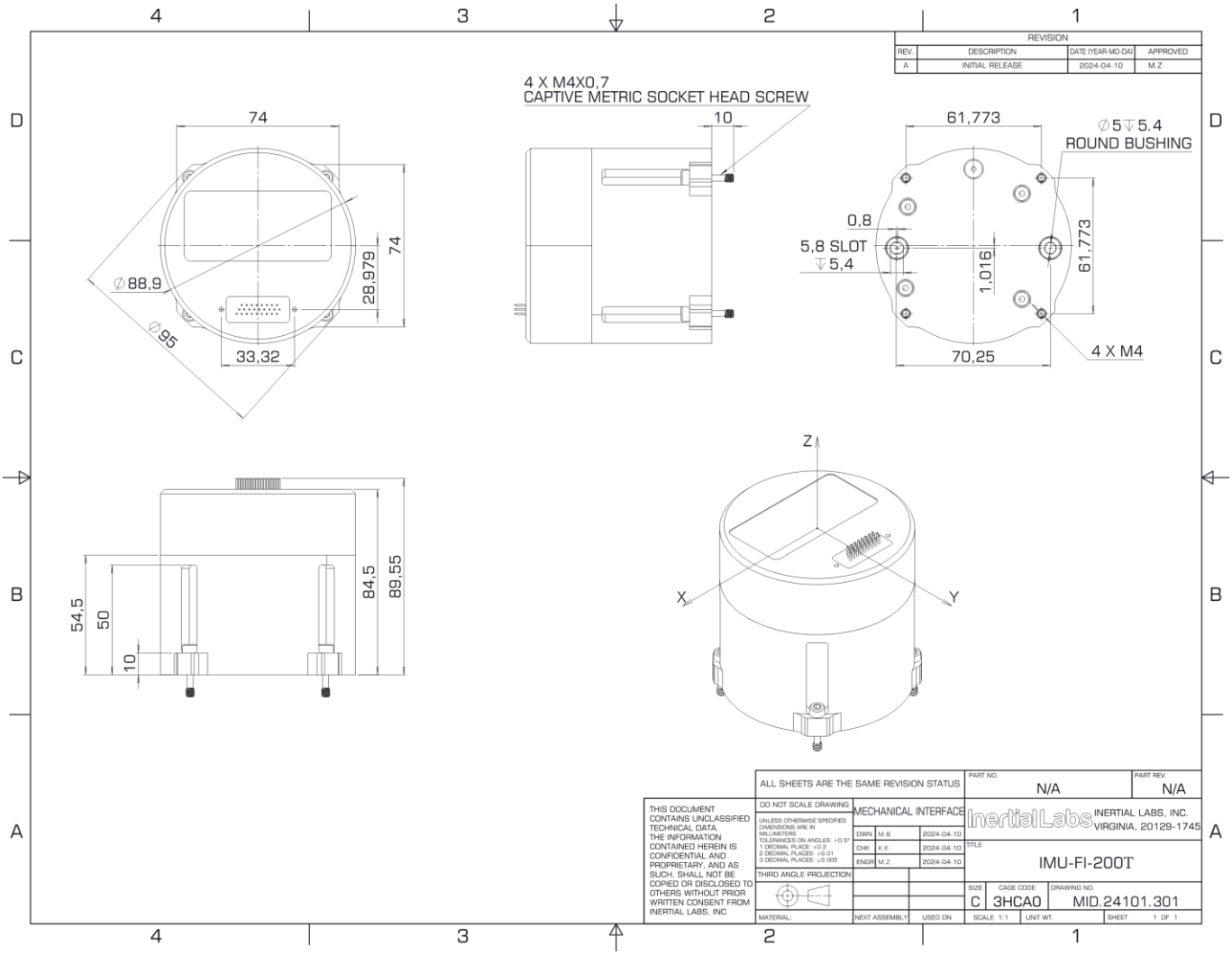
IMU-FI-200T Specifications

Parameter	Units	IMU-FI-200T	
Output signals		Accelerations, Angular Rates, Delta Angle, Delta Velocity, Temperature, Synch.	
Start-up time	sec	<1	
GYROSCOPES	**Units**	**IMU-FI-200T**	
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/√hr	0.025 (typical)	
Non-linearity	ppm	50	
Axis misalignment	mrad	0.1	
ACCELEROMETERS	**Units**	**IMU-FI-200T**	
Technology		MEMS	
Measurement range	g	±8	±40
Bandwidth (-3dB)	Hz	260	260
Data update rate	Hz	400 (1000 is optional)	400 (1000 is optional)
Bias in-run stability (RMS, Allan Variance)	mg	0.005	0.02
Bias repeatability (over temperature range)	mg	0.5	1.2
Bias one year repeatability	mg	1.0	1.5
SF accuracy (over temperature range)	ppm	150	500
Noise. Velocity Random Walk (VRW)	m/sec/√hr	0.015 (typical)	0.045 (typical)
Non-linearity	ppm	150	150
Axis misalignment	mrad	0.2	0.2
ENVIRONMENT	**Units**	**IMU-FI-200T**	
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**	**IMU-FI-200T**	
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**	**IMU-FI-200T**	
Size	mm	D88.9 x H84.5	
Weight	grams	790	





IMU-FI-200T Mechanical interface



IMU-FI-200T Product Codes Structure

Model	Gyroscope	Accel	Calibration	Connector	Color	Version	Interface
IMU-FI-200T	G490	A8	TGA	C18	S	V1	.2
		A40					.6

Product code details:

- G490: Gyroscopes dynamic range is ±490 deg/sec
- A8: Accelerometers measurement range is ±8 g
- A40: Accelerometers measurement range is ±40 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

Example: IMU-FI-200T-G490-A40-TGA-C18-S-V1.2