INERTIAL SENSORS
FOR UAVs



exail

HIGH-GRADE IMU
FOR DEMANDING UAV APPLICATIONS

Exail's ultra-compact UmiX 40 Inertial Measurement Unit (IMU), benefiting from north-seeking Fiber-Optic Gyroscopes (FOG) and vibrating quartz accelerometers, offers top performance in demanding conditions. ITAR-free, it supports both civil and defense missions, from GNSS-free navigation to precise targeting.

RELIABLE INERTIAL PERFORMANCE FOR ADVANCED UAV OPERATIONS

With high stability, north-seeking capability, and robust performance in dynamic environments, UmiX 40 is ideal for:

- Flight control and high-dynamic maneuvers
- GNSS-denied navigation and dead reckoning
- Image matching and advanced geo-referencing
- Target designation, scanning, and imaging

HIGH-END GYROSTABILIZATION FOR UAV PAYLOADS

- Ultra-low latency and high bandwidth for real-time response
- Low noise FOG gyros
- Maintains stability in challenging conditions
- Ideal for EO/IR gimbals and pods, LiDAR and designation lasers

SMART SOLUTION FOR CIVIL AND MILITARY USE

Fiber-Optic Gyroscopes	Civil version	Military version*
Dynamic	±490 °/s max	±2000 °/s max
Angular random walk	8 m°/√h	
Bandwidth	5 kHz	
Bias instability	10 m°/h 1σ	
Bias thermal residual	50 m°/h 1σ	
Scale factor thermal residual	40 ppm 1σ	

Vibrating quartz accelerometers	Civil version	Military version*
Dynamic	±30 g	±100 g
Bias instability	10 µg 1σ	
Bias thermal residual	250 µg 1σ	
Scale factor thermal residual	40 ppm 1σ	
Rectification	50 µg/g² 1σ	

UNLOCK MISSION-CRITICAL CAPABILITIES

VERSATILE IMU TECHNOLOGY
enabling a wide range of drone applications

ENHANCED RESILIENCE TO PNT THREATS
like jamming and spoofing for uninterrupted missions

HIGH-PRECISION STABILIZATION AND POINTING
for reliable onboard equipment performance

HASSLE-FREE INTEGRATION
Dedicated engineering support for a smooth system onboarding

Scan to view full technical specifications

MINI SIZE
MIGHTY PERFORMANCE

Designed for space and power-constrained UAVs, UmiX 40 delivers tactical-grade inertial performance in one of the smallest, most reliable form factors on the market.

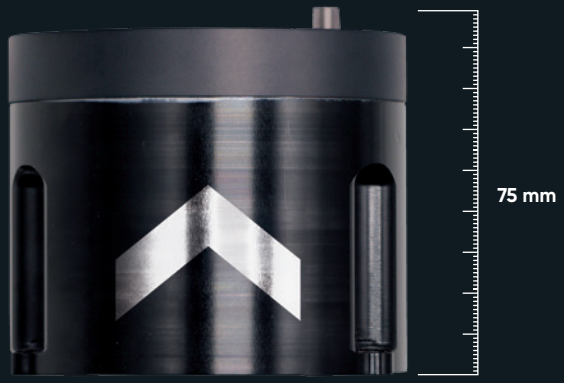
HIGH-PERFORMANCE ARCHITECTURE

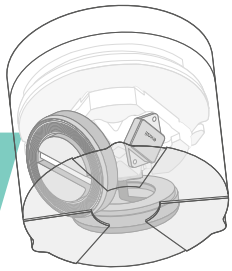
- 3 north-seeking FOG gyroscopes
- 3 vibrating beam accelerometers
- Highly accurate, low-drift acceleration measurements
- Wide dynamic range
- Navigation-grade precision
- Robust solid-state design
- High MTBF: >80,000 hrs

UAV-OPTIMIZED DESIGN

- Ultra-compact and lightweight: < 770 g
- Low power draw for extended battery life
- Rugged, dust- and humidity-resistant
- Built to withstand harsh environments
- Plug-and-play integration through simple interface and flexible mounting







WHY CHOOSE FIBER OPTIC GYROSCOPES?

1

Exceptional precision and stability

FOGs deliver highly accurate and stable orientation data, ensuring reliable navigation even in the toughest conditions.

2

Built to withstand harsh environments

FOGs are immune to magnetic interference and resistant to vibrations, making them ideal for UAVs operating in challenging environments.

3

Maintenance-free reliability

With no moving parts, FOGs offer long-lasting durability and reduced maintenance compared to traditional mechanical gyros.

4

Fast and smooth response

FOGs provide rapid, jitter-free angular rate measurements for precise and stable UAV navigation and payload control.

5

Compact design for versatile integration

Thanks to their small size and light weight, FOGs enable ultra-compact systems perfect for space-limited UAV platforms.

Learn more about Exail FOG technology

*Products subject to arms export regulations

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