NAVAL DEFENSE NAVIGATION



exail



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Exail, a global leader in naval navigation

Trusted by over 50 navies worldwide, delivering sea-proven solutions for resilient, secure, and precise maritime navigation.

Exail leads the way in integrated naval defense navigation, providing cutting-edge, sea-proven technologies that combine precision, reliability, and robust cyber resilience. These advanced capabilities protect surface vessels from spoofing and jamming threats, enable stealth autonomous navigation for submarines, and enhance environmental awareness across naval operations. By empowering naval forces with safe, resilient, and mission-critical navigation capabilities, Exail ensures superiority and success in every maritime mission.

RESILIENT NAVIGATION

PRECISE POSITIONING WITHOUT GNSS

Marins Series & Phins INS
Octans 9 & Quadrans AHRS

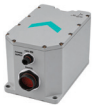
UP TO 1NM 360H



Marins Series



Phins



Octans 9



Quadrans

GNSS resilience
Full range of INS and AHRS ensuring reliable navigation under jamming or spoofing, preserving mission integrity.

Maximum mission readiness
Maintenance-free FOG technology ensuring high availability and zero operational downtime.

Unrivaled performance
Ultra-low drift < 1 NM per 360 h for tactical superiority and prolonged autonomy in GNSS-denied environments.

Total stealth & covertness
Low acoustic signature or electromagnetic emissions for covert operations.

SECURE DISTRIBUTION OF CRITICAL NAVIGATION DATA

Netans Series DDU



Netans N1



Netans N5



Netans N7

Data processing & fusion
Real-time sensor fusion and custom processing capabilities for optimal data management and asset communication.

Intelligent sensor selection & continuity
Smart sensor selection and full redundancy ensure uninterrupted, high-integrity data flow.

Reliable alignment transfer
Real-time INS-to-weapons data transfer reduces targeting errors and boosts combat efficiency.

Built-in cybersecurity
Advanced hardware safeguards threat detection, and integrity checks protect sensitive navigation data.

ASSURED PNT
THROUGH INTEGRATED NAVIGATION SOLUTIONS

Exail delivers accurate and resilient Positioning, Navigation, and Timing (PNT) through a complete, cybersecure ecosystem. Deployable across crewed and uncrewed platforms, it provides naval forces with absolute navigation superiority in surface and underwater domains.

MODULAR NAVIGATION ARCHITECTURE & SYSTEM SYNERGY

Exail solutions harness the synergy of the core navigation suite—combining INS, DDU, and WECDIS with obstacle avoidance sonars through real-time data fusion. While each component can operate independently, deploying them as a unified suite unlocks full navigation performance, offering unmatched flexibility for mission planning, upgrades, and rapid fleet deployment.

MISSION RESILIENCE FOR HIGH-INTENSITY OPERATIONS

Facing aggressive electronic warfare, GNSS spoofing, and cyber threats, Exail provides resilient PNT capabilities engineered for modern naval warfare. Embedded cybersecurity ensures continuous navigation integrity and full situational awareness, even in contested or denied domains.

View technical specs and video of Exail's naval navigation solutions

KEY BENEFITS FOR NAVAL FORCES

ADAPT TO MISSION NEEDS
through flexible system configurations

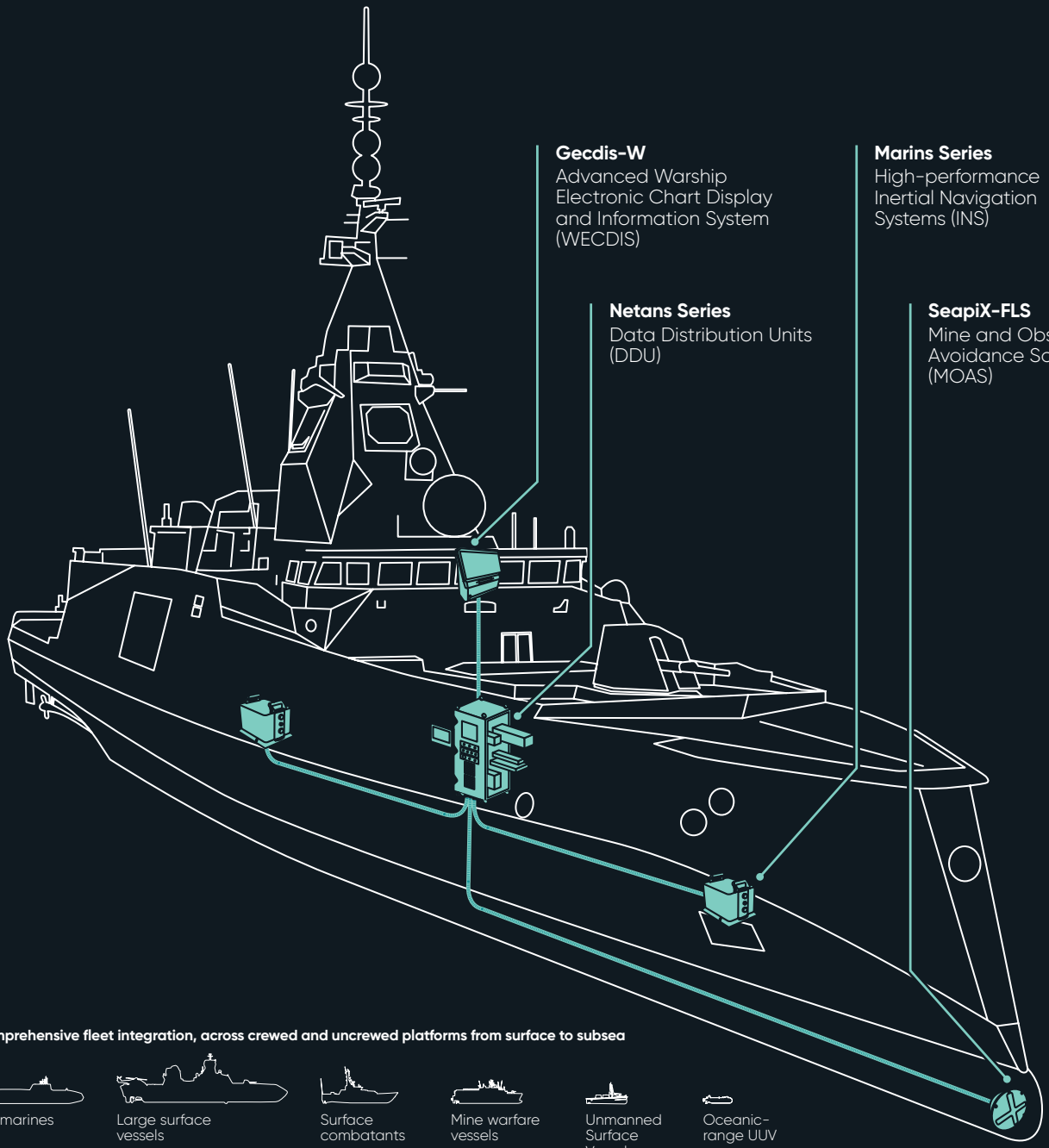
ENHANCE FLEET COORDINATION
through native system interoperability

MAXIMIZE ACCURACY
with real-time sensor fusion

MAINTAIN NAVIGATION CONTINUITY
in GNSS-contested or denied areas

ACCELERATE DEPLOYMENT
with plug-and-play modular architectures

PROTECT NAVIGATION INTEGRITY
with embedded cybersecurity features



Comprehensive fleet integration, across crewed and uncrewed platforms from surface to subsea

TACTICAL AWARENESS

EARLY DETECTION OF UNDERWATER THREATS
SeapiX Series MOAS

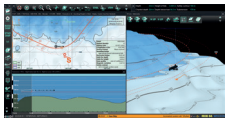


Autonomous detection & mapping
Real-time obstacle probability maps support adaptive navigation.

Flexible integration
Easily deployable on crewed/uncrewed vessels and fixed platforms for any mission profile.

3D real-time obstacle detection
Georeferenced multibeam imaging covers the full water column, from surface to seabed, for precise awareness.

COMPLETE SITUATIONAL AWARENESS AT SEA
Gecdis-W WECDIS



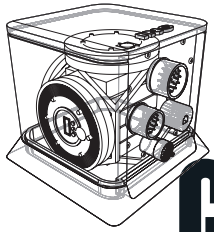
COMPLIANT STANDARDS
STANAG ED.3
COMPLIANT STANDARDS

Seamless integration
Flexible multi-platform deployment with seamless IBS, CMS, and mission-critical system interfacing.

Navigation safety
IMO type-approved ECDIS for confident decision-making, powered by sea-proven features.

Interoperability
NATO-compliant WECDIS driving seamless allied cooperation and common operational capabilities.

Future-ready
Advanced architecture built for next-generation WECDIS and the S-100 data standard.



WHY CHOOSE FIBER OPTIC GYROSCOPES?

1

Mission-critical precision

Advanced algorithms deliver high-precision heading and positioning, essential for GNSS-denied navigation and targeting.

2

Combat-ready robustness

Solid-state and maintenance-free, offering high resistance to shock, vibration, and interference in extreme environments.

3

Field-proven at sea

Deployed by 50+ navies worldwide with 500,000+ hours MTBF across surface ships, submarines, and autonomous systems.

4

Full in-house design and production

All core FOG components are manufactured in-house, ensuring value chain control, long-term supply security and continuous innovation.

A FOG-POWERED RANGE
built to match every mission profile

	 **Quadrans** AHRS	 **Octans 9** AHRS	 **Phins** INS	 **Marins M1*** INS	 **Marins M3/M5*** INS	 **Marins M7/M8*** INS	 **Marins M9/M11*** INS
Heading accuracy (seclat RMS)	0.15°	0.01°	0.01°	0.01°	0.01°	0.01°	0.01°
Roll & Pitch accuracy (RMS)	0.1°	0.01°	0.01°	0.01°	0.01°	0.01°	0.01°
Position accuracy aiding without GNSS (TRMS)	N/A	N/A	≤ 0.6NM/1h	≤ 1NM/3h	≤ 1NM/24h	≤ 1NM/96h	≤ 1NM/360h
Certifications MIL STD 810E / 461G			•	•	•	•	•

*Products subject to arms export regulations