



ELECTRONICS & DEFENSE

LAND INERTIAL NAVIGATION SYSTEMS

Highly reliable navigation and precision strikes
under any NavWar conditions

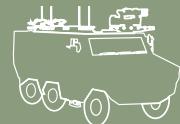


 **SAFRAN**

HIGH PRECISION FOR SUCCESSFUL MISSIONS

ALL YOUR MISSIONS
require precision
navigation & pointing,
even in GNSS* denied
environment.

VEHICLE NAVIGATION

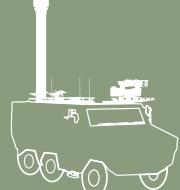


APC* / IFV*



MBT*

TARGET ACQUISITION



Forward Observer

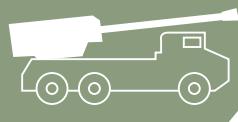


Radars

ARTILLERY POINTING



Ground-air
defense systems



Howitzers

75 YEARS OF EXPERIENCE
AS A MARKET LEADER



PERFORMANCE & RELIABILITY
AT YOUR SERVICE



TAILORED TO YOUR
REQUIREMENTS



COMBAT PROVEN



OPTIMIZED LIFE CYCLE COST



SPACE & AERONAUTICS
HERITAGE



JAMMING, SPOOFING AND MEACONING
ALGORITHMS DETECTION

* Definitions on the last page

SAFRAN INS™ PORTFOLIO: TAILORED TO YOUR MISSIONS

FOR ALL YOUR PLATFORMS

- WHEELED OR TRACKED
- HOWITZER
- MORTAR
- MILITARY VEHICLE & TRUCK
- MAIN BATTLE TANK
- LIGHT VEHICLE & TRUCK
- MOBILE RADAR
- AMPHIBIOUS VEHICLE

FOR ALL YOUR NEEDS

- POSITION
- NAVIGATION
- POINTING
- LAYING
- STABILIZATION
- FORWARD OBSERVATION

IN ALL ENVIRONMENT

- GNSS-DENIED
- SPOOFING
- JAMMING
- MEACONING

THE FURTHER YOU GO OR STRIKE, THE MORE PRECISION YOU NEED

EPSILON™ Family

GNSS* BACK-UP SYSTEM

Product	EPSILON™ ONE	EPSILON™ 10	EPSILON™ XP North Finding capacity
Heading RMS* @70° ↔ seclat	< 0.85°	< 0.85°	< 0.85°
Alignment	Aided alignment with GNSS	Aided alignment with GNSS	Autonomous alignment without GNSS Full performance < 10 min
Pitch & Roll (RMS)	0.3° (static)	0.3° (dynamic)	0.2° (dynamic)
H.Position (CEP*)	1% DT	1% DT	1% DT
GNSS-denied survival	Tens of minutes		Hours
Size	1 L		6 L
Weight	1.5 kg		6.4 kg
MTBF*	> 100,000 h		> 100,000 h
NavWar Capability	Not available		Available

GEONYX™ Family

INS* FOR HIGH PRECISION NAVIGATION & POINTING

Product	GEONYX™ SP	GEONYX™ HP/M	GEONYX™ XP	GEONYX™ XP+
Heading RMS* @70° ↔ seclat	2 mils ↔ 0.70 mils	1 mils ↔ 0.35 mils	0.9 mils ↔ 0.30 mils	< 0.50 mils ↔ < 0.20 mils
Alignment	Autonomous alignment without GNSS Full performance < 5 min	Autonomous alignment without GNSS Full performance < 5 min	Autonomous alignment without GNSS Full performance < 5 min	Autonomous alignment without GNSS Full performance < 10 min
Pitch & Roll (RMS)	0.75 mils	0.5 mils	0.35 mils	0.20 mils
H.Position (CEP*)	0.15% DT	0.1% DT	0.05% DT	0.04% DT
GNSS-denied survival		Unlimited		
Size				
Weight				
MTBF*				
NavWar Capability				

OUR REFERENCES

More than 75 different land platforms equipped worldwide



Our understanding of your requirements combined with our expertise in inertial and electro-optics solutions.



APC: Armoured Personnel Carrier - **BMS:** Battle Management System - **CEP:** Circular Error Probable - **GNSS:** Global Navigation Satellite System
HMI: Human Machine Interface - **HRG:** Hemispherical Resonator Gyro - **IFV:** Infantry Fighting Vehicle - **INS:** Inertial Navigation System - **MBT:** Main Battle Tank - **MTBF:** Mean Time Between Failure - **RCWS:** Remote Controlled Weapon Station - **RMS:** Root Mean Square Error - **RLG:** Ring Laser Gyro - **SWAP:** Size Weight & Power - **SWAP-C:** Size, Weight, Power and Cost - **TAT:** Turn Around Time.

MY E&D SERVICES

ONLINE CONTRACT MANAGEMENT

- Full online access to your repair status, contract information technical documentation

CYBER-SECURED ONLINE PLATFORM

- Data sharing and documents transfer

E-LEARNING

- Access to e-Learning modules

HELPDESK AND TICKETING

- 24/7 access to Safran Service Managers

SAFRAN ELECTRONICS & DEFENSE OFFERS SPECIAL ACCESS TO A FULL RANGE OF CUSTOMER SUPPORT SERVICES VIA AN ONLINE PORTAL.

If you have any other questions or if you would like our assistance, please contact us by email.

We look forward to hearing from you.
Your Safran Support Team.



Email: contact-defense@safrangroup.com



SafranDefense



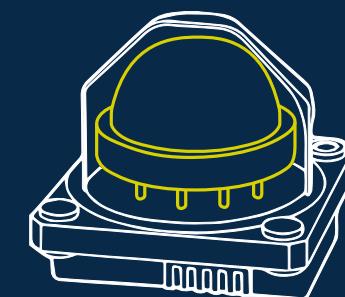
SafranElecDef



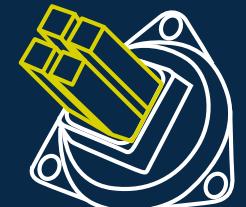
CORIOLIS GYROS: THE NEW HEART OF LAND NAVIGATION & POSITIONING

Epsilon™ and Geonyx™ are based on the resonator gyros. This technology has already proven its superiority in terms of performance, robustness, SWAP-C* and unparalleled reliability in all environments.

- Two complementary gyros exploiting the same Coriolis resonating principles



HRG CRYSTAL™
Navigation grade resonator gyroscope



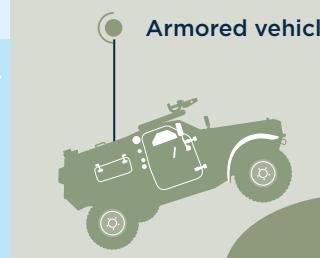
QUAPASON™
Tactical grade resonator gyroscope

*Definitions on the last page

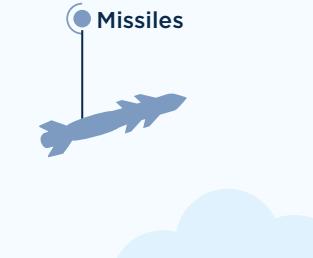
- Safran's Coriolis gyros cover any demanding applications, from tactical to navigation grade, in any environment



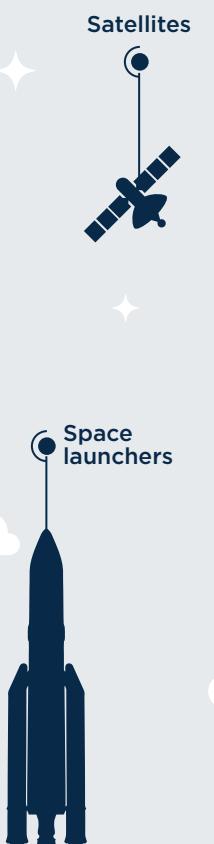
SEA & SUBSEA



LAND



AIR



SPACE

EPSILON™ FAMILY

TRUSTFUL COORDINATES UNDER ANY

With the Epsilon™ family, Safran offers long lasting navigation performance INS*/GNSS* hybrid land navigation systems. Even in GNSS*-denied environment, Epsilon™ provides accurate position and heading for hours thanks to the outstanding inertial performance of the Quapason™. Epsilon™ can also be integrated with small caliber guns like RCWS* to provide precision pointing.

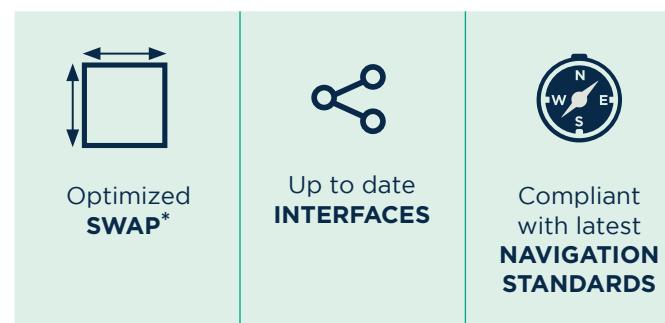
As a full inertial navigation system, Epsilon™ systems are insensitive to magnetic disturbances, providing higher accuracy and easier vehicle integration. Highly reliable and fully interchangeable, the Epsilon™ family offers the most cost-effective navigation solutions for any vehicle platform.

EPSILON™

Most compact & life-cycle cost effective
Northfinding and/or GNSS back-up system



Long-lasting
navigation
performances



GNSS (embedded or external)
Environnement MIL-STD-810

CANBUS
Ethernet
RS-422
Electrical I/F
MIL-STD-1275

EMC
MIL-STD-461



Connectable
to any BMS*



Gyrocompass
capacity



Small caliber
RCWS* pointing

GEONYX™ FAMILY

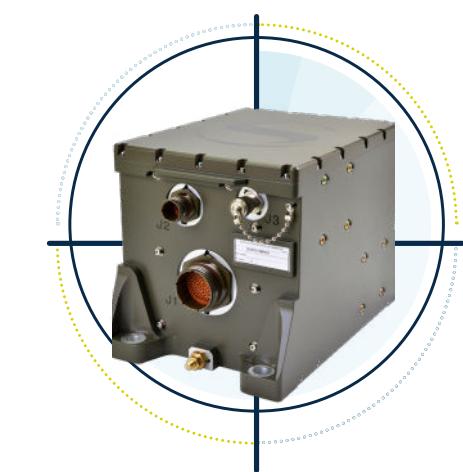
RELIABLE STRIKES UNDER ANY CONDITIONS

Integrating the HRG* Crystal™, Geonyx™ offers a real breakthrough in the INS navigation grade market in terms of:

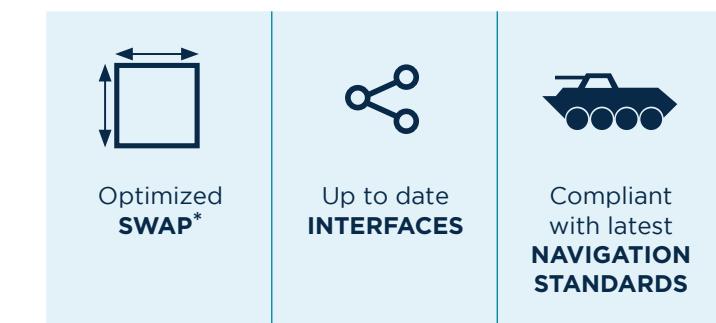
- **Operational efficiency:** Geonyx™ pointing accuracy is first-of-class under the harshest conditions and offers the market's shortest alignment time in any configuration (with or without hybridization).
- **Flexible systems integration:** Geonyx™ is the most compact INS for its class of performance and can be mounted on any orientation on vehicles, turrets and artillery weapons.
- **Robustness and reliability:** being hard-mounted, Geonyx™ withstands high shocks of artillery guns, without the need of external support. Moreover, Safran has extended its INS lifetime by integrating the most reliable gyroscope of the market, the HRG Crystal™.
- **PNT resilience:** Thanks to the new NavWar Option, Geonyx™ is now capable to detect any threat on GPS signal reception (jamming, spoofing and meaconing) and automatically stops GPS hybridization when necessary.

GEONYX™

High performance & ultra effective life-cycle cost
Inertial Navigation System



Pointing
accuracy
< 0.5 mils



EMBEDDED GNSS (external GNSS possible)
Environnement MIL-STD-810

CANBUS
Ethernet
RS-422
Electrical I/F
MIL-STD-1275

EMC
MIL-STD-461



Quick & flexible
alignment



Hard-mounted
on guns



Space & aeronautics
heritage



Gyrocompass
capacity



Jamming, Spoofing
and Mecaoning
Algorithms Detection

POWERED BY TRUST

Scan for the website



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