LAND INERTIAL NAVIGATION SYSTEMS

Highly reliable navigation and precision strikes under any conditions

SAFRAN

HIGH PRECISION
FOR SUCCESSFUL MISSIONS

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

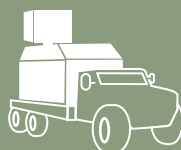**VEHICLE NAVIGATION**

APC* / IFV*   MBT*
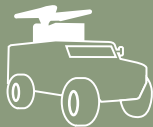
TARGET ACQUISITION
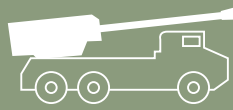
Forward Observer   Radars

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

ANTI SPOOFING CAPACITY

Definitions on the last page

SAFRAN INS[(1)] 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

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

EPSILON™ Family
GNSS* BACK-UP SYSTEM

GEONYX™ Family
INS* FOR HIGH PRECISION NAVIGATION & POINTING

Product	EPSILON™ ONE	EPSILON™ 10	EPSILON™ XP North Finding capacity	GEONYX™ One	GEONYX™ SP	GEONYX™ HP/M	GEONYX™ XP	GEONYX™ XP+
Heading RMS* @70° ⇔ seclat	< 0.85°	< 0.85°	< 0.85°	4 mils ⇔ 1.40 mils	2 mils ⇔ 0.70 mils	1 mils ⇔ 0.35 mils	0.9 mils ⇔ 0.30 mils	< 0.50 mils ⇔ < 0.20 mils
Alignment	Aided alignment with GNSS	Aided alignment with GNSS	Autonomous alignment without GNSS Full performance < 10 min	Autonomous alignment without GNSS Full performance < 10 min	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)	0.3° (static)	0.3° (dynamic)	0.2° (dynamic)	1 mils	0.75 mils	0.5 mils	0.35 mils	0.20 mils
H.Position (CEP*)	1% DT	1% DT	1% DT	0.30% DT	0.15% DT	0.1% DT	0.05% DT	0.04% DT
GNSS-denied survival	Tens of minutes		Hours	Unlimited				
Size	1 L			6 L				
Weight	1.5 kg			6.4 kg				
MTBF*	> 100,000 h			> 100,000 h				

* Definitions on the last page

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
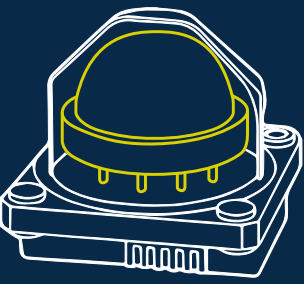
HRG CRYSTAL™ Navigation grade resonator gyroscope

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
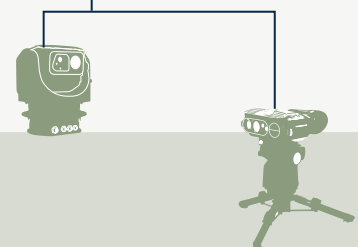
- Satellites
- Military and paramilitary ships
- Surveillance & Targeting systems
- Aircrafts & helicopters
- Merchant ships
- Space launchers
- Military submarine
- Armored vehicles
- Missiles
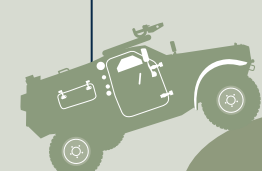
SEA & SUBSEA **LAND** **AIR** **SPACE**

EPSILON™ FAMILY

TRUSTFUL COORDINATES UNDER ANY CONDITIONS

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.

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:** Safran offers the latest resilient Positioning, Navigation and Timing (PNT) solutions for military forces, especially in GNSS-denied, spoofing or jamming environment.

EPSILON™

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

- Long-lasting navigation performances
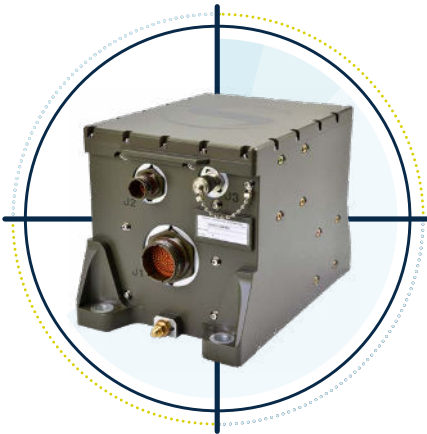- Connectable to any BMS*
- Gyrocompass capacity
- Small caliber RCWS* pointing

Optimized **SWAP***	Up to date **INTERFACES**	Compliant with latest **NAVIGATION STANDARDS**
Dimensions (mm) 110 x 110 x 83	GNSS (embedded or external)	Environnement MIL-STD-810
Weight < 1.5 kg	CANBUS Ethernet RS-422	Electrical I/F MIL-STD-1275
Consumption < 13 W		
Reliability MTBF* > 100,000 h		EMC MIL-STD-461

GEONYX™

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

- Pointing accuracy < 0.5 mils
- Quick & flexible alignment
- Hard-mounted on guns
- Space & aeronautics heritage
- Gyrocompass capacity
- Anti spoofing capacity

Optimized **SWAP***	Up to date **INTERFACES**	Compliant with latest **NAVIGATION STANDARDS**
Dimensions (mm) 205/245 x 158 x 169	GNSS Embedded (external GNSS possible)	Environnement MIL-STD-810
Weight 6.4 kg	CANBUS Ethernet RS-422	Electrical I/F MIL-STD-1275
Consumption < 17 W		
Reliability MTBF* > 100,000 h		EMC MIL-STD-461

*Definitions on the last page

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MY E&D SERVICES

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

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
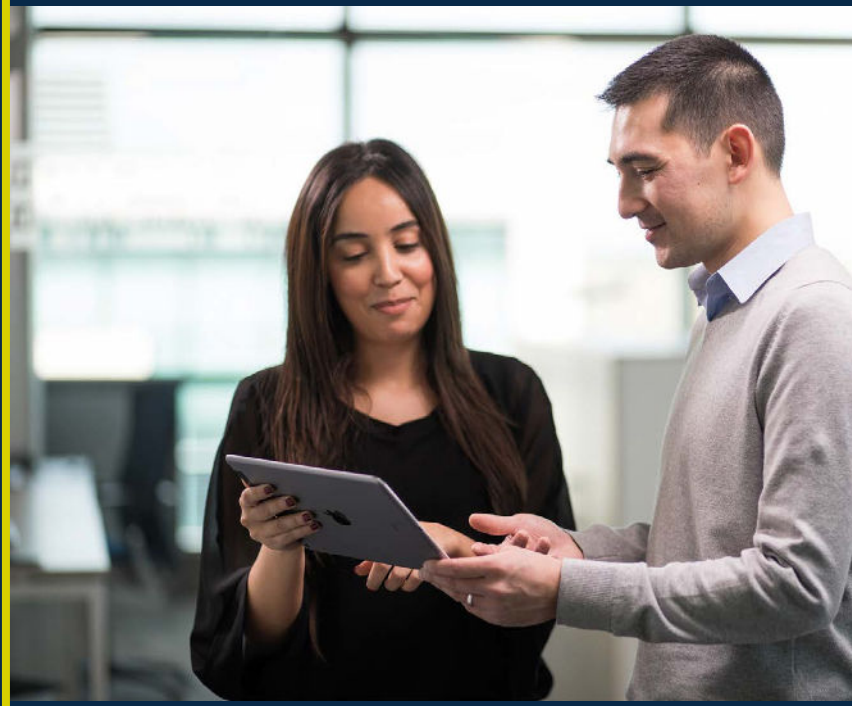
HELPDESK AND TICKETING

> 24/7 access to Safran Service Managers

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**

in **SafranDefense**

SafranElecDef

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.

POWERED BY TRUST

Scan for the website

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