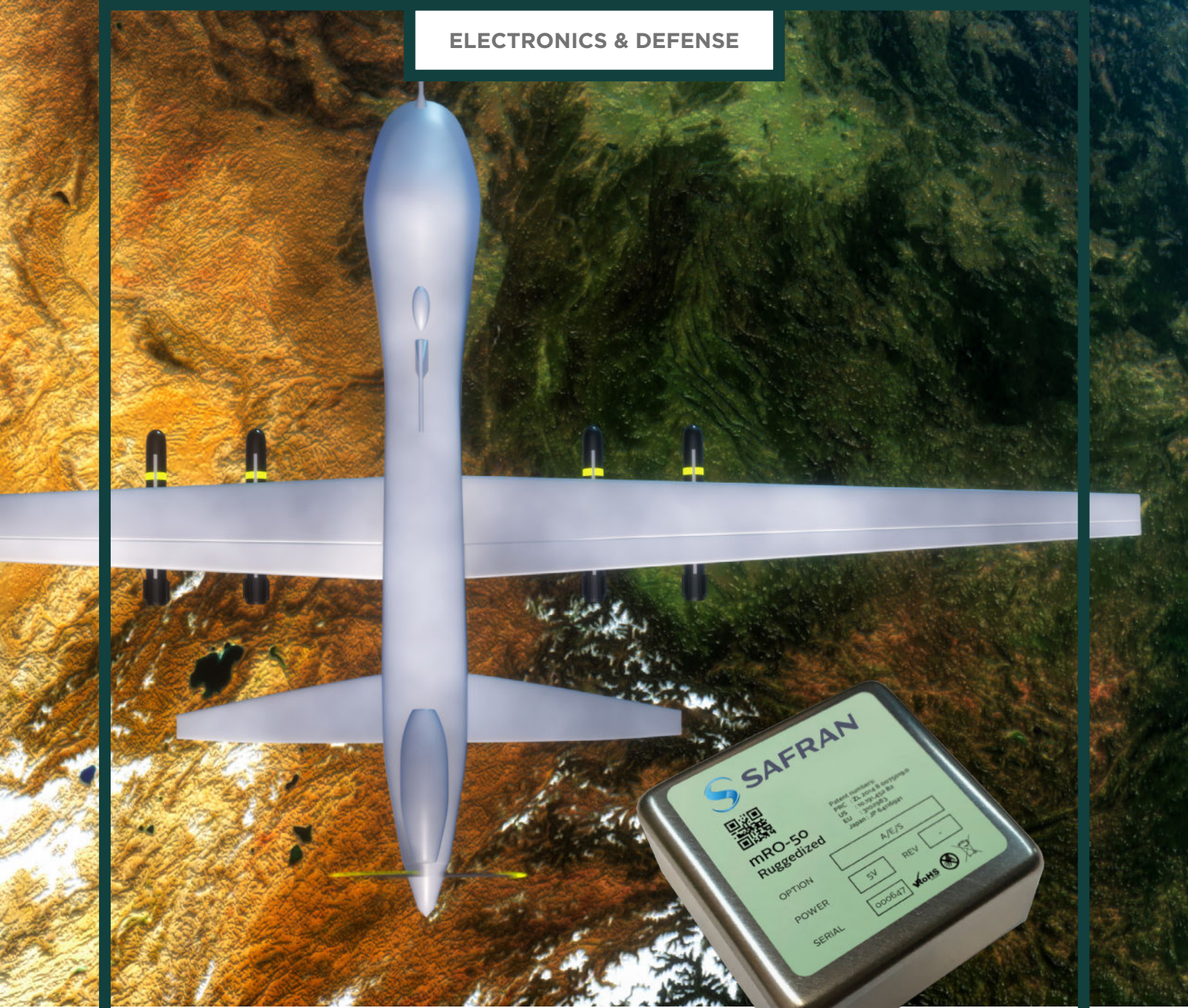


ELECTRONICS & DEFENSE



# MRO-50 RUGGEDIZED

DESIGNED FOR DEFENSE APPLICATIONS



# Safran mRO-50 Ruggedized Designed for Defense Applications



The mRO-50 Ruggedized is Safran's new low SWaP-C Miniaturized Rb Oscillator, specifically designed to meet core requirements for military airborne, ground, and mobile radio communications applications. It provides better holdover and higher stability in the same volume as a standard OCXO oscillator but with much lower power consumption. It can be a drop-in replacement for most applications.

## Fast, accurate GNSS lock for positioning data

Military GNSS-based systems use very long pseudo random codes for signal recognition. These codes prevent civilian GNSS devices from detecting military codes and their positioning data. The disadvantage of lengthy codes is the amount of time necessary for military systems to decrypt them (up to two minutes).

With the new mRO-50 Ruggedized technology, detection time can be reduced to second.

## Accurate timing and synchronization for radio transmission

Most modern radios operate by transmitting data in small packets. If many users in a group such as an infantry platoon are communicating, differing times are allocated to the radios to allow transmission on the same frequency (TDMA). The data packets have guard bands that protect individual packets from overlapping. This timing feature ensures communications, even if all of the radios are not synchronized.

With the new mRO-50 Ruggedized technology, guard bands will be reduced and thus allow at least twice the level of information to be transmitted.





## Precise time stamping, inertial navigation, and waveform synchronization for UAVs

UAV sensor payloads typically use a clock synchronized to GNSS. When that signal is lost, the mRO-50 Ruggedized provides a “holdover” function to maintain precision for extended periods of GNSS denial.

UAVs also rely on Inertial Navigation Systems (INS) in the absence of GNSS. The high stability of the atomic clock with mRO-50 Ruggedized as the INS time base reduces the time integration error drift during extended GNSS outages.

Accurate clocks are also needed in UAV communications: high-density encrypted waveforms have been employed to transmit and receive UAVs control data as their sensor payloads have advanced from still photos to video, and to video integrated with infrared.

The mRO-50 Ruggedized technology enables the constant synchronization and stabilization of those waveforms.



AEROSPACE

- GNSS operation through interference
- Low Earth Orbit satellite missions



MILITARY

- Military communication systems
- Key Infrastructure Emergency Vehicles
- Radars
- Aircraft and UAVs



COMMERCIAL

- Secured telecom
- Underwater geological applications
- Autonomous cars
- Aircrafts

## Key features

- One-day holdover below 1Qs
- Wide-ranging operating temperature of -40° to +80°C
- High accuracy and stability atomic frequency clock
- Low SWaP-C (Size, Weight, Power and Cost)
- Enhanced MAC (Miniature Atomic Clock) technology
- Frequency Stability: ADEV : 1s < 4E-11 (Option S)
- Cell lifetime/MTBF: 10 years / 155860 hours at +25°C
- Aging (After 30 days): Per day < (option A) 5E-12 / day

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[safran-navigation-timing.com](https://safran-navigation-timing.com)



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