



News



## Safeguarding land navigation from GNSS disruptions

In the challenging landscape of modern land defense environments, Exail's Advans Series inertial navigation systems (INS) present a compelling solution to enhance land forces' navigation. By eliminating the risks associated with GNSS disruptions, these state-of-the-art INS empower military units to navigate with confidence, maintain operational tempo, and safeguard their troops' safety.

### Modern conflicts, modern threats

Modern conflicts are characterized by a dangerous duality. On one hand, contemporary equipment is becoming increasingly technologically advanced, with a growing emphasis on network-based interconnectivity. This is particularly evident in blue force tracking and collaborative combat, where transmitting one's own location and target designation via the combat network is crucial for maintaining operational tempo and preventing fire incidents against its own troops.

On the other hand, electronic warfare is playing an increasingly significant role on the battlefield, leading to complete disruptions of the GNSS signal, which includes systems like GPS and Galileo, over large areas. This disruption, which has become commonplace in conflicts between peer or near-peer nations, comes mainly into two forms: GNSS jamming, which renders the signal unavailable, and GNSS spoofing, which has the potential to mislead unsuspecting GNSS-based navigation devices and guide them to undesirable locations.

Relying solely on the GNSS signal for real-time positioning is therefore hazardous. Entire military units are at risk of losing track of their position, forcing them to rely on outdated navigation methods. These methods not only require additional cognitive effort from operators who are already under critical workload, but they are also less accurate and prone to human errors. As a result, the operational tempo and the effectiveness against the enemy are degraded, while the vulnerability of friend troops reaches unacceptable levels.

Exail's Advans Series range of inertial navigation systems (INS) addresses the risks posed by jamming and spoofing without resorting to such degraded methods. The Advans Series INS does not rely on any external signals to generate navigational data, making it immune to jamming and spoofing. This guarantees that the vehicle and its crew remain on a safe path and are aware of their location at all times.

### Using an INS to preserve critical navigation

The Advans Series consists of three different INS models, each offering varying levels of performance while ensuring accurate positioning in all environments, with or without GNSS. Advans Ursa represents a departure from traditional tactical navigation concepts by providing complete independence from GNSS. Unlike devices reliant on GNSS, Advans Ursa can autonomously align itself and maintain navigation without any time limitations. Its limited drift can be easily corrected by repositioning the INS using a reference point on the map. With its cost-effectiveness, Advans Ursa is an ideal solution for equipping fleets of several hundred vehicles. Advans Lyra follows with even higher performance in inertial navigation, while Advans Vega represents the top-grade INS in the range. Advans Vega offers navigation performance compatible with high-value capabilities such as Main Battle Tanks (MBTs) or artillery launchers with first-round strike capabilities.

In addition to their navigation capabilities, the Advans Series excels in accurate pointing, catering to a range of requirements from short-range targeting in collaborative combat to long-range capabilities such as howitzers, air defense systems, and counter-battery radars. The Advans Series is highly reliable, designed to withstand the harshest environments. They can operate within a wide temperature range, ensuring functionality regardless of the operation's location. These INS units can endure high stresses, including strong shocks and intense vibrations, commonly experienced by land platforms during combat. Furthermore, all critical subcomponents, from the fiber optic gyroscopes to the accelerometers, are

manufactured by Exail in France. Consequently, the Advans Series does not contain ITAR/EAR-restricted components and is solely subject to French export control.

**About Exail**

Exail is a leading high-tech industrial company specializing in cutting-edge robotics, maritime, navigation, aerospace and photonics technologies. With a strong entrepreneurial culture, Exail delivers unrivaled performance, reliability and safety to its civil and defense clients operating in severe environments. From the deep sea to outer space, Exail expands their capabilities with a full range of robust in-house manufactured components, products and systems. Employing a workforce of 1800 people worldwide, the company benefits from a global footprint and conducts its business in over 80 countries. Exail was formed by ECA Group and iXblue joining forces in 2022. It is a subsidiary of Exail Technologies, a family-owned company specialized in high-technology.

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