# R-Nav

# Anti jamming

## Makes your navigation resilient for safe and secure operations


- High GNSS interference & jamming signal rejection
- Add-on fitting the smallest boats to biggest ships
- Secure GNSS navigation optimizing route planning 3 levels of awareness indicators
- Easy integration with any GPS receiver

Ships and USVs operate using GNSS as the primary source for navigation and embed mission equipment requiring GNSS. Intentional jamming or unintentional interference can jeopardize your mission with critical impacts (loss of control, mission aborted, loss of communication or range reduced) due to external signals that may overlap with satellite signals. With no protection.

R-Nav GNSS Antijamming will protect the navigation or communication system against jammers, will increase the operational range in case of jamming and will provide indicators allowing the operator to redefine the mission.

## Protect and alert during operations

The R-Nav GNSS Antijamming add-on, dedicated to all ground or naval vehicles, rejects GPS/GNSS jamming signals, protecting your navigation. The easiest integration combined with the high jamming resistance and the enhanced jamming indicators will secure carrier operations and efficiency. The level of interference detected is available, enabling the operator to know the threat level intensity (low to high).

R-Nav GNSS Antijamming enables the jammer's range of influence to be reduced by a factor of 10.

| Jammer Power | Harmful distance without RNAJ | Harmful distance with RNAJ* | Operational gain of navigation |
|---|---|---|---|
| **100 mW** | 5 km | 0,5 km | 4,5 km |
| **1 W** | 50 km | 5 km | 45km |
| **100 W** | 500 km | 50 km | 450 km |

**RNAJ = R-Nav Anti jamming*

GACI Technologies
5 avenue du Québec
91 140 Villebon-sur-Yvette, France
Phone : +33 (0) 1 69 07 16 86
Contact : sales@gaci.fr

## Technology for High Performance

Thanks to Thales expertise in GNSS antijamming technology for bigger platforms, Controlled Radiation Pattern Antenna (CRPA) for Helicopter/Combat Aircraft and new Radio Frequency technology. The GACI's R-NAV GNSS Antijamming solution ensures best STAP (Space Time Adaptive Processing) algorithm performance in miniaturized hardware.

The CRPA is consider the best interference protection for GNSS receivers against interference and jamming. The antenna array and the Associated Electronic Unit (AEU) perform a destructive combination of the interfering signals received, enhancing the availability of GNSS-based navigation systems.

The antijamming process is updated every millisecond to fit with the dynamic environment and fast-moving jammers, even protecting your drone against non-static jammers.

## Fits the maritime environments

Designed to fit very small boats and USVs to the biggest ships thanks to waterproofness and shocks resistant, the add-on integrates the Antenna Electronic Unit (AEU), and antennas with the associated RF cables.

## Features

- Provides CW, NB, WB jammer immunity with rejection level of 20dB
- Jamming situational awareness indicator
- Optimized weight, size and ruggedization for "on-the-desk" integration
- Support of L1/E1 GPS C/A and GALILEO OS signals standard with RF bandwidth up to 16MHz
- Fully digital Space Time Adaptive Processing (STAP) technique embedded

| AEU Features | |
|---|---|
| **Size** | 205 x 76 x 76 mm (w/o connectors) |
| **Weight** | 600 g |
| **Power** | 3 W |
| **Power Supply Voltage** | 12 $V_{DC}$ (12V-36V) |
| **Interfaces** | Data: RS422<br>RF: 2 RX and 1 TX |
| **Band** | L1/E1 band: 1575.42 ± 8 MHz |
| **Operating Temperature** | -15°C to +50°C |
| **Sealing** | IP 67 |

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