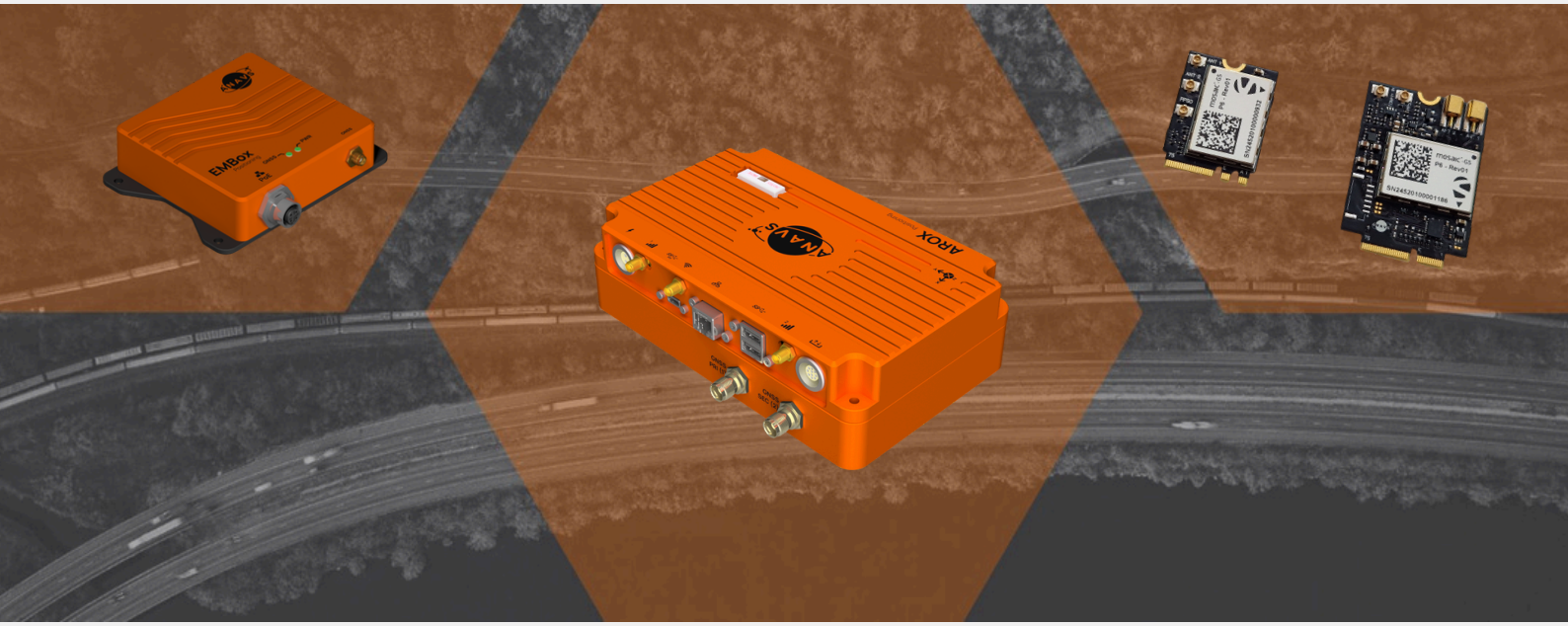
Advanced Navigation Solutions

INNOVATION TO THE POINT

ANavS - Newsletter - September 2025



From Bavaria to Mars – ANavS® provides navigation technology for every mission

In this newsletter, we show how versatile and powerful modern navigation ‘Made in Germany’ can be:

New at ANavS®: The EMBox
Our compact RTK and heading solution with Septentrio MOSAIC-X5 or MOSAIC-H impresses with its precision, robustness and easy integration – perfect for dynamic and static applications such as surveying, marine systems, or stationary platforms.

Pre-order now: M.2 G5 GNSS Cards
With L5 signal support, the new GNSS module sets new standards in terms of accuracy and reliability in it’s class. Pre-orders are now open – the first deliveries will be made from the end of October 2025.

Mars mission in Bavaria:
As part of the VaMEx-3 research project, we were able to use our technology in a realistic Mars field test at the Langenaltheim quarry. Two autonomous rovers – controlled by ANavS® systems with intelligent sensor fusion from GNSS, lidar, camera and AI – searched for traces of extraterrestrial life there. A vision that is gradually becoming reality.

Enjoy reading!

ANavS EMBox – Compact RTK and Heading System with PoE

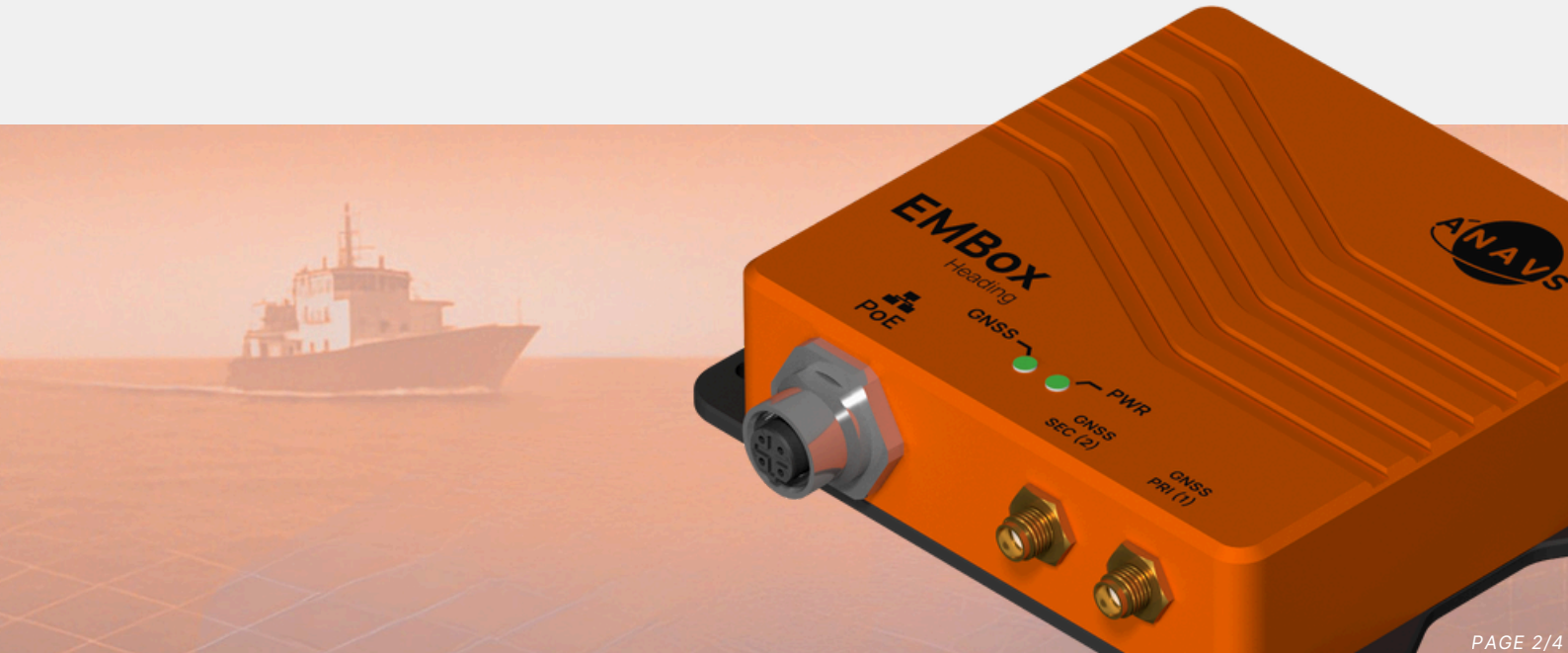
The new ANavS EMBox is a compact and robust system for high-precision GNSS RTK and heading applications.

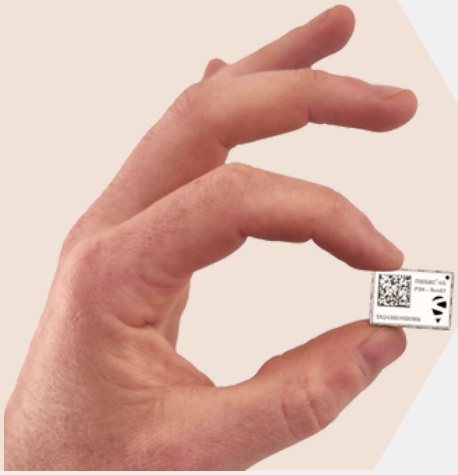
At its core, the Septentrio MOSAIC-X5 or MOSAIC-H chipset enables RTK and dual-antenna operation for highly accurate position, heading, pitch, and roll determination – perfect for dynamic and static (heading with H-variant) applications such as surveying, marine systems, or stationary platforms.

Key Features:

- **High Accuracy**: Position accuracy of 1cm RMS and Heading accuracy down to 0.08° RMS (with 1.8 m antenna spacing).
- **Precise Timing:** PTP server and PPS output with 5 ns accuracy.
- **Easy Integration:** Ethernet communication with PoE power supply.
- **Industrial-Grade:** CE and RoHS certified, vibration- and temperature-resistant according to MIL-STD-810G (–40 °C to +85 °C).
- **Reliable:** MTBF of approx. 128,000 hours.
- **Export-Friendly**: Classification EAR99 – no export license required for most countries.
- **Total dimensions:** 109 mm x 119 mm x 29 mm high

With its durable aluminum housing, the EMBox meets IP67 protection standards, making it suitable for harsh outdoor environments.





M.2 G5 GNSS Cards

The M.2 GNSS Card G5 is based on the Mosaic-G5 chipset and is available in several variants. It is designed for direct integration into embedded systems such as industrial PCs, drones, robotics platforms or IoT devices.

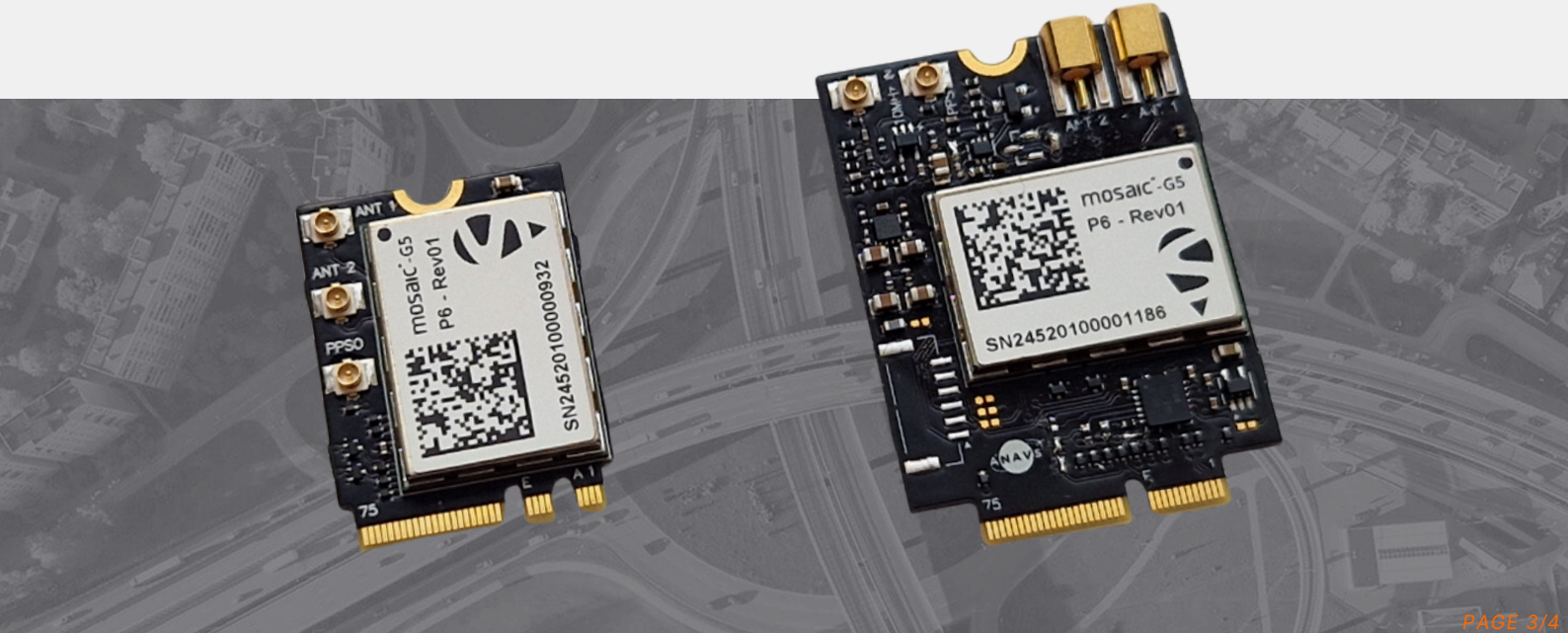
This new chipset complements and enhances our existing portfolio of GNSS receiver cards.

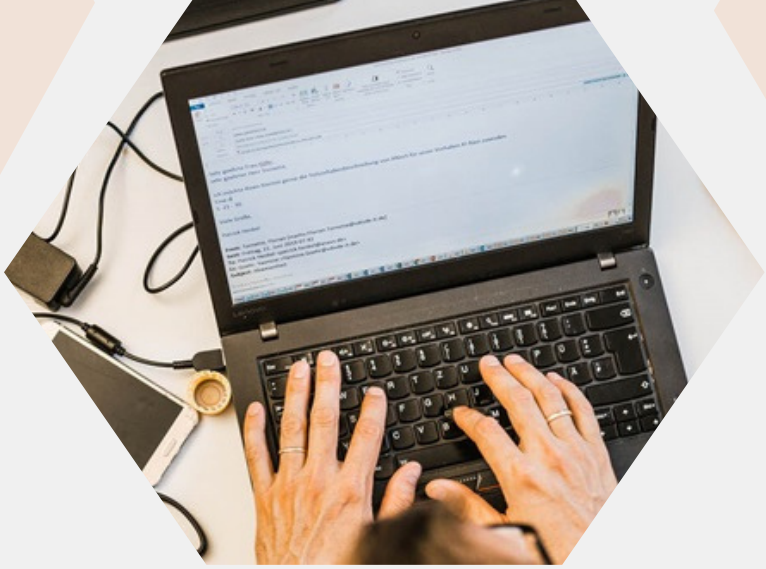
- **Ultra-compact & powerful:** GNSS receiver module in M.2 format, ideal for space- and energy-sensitive applications.
- **High-precision positioning:** Provides RTK with centimeter accuracy via quad-frequency and supports multi-constellation tracking.
- **Raw data & heading function**: Includes Galileo High Accuracy Service (HAS) – full raw data and precise heading functionality are available.
- **Energy-efficient & easy to integrate**: Especially suitable for IoT, robotics, and drones. Optimized for automated production processes.
- **Robust & reliable**: Based on the Septentrio Mosaic-G5 P3™ chipset with GNSS+ technology – high resilience and stable performance even under challenging conditions.

Two variants for different needs:

- **G5 SMART:** For embedded PCs (e.g., Nvidia Jetson), open-source, extremely compact.
- **G5 PRO:** With high-quality MMCX antenna connectors, additional UART and timing interfaces and higher antenna supply voltage.

More Information to M.2 Mosaic G5 SMART and M.2 MOSAIC G5 PRO





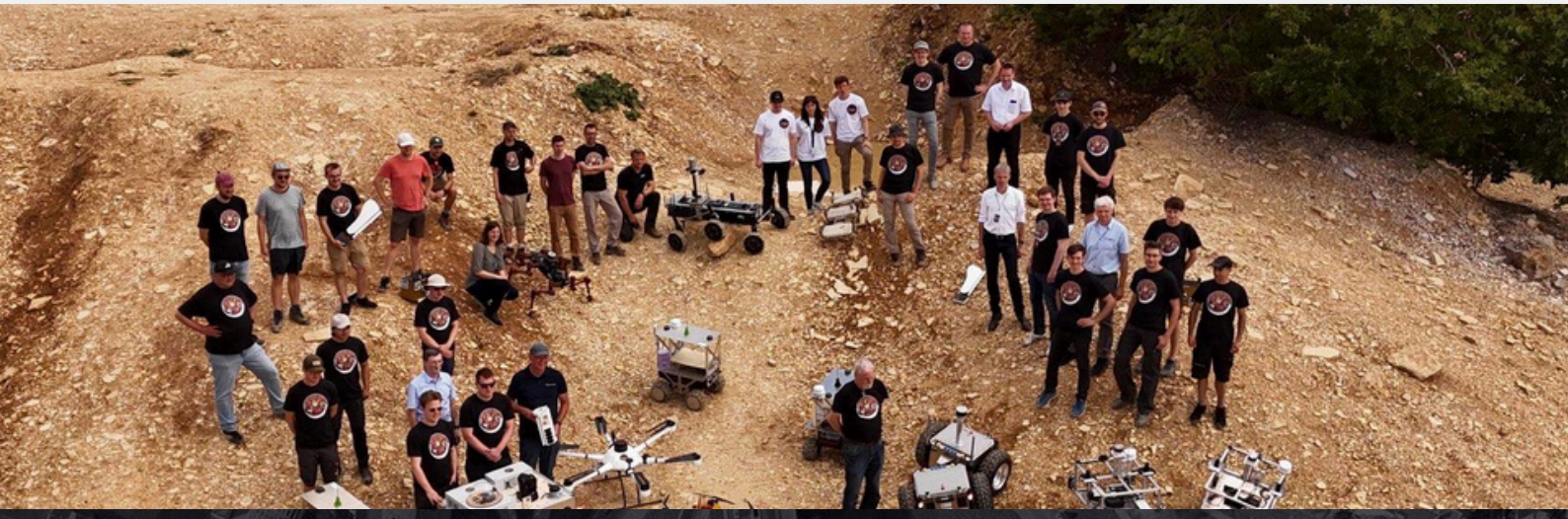
Mars mission made in Germany – with navigation from ANavS.

As part of the VaMEx-3 research project, German scientists and engineers spent three weeks testing a Mars mission – in the middle of Bavaria, in the Langenaltheim quarry. Also involved: The Artemis and Crex ground robots – and technology from ANavS.

Our task
We are developing visual (camera-based) navigation for the two rovers – including highly accurate and fail-safe position and location determination.

How we do it
- Fusion of GNSS RTK/PPP, LIDAR, inertial sensors and camera SLAM.
- Use of artificial intelligence for reliable orientation, even in GNSS-free environments.
- Development of an autonomous system that can operate within a robot swarm.

Project goal
An intelligent robot swarm will search for traces of extraterrestrial life on Mars – and we are providing the navigation technology to make this possible.
We are proud to be part of this ambitious research project and to help shape the future of extraterrestrial mobility.



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