

VERSATILE GNSS RECEIVERS FOR INDUSTRIAL APPLICATIONS

Septentrio: From GPS to GNSS

Septentrio has from its inception embraced new possibilities in satellite navigation and offers satellite navigation receivers for professional markets, while preparing users for the possibilities of Global Navigation Satellite Systems (GNSS) of tomorrow. These are exciting times in satellite navigation. While the abolition of selective availability for GPS has fuelled a growth in use of satellite navigation technology in both professional and consumer applications, new satellite navigation signals and systems are reshaping the satellite navigation landscape. This promises further performance enhancements and new and expanded applications, whilst the past decade has seen a number of important changes: technological evolution in chip technology, signal and digital processing, miniaturisation and portability. There has also been policy evolution in the official mission and management of GPS, including the switching off of selective availability, in the European vision of a European but global satellite navigation system, in the fall and announced revival of Glonass. And, most of all, there has been market evolution in the massive uptake of portable devices and reliance of consumers and professionals alike on communication and information, including positional information. Septentrio firmly believes in the opportunities this creates and turns these opportunities into reality for industrial users.

A New Millennium

Septentrio was founded at the beginning of 2000 in Leuven as a spin-off from IMEC, Europe's leading independent research centre in the field of micro- and nano-electronics, nano-technology, micro-electronic design methods and technologies for ICT systems. After several years work on GPS ASIC technology, a team of seven people felt it was ready for commercial launch. They embarked on a venture in the new millennium to become a unique player in Europe and to build and supply GPS receivers for high-precision industrial applications while playing a pioneering role in the development of Europe's own satellite navigation system, Galileo.

European Player

Today Septentrio is a multidisciplinary team of over fifty GNSS engineers and professionals spanning the whole range of capabilities to conceive, design, build and support high-precision GNSS receivers. The team includes RF specialists, (digital) ASIC designers, analogue and digital electronics design engineers, signal-processing and positioning-algorithm experts, inertial system integration experts, embedded software and graphical user-interface engineers, as well as GNSS application support engineers. Septentrio's mission is to supply high-end GNSS receivers to a wide variety of demanding, high-precision and integrity applications in industrial markets. The company develops its own satellite-navigation technology, whether ASICs or other receiver hardware, receiver algorithms for a variety of uses, or fully integrated units. Next to and in support of strategic commercial goals, Septentrio plays and wants to continue to play a crucial role in the development of the Galileo, both in realisation of the system and in supporting the early commercial availability of Galileo technology for (industrial) users.

Industrial Solutions

Septentrio designs and sells high-performance satellite navigation receivers for all GNSS systems: GPS, Galileo, GLONASS and SBAS. These products fall into two families. The PolaRx2 family of receivers, on the market for over five years, is a complete platform of high-end multi-frequency single- and multi-antenna receivers, including special models for attitude calculation and time transfer. The company has recently introduced the AsteRx family, a platform of compact rover receivers featuring low power consumption, high update rates and easy integration into various static or kinematic products. All variants can be delivered as an OEM board or ready-to-use in a rugged enclosure. Septentrio also delivers antennas, cables and other accessory products. All receivers are provided with intuitive graphical user-interface software and various software tools to facilitate instant use and ease integration.

Wide Range

Septentrio products are specifically designed for industrial applications requiring high accuracy, robustness or integrity. They are found in a wide variety of applications in existing and emerging markets, such as land and marine survey, marine construction and hydrographics, reference networks, machine control in construction and precision agriculture, precise time and frequency transfer, and many more. The unique single-board heading and attitude capabilities of PolaRx2 receivers have found applications in various machine-control applications, but also in such applications as aerial survey or on maritime platforms. As Septentrio focuses on supporting integrators and solution providers, special application engineering support is provided to work closely with customers and users to help configuration and integration of Septentrio receivers in the various user applications, occasionally even providing special software to support special requirements or customer features.

Pioneering Galileo

From its beginning Septentrio has supported and actively contributed to the Galileo programme. In the summer of 2004 Septentrio supplied the first Galileo receiver prototype to the European Space Agency (ESA). This receiver was used extensively to test interoperability with both Galileo Test Satellites GIOVE-A and GIOVE-B, and quickly resulted in the design of the experimental Galileo receiver (GETR) which received the first live Galileo signals ever transmitted from space on 12th January 2006. A network of these

receivers was subsequently built around the world to secure the frequency filing for Galileo and provide in-depth characterisation and analysis of Galileo signals. Septentrio continues to extend the capabilities of its Galileo Test Receivers to support Galileo System Development and In-Orbit-Validation activities. But most of all Septentrio wants to put Galileo technology into the hands of industrial users. To this end Galileo upgrade capabilities are built into Septentrio's new receivers, including the new AsteRx1 receiver platform, which offers users high-quality GPS with a simple upgrade guarantee for when the Galileo system is fully operational.

The Vision

Users need quality positional information for their applications. In the end they are (usually) not interested in whether one satellite system or another, or, indeed, a combination of multiple systems plus possible additional sensors, provides what they need at a cost they find acceptable. This is why the Septentrio vision is to provide great GPS receiver technology today, with the evolution to GNSS receivers in mind. And why Septentrio receivers come with application engineering support. Septentrio will provide customers the positioning technology they need so that customers can focus on getting their own job done.

<https://www.hydro-international.com/content/article/septentrio-from-gps-to-gnss>
