SecRTK - Secure High Precision Position Estimation

Multi-antenna receiver combined with RTK positioning

Minimizing disruptions

When navigating using satellites, precise position determination is of crucial importance. GNSS receivers are usually used for this purpose, which enable worldwide positioning with great accuracy. However, these receivers are susceptible to interference, which is a massive problem.

Our innovation offers the solution here: the combination of RTK receiver and multi-antenna unit, which is connected as a device in front of the conventional GNSS receiver. While the RTK technology offers high accuracy, interference signals are filtered out by the multi-antenna receiver. It also estimates the direction of the disrupting signals via Angle-of-Arrival. The result is reliable and precise positioning in the centimeter range.

GNSS-independant reference system with Leica MultiStation

SecRTK with its antenna-array

Optimized interference immunity and reliable positioning

By integrating the multi-antenna receiver as a device in front of the conventional GNSS receivers, the use of commercially available GNSS receivers is maintained, while at the same time the interference immunity is significantly increased.

The secRTK GNSS receiver uses satellite signals from the Navstar GPS, GLONASS, Galileo and Beidou systems as well as the existing additional systems for cm-accurate positioning. The quad antenna of the secRTK receiver enables the suppression of jamming and spoofing signals up to a jammer-to-signal ratio of 60 dB.

The reliable positioning of motor vehicles, trucks, rail vehicles, ships or drones, for example, can thus be ensured.

Future-proof through adaptable technology - become our partner!

The process is designed for GPS signals, but this technological development can be adapted to any frequency band.

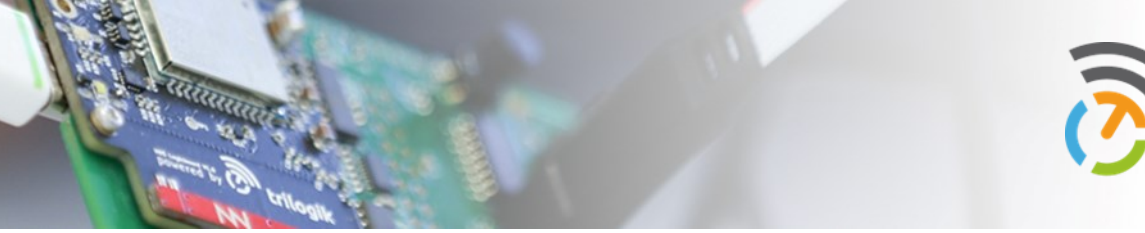
In professionally conducted test drives under real fault conditions (see illustrations), we have already been able to provide impressive proof of its functionality.

We offer interested companies the opportunity to license and further develop the technology in collaboration with us. Together with you as a partner, we are striving for technology and market leadership in the segment of interference resilience for GPS signals.

- Highly accurate positioning in the cm range using RTK
- Interference resilience for GPS signals
- Can be combined with conventional GNSS systems

trilogik GmbH, Herberner Straße 43a, 48268 Greven, Germany, info@trilogik.de, +49 2575 / 977 57 – 0

Developed in cooperation with FH Münster and RWTH Aachen, patronized by esa



RTK-GPS System „SecRTK“

Location - Security - Reference

SecRTK offers an advanced solution for precise positioning using GNSS receivers. The combination of RTK technology and a multi-antenna receiver in front of conventional GNSS devices enables highly accurate positioning in the centimeter range. This innovation minimizes and filters out interference while simultaneously detecting the direction of the satellite signals. The integration of this technology significantly increases interference immunity and ensures reliable positioning for vehicles, ships, drones and more. This adaptable technology to GPS signals can also be extended to other frequency bands.

SecRTK offers interested companies licensing opportunities for further development and aims to become the technology and market leader in the field of interference resilience for GPS signals.

In combination with our high-precision GPS system with Real Time Kinematics (RTK), satellite-based positioning of any instruments or machines is possible. The accuracy of the system is many times higher than that of conventional GPS devices thanks to RTK technology.

RTK stands for Real Time Kinematic and describes a method for the exact determination of positions with the help of satellites (real-time kinematics). The signal from a reference station (known as the “base”) is constantly compared with the signal from mobile stations (known as “rovers”) using correction signals.

Areas of application include aviation, shipping, agriculture and road construction.

Technical Data

General

Voltage supply	230 VDC
Receiver core	184-channels u-blox F9 core
GNSS	GPS L1C/A, GLO L1OF, GAL E1B/C, BDS B1I, QZSS L1C/A, SBAS L1C/A
Nav. update rate RTK	up to 20 Hz
Position accuracy	RTK 0.01 m + 1 ppm CEP
Time of convergence	< 10 s
Disruptor detection	Angle-of-Arrival

Acquisition

Cold start	24 s
Re-acquisition	2 s
Sensitivity Tracking	-167 dBm
Cold start	-148 dBm
Hot starts	-157 dBm
Reacquisition	-160 dBm
Jamming to signal ratio	60 dB
Number of antennae	4

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