

NavRIX PinPoint GNSS Receiver: Precise Orbit Determination (POD) and Precise Point Positioning (PPP)

NavRIX PinPoint, the RUAG Space multi-constellation (GPS, GALILEO) multi-frequency GNSS Receiver for NewSpace LEO applications provides an outstanding on-board real-time navigation with an accuracy of below 20 cm. With Precise Orbit Determination (POD) based on on-ground post-processed dual-frequency receiver data, a satellite position measurement accuracy of a few centimeters can be achieved.



KEY FEATURES

- Precise Point Positioning algorithm based on subscription-free Galileo High Accuracy Service (HAS) correction data
- Internal LNAs
- Selective RF-filter and low-noise amplifier for improved performance enable long tracking arcs especially important for POD processing
- Accurate force model-based orbit propagator
- Advanced Kalman filtering allows high on-board navigation performance
- Configurable data rate per measurement type
- Autonomous start-mode determination for minimized time-to-first-fix
- Additional data products provide excellent visibility of receiver internals
- Monitoring of external ultra-stable oscillator (USO) long term drift supported
- Low mass and power consumption
- Internal redundancy

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Supported GNSS Signals

- GPS L1 C/A
- GPS L5 I/Q
- Galileo E1 B/C
- Galileo E5a I/Q
- Galileo E6

Data Products

- Navigation solution based on GPS/GALILEO constellations
- PPS signal synchronized to GPS/GALILEO
- Carrier phase measurements for each tracked signal
- Code phase measurements for each tracked signal
- Support data:
 - Tracking state
 - GDOP
 - Carrier to noise (C/N) measurement of each tracked signal
 - Noise measurements of each RF down-conversion chain
 - Satellites in view status
 - Satellite navigation message

Interfaces per redundant receiver

- 2 antenna inputs
- TC/TM: UART (RS-422), CAN (opt.)
- PPS output nom/red (RS-422)
- Primary power input 28 V unregulated (Autostart upon voltage application)
- External clock input (opt.)

On-board Navigation Solution Accuracy

- Position: < 0.2 m 3D rms
- Velocity: < 1 mm/s 3D rms
- Time: < 50 ns

Time to first fix

- Warm start < 60 s
- Cold start < 4 ½ min

Physical/Environment

- Electronic box (redundant):
 - Size (incl. feet): 210x155x112 mm³ (8.3" x 6.1" x 4.4")
 - Weight: 3.6 kg (7.9 lbs)
 - Operating temperature: -20° C to +60° C
 - Total Ionisation Dose (TID) allows >7.5 years in LEO
 - Power consumption: 10 W avg.

Programs/Heritage

RUAG has delivered more than 80 flight models of GNSS receivers to customers in Europe, USA, Middle East and Asia. Some example missions:

- SWARM (ESA)
- Sentinel-1, Sentinel-2 and Sentinel-3 A/B (EC Copernicus)
- Sentinel-1, Sentinel-2 and Sentinel-3 C/D
- Sentinel-6/Michael Freilich A/B (NASA/ESA)
- EarthCare (ESA/JAXA)
- ICESat-2 (NASA)
- PACE (NASA)
- OSAM-1 (NASA)
- Biomass (ESA)
- FLEX (ESA)
- KOMPSAT-6, -7 (KARI)
- CAS-500 (KARI/KAI)
- WSF-M (Ball Aerospace)

Product availability: Please contact our Sales team.