beyond gravity

NavRIX PinPoint GNSS Receiver

Redundant, NewSpace, Multi-Constellation, Multi-Frequency, LEO

NavRIX PinPoint, Beyond Gravity's 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 1 meter (<20 cm with optional Precise Point Positioning software). With Precise Orbit Determination (POD) based on on-ground post-processed dual-frequency receiver data, a satellite position measurement accuracy of 1 cm can be achieved.

Key features

- Precise Point Positioning (PPP) algorithm based on subscription-fee free Galileo High Accuracy Service (Galileo E6 HAS) correction data (optional)
- 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 onboard 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

Supported GNSS Signals

- GPS L1 C/A
- GPS L5 I/Q
- GPS L2C
- Galileo E1 B/C
- Galileo E5a I/Q

Time to first fix

- Warm start < 90 s
- Cold start < 15 min.

On-board navigation solution accurancy

- Position 3D rms: < 1.0 m (< 0.2 m with PPP)
- Velocity 3D rms: < 25 mm/s (< 1 mm/s with PPP)
- Time 1 sigma: < 50 ns (< 30 ns with PPP)

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/N0) measurement of each tracked signal
  - Noise measurements of each RF downconversion chain
  - Satellites in view status
  - Satellite navigation message

Interface 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)

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

Program / heritage

Beyond Gravity has delivered more than 90 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 (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)
- SWF-M (Ball Aerospace)

Product availability: Please contact our Sales team.

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