



FoX NavRIX GEO GNSS Receiver

FoX NavRIX GEO, Beyond Gravity's cost-efficient, redundant (or non-redundant), multi-constellation (GPS, Galileo) GNSS receiver for commercial GTO/GEO missions provides an outstanding on-board real-time navigation performance with accuracy below 10 meter (3D rms). It is specifically designed for use in harsh space environments also for mission durations of up to 15 years. Due to its SDR design the receiver provides the maximum amount of resilience, availability, and flexibility.

Key Features

- The FoX NavRIX receivers rely on BG's proven space [heritage](#) and are [designed for space environments and long lifetimes](#), providing the highest [fault tolerance and availability](#) in the radiation environment encountered in orbit.
- [Flexible Software Defined Radio design](#) with heritage building blocks unified in a single product allows adaption to the needs and requirements of different constellations or future missions even after launch.
- Cost efficient and lightweight antenna solution for GTO and GEO.
- [Outstanding position, velocity & timing performance](#) in GEO and GTO orbit.
- [Highest availability in flight](#) due to active mitigation of radiation effects in the design reducing performance outages to the bare minimum.
- The advanced dynamically filtered navigation solution implemented [guarantees resilience](#) and allows also for outstanding positional and timing performance [even during periods of GNSS outage](#).
- Lightweight external LNAs, supplied from main box

Supported Signals

- GPS L1 C/A
- Galileo E1 B/C

Time-to-first fix

- Warm start typ. < 15 min (GEO)

Performance

- Position 3D rms < 10 m 3D typ.
- Velocity 3D rms < 1 cm/sec
- Time 1 sigma < 0.5 µsec

Data Products

- [Navigation solution](#) based on single-frequency and dual-constellation (GPS/Galileo) measurements
- 2 PPS signals synchronized to GPS/Galileo
- Support Data:
 - Tracking state
 - GDOP
 - Carrier to noise (C/N0) measurement of each tracked signal
 - Noise measurements of each RF down conversion chain
 - Satellites in view status
 - Satellite navigation message

Physical / environment

- [Full internal redundancy](#) ("two receivers in a box")
- Size (box incl. feet): 217x148x131mm³
(8.5" x 5.8" x 5.2")
- Weight (2 GNSSR, 2 antennas, 2 LNAs): 4 kg
- Operating temperature (qual.): -30° C to +70° C
- Total Ionisation Dose (TID): 36krad
- Box shielding allowing lifetime of 10 years in GEO
- Power consumption: < 10 W

Program / heritage

Beyond Gravity has delivered [more than 100 flight models](#) of GNSS receivers to customers in Europe, USA, Middle East and Asia.

Some example missions:

- TEMPO (NASA)
- 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)
- WSF-M (BAE)

Interfaces (per redundant half)

- 2 antenna inputs
- TC/TM: 2 UARTs (RS-422)
- PPS: 2 outputs (RS-422)
- Primary power input 28 V unregulated (on/off command or autostart upon power application)
- Up to 2 external clock inputs (option)
- Converter status
- Thermistors

Contact our sales team for more information:
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