



# NavRIX Integral GNSS Receiver

**Multi-Constellation GNSS Receiver Integrated  
into the cOBC NewSpace On-Board Computer**

NavRIX Integral is the multi-constellation (GPS, GALILEO) GNSS Receiver function for LEO applications integrated into the NewSpace On-Board Computer of Beyond Gravity. It provides an outstanding on-board real-time navigation performance with a position accuracy of below 1 meter.

## Key Features

- Integrated into the cOBC On-Board Computer (see separate datasheet)
- Most compact design and lowest additional mass:
  - GNSS processing resources shared with cOBC
  - Internal LNAs
  - Antenna is the only external hardware
- 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
- Low power consumption
- Internal redundancy

## Supported GNSS Signals

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

## Time to first fix

- Warm start < 150 s (90%)
- Cold start < 270 s (90%)

## 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 down-conversion chain
  - Satellites in view status
  - Satellite navigation message

## Interfaces

- 2 antenna inputs (1 nominal + 1 redundant)
- TC/TM: via cOBC
- PPS output: via cOBC
- Primary power: via cOBC

Product availability: Please contact our Sales team.

Beyond Gravity  
electronics@beyondgravity.com

## On-board navigation solution accuracy

- Position 3D rms: < 1.0 m
- Velocity 3D rms: < 25 mm/s
- Time 1 $\sigma$ : < 100 ns

Other performance/price options available!

## Physical / environment

- Electronics are part of cOBC box:
  - no additional mass
  - additional power consumption < 1W
- Antenna:
  - Ø144 mm (5,7")
  - 216 g (0.5 lbs)
- Operating temperature: see cOBC datasheet
- Radiation: see cOBC datasheet

## Programs / heritage of GNSS Receivers

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)
- WSF-M (Ball Aerospace)