

T-GNSS

GNSS Reference Receiver

KRATOS | RT LOGIC



Overview

The Kratos RT Logic modular Global Navigation Satellite System (GNSS) Reference Receiver simultaneously acquires, tracks, and demodulates GPS L1, L2, and L5 and Galileo E1, E5, and E6 signals on multiple channels. Each receiver is comprised of one or more downconverter modules, a Clock Generation module, and multiple receiver modules, all housed in a single ruggedized five rack-unit (5U) chassis with dual-redundant power supplies.

The downconverter modules receive GPS or Galileo RF signals, and converts them to an IF, where they are filtered and digitized using a high-speed Analog-to-Digital Converter (ADC), digitally downconverted to baseband using a Field Programmable Gate Array (FPGA)-implemented Digital Downconverter (DDC), and transmitted to any of the receiver modules.

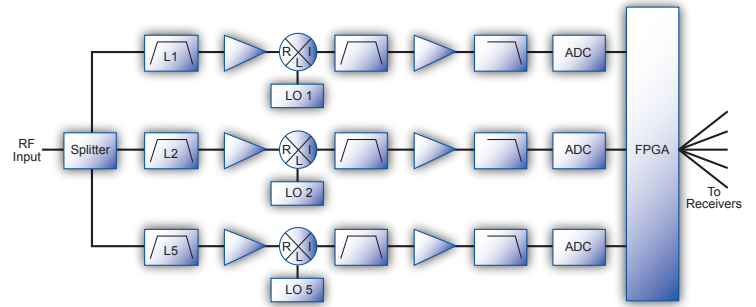
The Receiver modules receive digital data from any of the downconverter modules and perform acquisition, tracking, and demodulation. All processing is implemented in firmware on FPGAs. Sophisticated Digital Signal Processing (DSP) algorithms are utilized to extract navigation data messages in the presence of environmental degradation. All modules are easily replaceable, interchangeable, and hot-swappable, enabling field reconfiguration and maintenance without system downtime.

Applications

- Monitor stations
- Satellite test equipment
- Jamming and spoofing detection
- Integrity monitoring
- Test ranges
- User equipment initialization
- Special applications
- Augmentation systems (Aviations, Marine)
- Ionosphere monitoring
- Geospatial reference

Downconverter Module

- Converts GNSS RF signals to digital IF
- Custom frequency plans available on request
- Processes three frequencies in parallel
- Wideband (85 MHz) Front-End
- Hot-swappable for high availability
- Optional redundant downconverters for higher reliability



T400-GNSS

- High system reliability and ease of maintenance
- High-speed backplane for distribution of digital IF between downconverters and receivers
- Dual redundant, hot-swappable power supplies
- Auto-switching frequency reference
- Internal 10 MHz OCXO
- External 5 MHz or 10 MHz input overrides internal oscillator
- Optional CPU processor for local monitor, control, and maintenance
- Ruggedized 5U chassis



Receiver Module

- Acquires, tracks, and demodulates GNSS signals from up to 24 SVs per module
- GPS C/A, L2C, L5, L1C PRN codes
- GNSS E1-B, E1-C, E5a, E5b, E6-B, E6-C
- Pseudo-Range (PR) and Accumulated Delta Range (ADR) measurements
- Signal strength measurements
- Programmable tracking correlator spacing
- Rapid time and frequency domain search for fast direct acquisition
- Software-based tracking and demodulation algorithms
- Industry-standard Xilinx FPGAs enhance future upgrades
- 10/100/1000BASE-T network interface
- Hot-swappable for high availability

