

# T-GPS

## GPS Reference Receiver

The RT Logic modular Global Positioning System (GPS) Reference Receiver simultaneously acquires, tracks, and demodulates L1, L2, and L5 signals on multiple channels.

Each GPS 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 L1, L2, and L5 signals and convert them to an Intermediate Frequency (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 on L1, L2, or L5 GPS signals. All processing is implemented in firmware on FPGAs. Strict adherence to Information Security (INFOSEC) and Transmission Security (TRANSEC) boundaries are observed. Sophisticated Digital Signal Processing (DSP) algorithms are utilized to extract GPS data in the presence of environmental degradation.

All modules are easily replaceable, interchangeable, and hot-swappable, enabling field reconfiguration and maintenance without system downtime.

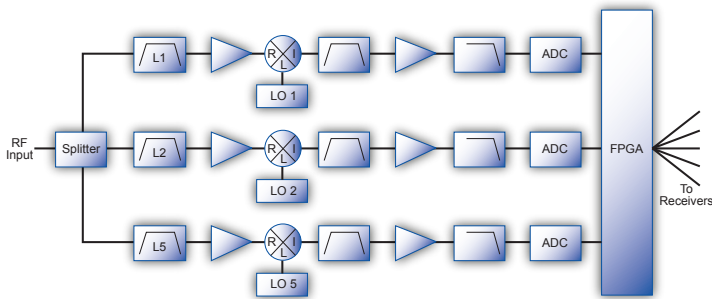
### Applications

- Monitor Stations
- Satellite Test Equipment
- Jamming and Spoofing Detection
- Integrity Assurance
- Test Ranges
- User Equipment Initialization
- Special Applications
- Augmentation Systems (Aviations, Marine)
- Ionosphere Monitoring
- Geospatial Reference



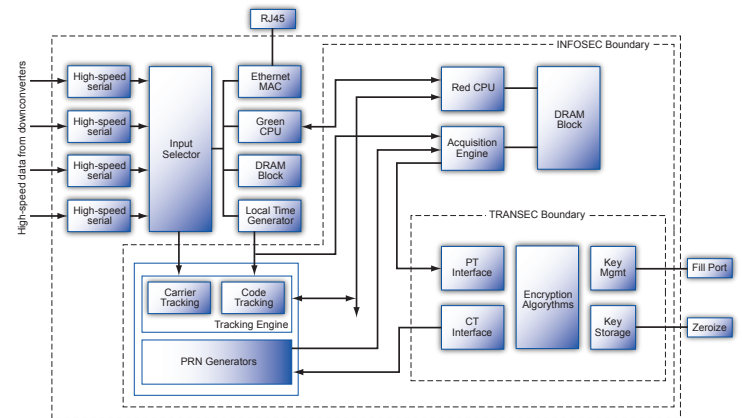
## Downconverter Module

- Converts GPS L1, L2, and L5 Signals to Digital IF
- Custom Frequency Plans Available on Request
- Processes all Three Frequencies in Parallel
- Wideband (50 MHz) Front-End
- Hot-Swappable for High Availability
- Optional Redundant Downconverters for Higher Reliability



## Receiver Module

- Acquires, Tracks, and Demodulates GPS Signals from up to 24 SVs per Module
- C/A, P(Y), M, Pseudo-M, L2C, L5, L1C PRN Codes
- Pseudo-Range (PR) and Accumulated Delta Range (ADR) Measurements
- Signal Strength Measurements
- FPGA-Based DSP Enhances Operation
- Rapid Time and Frequency Domain Search for Fast Direct Acquisition
- Programmable Tracking Correlator Spacing
- Software-Based Tracking and Demodulation Algorithms
- Implements Current GPS Cryptographic Algorithms
- Industry-Standard Xilinx FPGAs Enhance Future Upgrades
- 10/100/1000BASE-T Network Interface
- Hot-Swappable for High Availability



## T-GPS

- High System Reliability and Ease of Maintenance
- Ruggedized 5U Chassis
- High-Speed Backplane for Distribution of Digital IF Between Downconverters and Receivers
- Dual Redundant, Hot-Swappable Power Supplies
- Optional CPU Processor for Local Monitor, Control, and Maintenance
- Front-Panel Fill Connector for Initialization Keys

- Black Key Fill
- Front-Panel Zeroize Buttons
- Auto-Switching Frequency Reference
- Internal 10 MHz OCXO
- External 5 MHz or 10 MHz Input Overrides Internal Oscillator
- Integrated Information Assurance
- Also Available in a Civil-Only Version Suitable for Export