# Ninja *Precision Timing Module*

## *GPS-Synchronized, Portable Time and Frequency Standard*

Ninja is a compact, high-performance time and frequency standard optimized for size, weight, and power (SWaP). This cost-effective, highly integrated module  tedcmoduMr

to nine optional outputs. Itös easy to tailor the unit to meet your requirements. Optional output signals include IRIG-B time code, low-phase noise 5 or 10MHz, alarm and user-selectable pulse rates that include a trigger function.

### Secure Network Interface

To synchronize network clients, Ninja provides a robust Network Time Protocol (NTP) server and optional IEEE-1588 Precision Time Protocol (PTP) Grandmaster. The optional Synchronous Ethernet (SyncE) provides physical layer frequency synchronization with the performance of the Ninja reference oscillator. The IPv4 / IPv6 management interface supports SSH, SNMPv3 and HTTPs. Ninja is also security-hardened to meet the highest Information Assurance (IA) requirements.

### Reference Oscillators

We design and manufacture our own OCXO oscillators to achieve performance and quality not found elsewhere. The proprietary design uses a 3rd-overtone, SC-cut crystal built with the highest-quality components and is subjected to rigorous testing to guarantee industry-leading performance. Ninja is available with a High-Performance TCXO or a Medium-Stability, High-Stability, or Ultra-Stable OCXO. The Ultra-Low Phase Noise option enables up to four spectrally-pure 10 MHz outputs with phase noise less than -110 dBc at a 1 Hz carrier offset. 5 MHz outputs are available with any of the OCXO options.

### GPS Antenna and Accessories

A GPS Antenna Kit is available and required with Ninja consisting of an antenna, 50 ft cable, SMA to TNC adapter, mounting pipe, and clamps. Extended cable lengths, lightning arrestors, in-line amplifiers, splitters, and fiber optic links are also available.

### High Reliability and Two-Year Warranty

Ninja uses EndRunös power-efficient, fanless design and thermal packaging with an estimated MTBF of over 20 years. Itös made in America, backed by a two-year warranty, includes a 60-day money-back guarantee and free technical support for life.

### FEATURES

- Timing accuracy: <25 nanoseconds RMS to UTC(USNO). Optional calibration for <10 nanoseconds.
- Frequency accuracy: <6 x $10^{-14}$.
- Short-term stability: <6 x $10^{-13}$ at 1 second (US-OCXO option).
- No frequency steps - guaranteed.
- Ultra-low 5 / 10MHz phase noise option: < -110 dBc at 1 Hz.
- Up to nine optional outputs: 1PPS, PPO, 5 / 10 MHz, time code (AM and DC) and alarm.
- Real-Time Ionospheric Corrections for ultimate stability & accuracy (optional).
- 10 / 100Base-T Ethernet port.
- Network Time Protocol (NTP).
- Optional IEEE-1588 / PTP
- Optional Sync-E with SSM
- GPS almanac / ephemeris data, YUMA / RINEX formats.
- RINEX raw measurements for Precise Point Positioning.
- Free technical support and software upgrades.
- 60-day money-back guarantee.

### BENEFITS

- Portable time standard traceable to UTC(USNO).
- Frequency standard with atomic clock stability.
- Ultra low phase noise frequency reference for communication systems and signal intelligence.
- Optimized SWaP solution easily integrated into a 1U host system.