



# StarLoc II

## Precision GPS Time & Frequency Reference

### KEY FEATURES

- Stratum 1 Accuracy (<math><1E-12</math>)
- Available in Two Form Factors for Flexible Integration: Stand Alone Version (Includes Durable Housing and Power Regulation); OEM Version (Low Profile Board for Direct System Integration)
- Enhanced Holdover - Over 2 Hours
- High Reliability - Better Than 300,000 Hours MTBF

### APPLICATIONS

- Cellular Base Station (CDMA and TDMA)
- Fixed Wireless (LMDS, MMDS, and Wireless Local Loop)
- Asset location, E911

### INTRODUCTION

Symmetricom's StarLoc II™ is a low cost GPS timing time and frequency reference. This advanced product incorporates the latest GPS receiver technology, a precision disciplined crystal oscillator and improved tracking algorithms. StarLoc II is a small, low-cost, low-power requirement package that provides the precision time and frequency synchronization required by E911 location systems and their high-speed digital networks. It is the ideal choice for OEM applications in this area.

### TECHNOLOGY

Using Symmetricom's proprietary Snapshot™ technology, a network of StarLoc II units is able to lock system time to within 20 nsec (RMS) of each other. After a quick initial survey, only one GPS satellite need be visible in order to maintain system accuracy. This is especially important in a crowded urban environment that lacks antenna locations with an unobstructed view of the sky. Another helpful and advanced feature is the T-RAIM (time-receiver autonomous integrity monitoring) algorithm we have incorporated to monitor the health of individual GPS satellites. This algorithm assures that timing and position information from a malfunctioning satellite is not used, thus preventing it from negatively affecting your system's accuracy.

Contact Symmetricom to discuss your specific requirements. Discover how our StarLoc II, or another of the many precision timing and frequency products designed and manufactured by Symmetricom, can enhance your applications and improve your bottomline.



FIG.1 StarLoc II

## StarLoc II Specifications

### ELECTRICAL SPECIFICATIONS

- Inputs: L1 GPS (1575.42 MHz) C/A code (from GPS antenna)
  - Standalone: -48 Vdc or 24 Vdc,  $\pm 20\%$  @ 0.625 Amp. (+12 Vdc version available)
  - OEM: 12 Vdc and 5 Vdc,  $\pm 5\%$  @ 1 Amp. max each
- Outputs: 1 PPS TTL @ 50 ohm; 10 MHz Sine @ 50 ohm (coherent with 1 PPS); 13 dBm  $\pm 2$ ; +5V @ 80 ma for antenna Amp.; RS-232 for GPS time/status alarms
- Timing Accuracy:  $\leq 20$  nsec RMS between units over any 20 minute interval (under limited temp. variations);  $\pm 1$  sec programmable offset from GPS in 17 nsec steps
- Phase Noise:

10 Hz	<-120 dBc/Hz
100 Hz	<-130 dBc/Hz
1 KHz	<-145 dBc/Hz
10 KHz	<-150 dBc/Hz
100 KHz	<-150 dBc/Hz
- Holdover<sup>1</sup>: <1 micro sec over 2 hours typ.
- Spurious:

Harmonic:	<-30 dBc
Non-Harmonic:	<-80 dBc
- Time to first position fix: <20 minutes, 90% of the time
- Timestamp message: Calendar date and time to 1 second using Symmetricom Serial Binary Interface Protocol

### ENVIRONMENTAL SPECIFICATIONS

- Operating Temperature: -10°C to +65°C
- Storage Temperature: -40°C to +85°C
- Operating Altitude<sup>2</sup>: Operating: -200 ft to 40,000 ft. (12,200 meters)
- Operating Humidity:  $\leq 90\%$ , Non-condensing

### PHYSICAL SPECIFICATIONS

- Size: 5.0" L X 4.0" W X 2.0" H (127mm L X 101.6mm W X 50.8mm H)
- Weight: 20 ounces (567 grams)
- Fault Indicators: Software controlled/Power On LED (GRN)
- Antenna Input: Type F
- Outputs: 1 PPS and 10 MHz: BNC connectors; RS-232: DB-9M (DTE)
- EMI: Meets FCC Part 15, Class B
- Warranty: 1 year (Consult factory for extended warranty)

<sup>1</sup>Holdover refers to operation without GPS signals after an initial period of 8 hours of proper GPS reception

<sup>2</sup>Maximum operating temperature derated above 5,000 feet (1,525 meters)



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