



# StarLoc II Plus

## Precision GPS Rubidium Time & Frequency Reference

### KEY FEATURES

- Reliability and Performance of Rubidium
- Holdover <1 micro sec in 24 Hours
- MTBF Greater than 300,000 Hours
- Never Requires Calibration

### APPLICATIONS

- Stratum 1 Accuracy (<1E-12)
- Cellular Base Station (CDMA, TDMA, and UMTS)
- Fixed Wireless (MMDS, LMDS, and Wireless Local Loop)
- Broadcast (DVB, DAB, and DTV)
- Asset Location, E911

### INTRODUCTION

Symmetricom's StarLoc II Plus™ is a small, low-cost, low-power requirement package that provides the precision time and frequency synchronization required by base stations, optical network nodes, and high-speed digital networks. It is the ideal choice for OEM applications in this area.

StarLoc II Plus is Symmetricom's latest addition to its extensive line of precision time and frequency products. This advanced new product incorporates the latest GPS receiver technology, the industry leading X72® precision rubidium oscillator and improved tracking algorithms.

### TECHNOLOGY

Using Symmetricom's proprietary Snapshot™ technology, a network of StarLoc II Plus 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 which monitors 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 new StarLoc II Plus, or another of the many precision timing and frequency products designed and manufactured by Symmetricom, can enhance your applications and improve your bottom line.



FIG.1 StarLoc II Plus

## StarLoc II Plus Specifications

### ELECTRICAL SPECIFICATIONS

- Inputs: L1 GPS (1575.42 MHz.) C/A code (from GPS antenna)  
24 Vdc  $\pm 20\%$  @ 33W
- Outputs: 1 PPS TTL @ 50 ohm  
10 MHz Sine @ 50 ohm 13 dBm  $\pm 2$  dB, +5V@80 ma for antenna Amp.  
RS-232 for GPS time/status alarms
- Accuracy: Timing Preferred Application (Algorithm TP): 20 nsec RMS between units; Frequency Preferred Application (Algorithm FP):  $<5E-11$  measured instantaneously  $<1E-12$  (24 hour average)
- Phase Noise: Standard Low Noise
  - 1 Hz  $<-90$  dBc/Hz  $<-100$  dBc/Hz
  - 10 Hz  $<-120$  dBc/Hz  $<-125$  dBc/Hz
  - 100 Hz  $<-130$  dBc/Hz  $<-145$  dBc/Hz
  - 1 KHz  $<-145$  dBc/Hz  $<-150$  dBc/Hz
  - 10 KHz  $<-150$  dBc/Hz  $<-155$  dBc/Hz
- Holdover<sup>1</sup>:  
Standard =  $<1$  micro sec over 12 hours  
Extended Option =  $<1$  micro sec over 24 hrs
- Spurious:  
Harmonic:  $<-30$  dBc  
Non-Harmonic:  $<-80$  dBc
- Timestamp message: Calendar date and time to 1 second using Symmetricom Serial Interface Protocol

### ENVIRONMENTAL SPECIFICATIONS

- Operating Temperature: 0°C to +55°C
- Storage Temperature: -40°C to +85°C
- Operating Altitude<sup>2</sup>: -200 ft to 40,000 ft. (12,200 meters)
- Operating Humidity: 90%, Non-condensing

### PHYSICAL SPECIFICATIONS

- Size: 8.5" L X 4.0" W X 1.5" H (215.9mm L X 101.6mm W X 38.1mm H)
- Weight: ~29 ounces (~822 grams)
- Fault Indicators: Software controlled/Power On LED (GRN)
- Antenna Input: TNC Connector
- Outputs: 1 PPS and 10 MHz: BNC connectors, RS-232: DB-9M (DTE)
- 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 in temperature controlled environment (+/-3°C).

<sup>2</sup>Maximum operating temperature derated above 5,000 feet (1,525 meters)  
Values are typical unless otherwise noted



**SYMMETRICOM, INC.**  
2300 Orchard Parkway  
San Jose, California  
95131-1017  
tel: 408.433.0910  
fax: 408.428.7896  
info@symmetricom.com  
www.symmetricom.com

©2003 Symmetricom. Symmetricom and the Symmetricom logo are registered trademarks of Symmetricom, Inc. All trademarks and registered trademarks contained herein remain the property of their respective companies. All specifications subject to change without notice.  
DS/STARLOCIPLUS/D/1102/PDF