



# TimeSource 3500

## GPS Through the Window/Wall/Rooftop Stratum 1 Timing System

### KEY FEATURES

- Expandable Outputs Provides Single Box Solutions for Small/Remote Offices
- Increases Sync Coverage into Harsh GPS Environments
- Window Antenna Lowers Installation and Maintenance Costs
- Extended Holdover Reduces Nuisance Alarms and Downtime
- Built-in Early Warning Performance Monitoring Catches Problems Before They Impact the Network
- Eight User-Configurable T1/Composite Clock/E1/2.048 MHz Outputs
- NEBS level 3 and Telcordia Certified
- GPS Holdover Accuracy of  $1 \times 10^{-11}$  for 3 Weeks @25° C (Typical Performance)
- Sync Status Messaging
- Optional SNTP TimeServer

### INTRODUCTION

Symmetricom's TimeSource® 3500 is a stand-alone Stratum 1 Primary Reference Source (PRS) which works in GPS hostile environments. TimeSource 3500 meets GR 2830 network PRS performance requirements by using a GPS antenna mounted inside a window or on an outside wall. Timing outputs with Stratum 1 performance are achieved using advanced BesTime® technology, single-satellite locking GPS receiver subsystem, and Rubidium local oscillator.

BesTime is a flexible clock engine which provides robust performance in compromised GPS installations. BesTime continues to predict GPS timing information during the loss of GPS signals thereby guaranteeing Stratum 1 performance with as few as one satellite in view for as little as 10 hours per day. PRS quality holdover is extended to 72 hours (0-50°C) for long term GPS outages. Typical holdover performance is three weeks at PRC quality (at 25°C). TimeSource 3500 can be installed in just about any window or outside wall with a view to the sky, making it the inexpensive, yet high performance, alternative to cesium.

### CONFIGURATION OPTIONS

TimeSource 3500 comes standard with two T1 outputs. Expansion configurations includes eight additional T1 outputs, eight T1/composite clock outputs or eight T1/E1/2.048 MHz outputs programmable on a per port basis.

### APPLICATIONS

The TimeSource 3500 system can be configured as a PRS to front-end, an office BITS or as a stand alone PRS with 10 outputs for remote or small offices. In the stand alone configuration, TimeSource 3500 provides up to 10 T1 outputs in a compact, inexpensive package. This configuration is ideal for timing remote switch sites which may also have SONET terminals or other network elements.

The TimeSource 3500 ensures PRS performance is maintained through self-auditing the inputs and measuring and reporting performance against one another. Inputs can be easily provisioned to be either included in the timing ensemble output or be used for monitoring only. TimeSource 3500 is fully software upgradeable and provisionable while in-service. Communication is via RS-232 or Ethernet ports.



TimeSource 3500

# TimeSource 3500 Specifications

## GENERAL

- Specifications: GR2830, ANSI T1.101, NEBS, UL
- Internal oscillator: Rubidium
- Sync inputs: GPS, T1 (optional)
- Sync outputs: T1, 10 MHz, 1 PPS, TOD, Composite Clock, E1/2.048 MHz, SNTP TimeServer
- Sync status messaging: Outputs and inputs
- Communications: RS-232, Ethernet
- Management: TL1, TimeScan/Craft, TimeScan/NMS, TimePictra

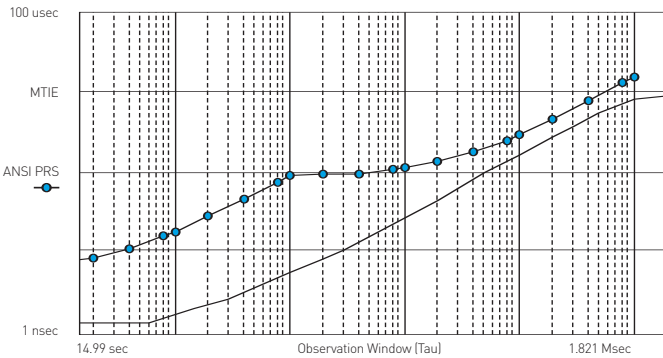
## SYSTEM OUTPUTS

- Number of T1 outputs: Up to 10 (2 standard)
- Format: D4, ESF with or without SSM - software selectable
- Number of E1/2.048 outputs: Up to 8
- Format: 2.048 Mb/s G.703/6 (CCS, CAS, CRC4, or non-CRC4 configurable) and 2.048 MHz G.703/10 - software selectable
- Frequency accuracy
  - Locked to GPS:  $1 \times 10^{-12}$
  - Holdover\*:  $1 \times 10^{-11}$  for 72 hours (0°C to 50°C  $\pm 5^\circ\text{C}$ )
  - $1 \times 10^{-11}$  for three weeks (@ 25°C) typical performance
  - $1 \times 10^{-10}$  for 30 days (0°C to 50°C  $\pm 5^\circ\text{C}$ )

## 1 PPS OUTPUT

- Number of outputs: 1
- Signal type: TTL
- Connector: BNC
- Timing accuracy
  - Locked to GPS: 100 ns to GPS
  - Holdover:  $< 3 \mu\text{s}$  to GPS for 72 hours (0°C to 50°C  $\pm 5^\circ\text{C}$ )

\* After 1 week of steady-state operation



TimeSource 3500 three week PRC quality holdover (@ 25°C)

## TIME OF DAY OUTPUT

- Type: Cisco or NTP type 4 IRIG-B (order option)
- Signal: RS-422 Amplitude Modulated
- Connector: RJ-45 BNC

## SNTP TIMESERVER (OPTIONAL)

- Type: SNTP
- Interface: Ethernet

## SYSTEM INPUTS (OPTIONAL)

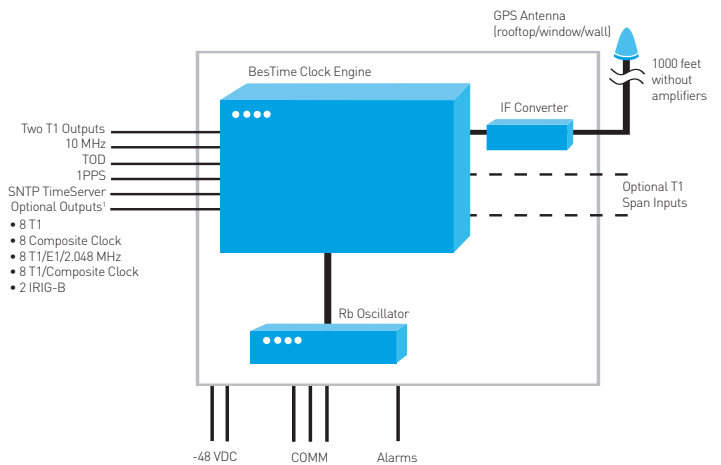
- Number: 2
- Signal: T1 (bridged or terminated)
- Connector: Wire wrap

## ANTENNA SPECIFICATIONS

- Type: Window or Wall mount patch; Rooftop
- Cable length: Up to 1000 feet without amplifier

## OTHER

- Mechanical: 3.5"(H) x 19"(W) x 12"(D)
- Power: -48 VDC (redundant)
- Operating temperature: 0°C to +50°C
- Humidity: 5% to 95% non-condensing
- EMC: FCC Part 15



\*Choose from one of five output options

TimeSource 3500 Block Diagram



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