



TimeSource 3000

Primary Reference Source For Public Network Service Providers

KEY FEATURES

- Innovative BesTime Clock Engine
- IF Antenna Provides 1000 Foot Cable Run Without Amplifiers
- GPS Holdover Accuracy of 1×10^{-11} for 72 Hours With Optional Inputs
- Timing Accuracy of 100 ns When Locked to GPS
- Sync Status Messaging
- Integrated Sync Monitoring of Inputs
- Optional SNTP TimeServer
- Eight User-Configurable T1/Composite Clock/E1/2.048 MHz Outputs
- NEBS Level 3 and Telecordia Certified

INTRODUCTION

Symmetricom's TimeSource® 3000 is a stand alone office Primary Reference Source (PRS) with integrated GPS receiver which meets GR2830 requirements. The TimeSource 3000 provides undisturbed Stratum 1 synchronization when locked to GPS with continued Stratum 1 performance for up to 72 hours upon loss of GPS.

The key to the TimeSource 3000's superior performance is its patented multiple input frequency locked loop BesTime™ clock engine. The BesTime engine, GPS receiver, and digitally controlled quartz local oscillator work together to produce precise timing outputs. Span line or remote oscillator inputs can be added, at the user's option, to increase system reliability and holdover performance in the event GPS signals are interrupted.

The GPS antenna can be installed up to 1,000 feet from the office shelf, without amplifiers, using inexpensive thin coax cable. The TimeSource 3000 can be managed using TL1 commands or via Symmetricom's TimeScan® element manager. The system is NEBS certified and provides Sync Status Messaging (SSM).

CONFIGURATION OPTIONS

TimeSource 3000 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 3000 system can be configured as a PRS to front-end, an office BITS or as a standalone PRS with 10 outputs for remote or small offices. In the standalone configuration, TimeSource 3000 provides multiple T1 and composite clock outputs in a compact, inexpensive package. This configuration is ideal for timing remote switch sites which may also have SONET terminals, digital loop carrier equipment, or channel banks.

The TimeSource 3000 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 ensemble output or be used for monitoring only. The TimeSource 3000 is fully software upgradeable and provisionable while in-service. Communication is via RS-232 or Ethernet ports.



TimeSource 3000

TimeSource 3000 Specifications

GENERAL

- Specifications: GR2830, ANSI T1.101, NEBS, UL
- Internal oscillator: Digitally Controlled Ovenized Crystal Oscillator (DCOCXO)
- Sync inputs: GPS, T1 (optional), or remote oscillator (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 1×10^{-12}
Holdover - no optional inputs 1×10^{-10} for 24 hours (0° C to 50° C $\pm 5^\circ$ C)
Holdover - with optional inputs 1×10^{-11} for 72 hours (0° C to 50° C $\pm 5^\circ$ C)

1 PPS OUTPUT PERFORMANCE

- Number of outputs: 1
- Signal type: TTL
- Connector: BNC
- Timing accuracy: Locked to GPS 100 ns to GPS
Holdover - no optional inputs $< 8.6 \mu\text{s}$ to GPS for 24 hours (0° C to 50° C $\pm 5^\circ$ C)
Holdover - with optional inputs $< 3 \mu\text{s}$ to GPS for 72 hours (0° C to 50° C $\pm 5^\circ$ C)

T1 INPUTS (OPTIONAL)

- Number: 2
- Signal: DS1, bridged or terminated
- Connector: Wire wrap

REMOTE OSCILLATOR INPUTS (OPTIONAL)

- Number: 2
- Signal: 5 or 10 MHz
- Connector: BNC

SNTP TIMESERVER

- Type: SNTP
- Interface: Ethernet

TIME OF DAY OUTPUT

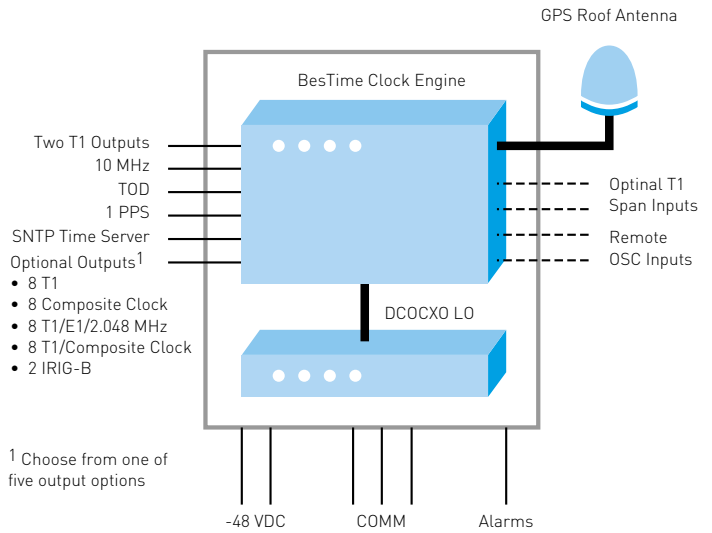
- Type: Cisco or NTP IRIG-B (order option)
- Signal: RS-422 Amplitude Modulated
- Connector: RJ-45 BNC

ANTENNA SPECIFICATIONS

- Type: Active antenna with integrated IF downlink
- Cable type: RG-59 with TNC connector
- Cable length: Up to 1000 feet without amplifier
- Operating temperature: -30° C to +80° C

OTHER

- Mechanical: 3.50"(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: Compliance with FCC Part 15, Class A



TimeSource 3000 Block Diagram



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