



# NetClock® Time Server

## 9300 Series



- **Timing References Available**  
Civilian GPS  
Secure GPS (SAASM)  
Pulse Per Second  
IRIG  
ACTS/ITU-R services  
NTP servers
- **Ruggedized shock and vibration-tested chassis**
- **IPv4/IPv6 dual stack**
- **Ideal for synchronizing military networks**
- **GPS back-up oscillators (OCXO and Rubidium)**
- **Stratum 1 NTP v2, v3, v4 Time Server via GPS**
- **Peering and Stratum 2 to other NTP servers**
- **10 MHz and 1 Pulse Per Second reference outputs**
- **IRIG time code outputs**
- **Ethernet 10/100 Base-T**
- **Web-based user interface**
- **Remote diagnostics, flash upgrades, configuration, and control over secure communication link**
- **Security features: IPSec, SSL, SNMP v3, SSH, SCP, SFTP**
- **RoHS compliant/UL approved**
- **5-year limited warranty**

Military networks and computer systems require timing services so operations are truly synchronized. Spectracom's NetClock 9300 Series delivers worldwide, split-second timing to mission critical systems with the highest security, reliability, and ease of management.

Spectracom's security features offer the utmost in operational integrity. The NetClock 9300 Series is the first time server to utilize IPSec by authenticating and/or encrypting each IP packet. Other features include remote login, file transfer capabilities, and multiple industry-standard interfaces. Protocols can be enabled or disabled based on your needs.

The NetClock 9300 Series includes directory server support to authenticate users, external logging, and monitoring of error messages through Syslog, convenient installation using DHCP, and dual stack network modernization using IPv4/IPv6 (as required in all government core networks by 2008).

A properly equipped 9300 Series NetClock can serve as a frequency reference for a variety of communications systems. Precision oscillators are available for improved accuracy and reliability in the event that the timing reference is lost. They also provide stable 10 MHz and 1PPS outputs. Spectracom's optional modem can also provide reference backup or function as a primary reference for disaster recovery.

The 9300 Series uses a Commercial Off-the-Shelf (COTS) operating system. GPS models track up to twelve satellites simultaneously, providing highly accurate timing. Alternatively, an IRIG input option leverages an existing precision timing network. ASCII time codes, alarm relays, and programmable timer outputs are standard to meet a wide array of user needs. IRIG outputs are available.

A secure GPS receiver is available for SAASM applications as is required under the 2003 Joint Chiefs of Staff Instructions: Master Positioning, Navigation, and Timing Plan (CJCSI 6130.01C: Enclosure E).



## Performance

### Typical Accuracy<sup>1</sup>

1PPS output  $\pm 50$  nanoseconds of UTC  
 RS-232/RS-485: Time code  $\pm 100$  microseconds to  $\pm 1$  millisecond of UTC, format dependent  
 IRIG B/E  $\pm 20$  microseconds to  $\pm 200$  microseconds of UTC, format dependent  
 Ethernet NTP: Output jitter within  $\pm 50$  microseconds relative to UTC typical

### Internal Oscillator/10 MHz

- TCXO:  $1 \times 10^{-10}$  typical 24-hour average locked to GPS/24-hour holdover (output dependent) unlocked
- OCXO:  $1 \times 10^{-11}$  typical 24-hour average locked to GPS,  $2 \times 10^{-9}$  per week typical aging/30-day holdover (output dependent) unlocked
- Rubidium:  $1 \times 10^{-12}$  typical 24-hour average locked to GPS,  $1 \times 10^{-11}$  per month typical aging/2-year holdover (output dependent) unlocked

<sup>1</sup> All output specifications are relative to GPS reference, unless noted otherwise.

### Outputs Available (x1 unless noted)

Type	Connector
Ethernet 10/100	Base-T RJ45 (auto sensing)
(up to 2) RS-232 Serial Connector <sup>2</sup>	DB9 female
(up to 2) RS-485 Once-per-Second <sup>2</sup>	3.81mm Terminal Block
IRIG B/E AM/TTL	BNC
1 Pulse Per Second	BNC
10 MHz Frequency Output	BNC
Alarm Outputs (up to 3)	3.81mm Terminal Block
Programmable Timer Output (up to 3)	3.81mm Terminal Block

<sup>2</sup> Serial time code formats: 0, 1, 2 (IBM Sysplex), 3, 4, 7, 8, 90 (GPS)

### Network Protocols

- NTP v2, v3, v4: Conforms with or exceeds RFC 1305 and 4330. Supports Unicast, Broadcast, MD5 encryption, Peering, Stratum 2, Autokey
- HTTP: Browser-based configuration and monitoring
- Telnet: Remote configuration
- FTP Server: Access to logs
- IPsec: IPv4/IPv6 Transport Mode
- IPv4/IPv6: Dual stack
- SNMP: Supports v1, v2, v2c, and v3 (no auth/auth/priv) with Enterprise MIB
- DHCP/DHCP6: Automatic IP address assignment
- LDAP: Authentication
- RADIUS: Authentication
- Syslog: Logging
- Time (RFC868)
- Daytime (RFC867)

### Security Features

- Enable/block protocols
- Set SNMP community names and network access
- Password protected
- Encryption: DES, 3DES, AES
- Authentication: SHA1, MD5
- SSL Web Based Interface: Web UI uses SSL to allow the use of the secure HTTPS protocol to access configuration and status web pages.
- SCP: is used to securely transfer files to and from the time server over an SSH session.
- SSH: utilizes SSL and data compression technologies to provide a secure and efficient means to control, communicate with, and transfer data to or from the master clock remotely.
- SFTP: is an FTP replacement that operates over an encrypted SSH transport.
- SNMPv3 (no auth/auth/priv): allows remote configuration and management over an encrypted connection.

### Inputs Available (x1)

Type	Connector
1PPS Input	BNC female
RS-232 Serial Set-up Interface <sup>3</sup>	DB9 female
GPS Antenna <sup>4</sup>	Coaxial N type
AM IRIG Input	BNC
DCLS IRIG Input	DB9
Key Fill Device	DS-102
Power	3 pin screw terminal

<sup>3</sup> Serial set-up interface configures network settings. The port works at 9600 baud, 8N1, and can be accessed with a PC terminal emulator.

<sup>4</sup> Option 06 replaces antenna input with IRIG on BNC connector.

### Modem Option (Primary or Back-Up Dial-Out Reference)

Serial set-up interface connects to an external modem that provides primary or back-up (in the event of a loss of GPS signal) connection to Legally Traceable Time<sup>®</sup> from NIST's ACTS or ITU-R services.

### Power

90–240 VAC, 47–63 Hz from supplied external CE/UL/CSA approved power supply with IEC 320 universal power cord connector. North American power cord included. Alternate type line cords or adapters may be obtained locally. Unit operates from 12 VDC nominal (+9.5 – +30 VDC) @ 18 watts. Rubidium, option 04 uses 24 VDC nominal (+18 – +32 VDC) @ 2.5 amps.

### Front Panel

- Status Indicators: "Power" and "Sync" multi-color LED
- Selectable 12 or 24 hour display, Hours, Minutes, Seconds, Day of Year
- Key Fill Loader Interface & Zeroize Function (Option 07)

## Physical & Environmental

### Size/Weight

- Designed for EIA 19" rack mount. 16.75" W x 1.72" H (1U) x 14.00" D actual (425 mm W x 44 mm H x 356 mm D actual)
- Weight: 6.5 lbs. (2.95 kg) with Rubidium option; 6.0 lbs (2.72 kg) without
- Rack mount hardware included (assembly required)

### Environmental

	Operating	Storage	MIL-STD-810F Method
Temperature	0° to 50°C	-40° to +85°C	501.4, 502.4
Humidity	10%–95% R.H., non-condensing	10%–95% R.H., non-condensing	507.4
Altitude	15,000 ft	40,000 ft	500.4
Shock	15g/0.53 oz, 11 ms, half sine wave	40g/1.76 oz, 11 ms, half sine wave	516.5
Vibration	10~55Hz/0.075g, 55~500Hz/1.0g	10~55Hz/0.15g, 55~500Hz/2.0g	514.5

### Agency Approvals



## GPS Receiver Specifications

### Civilian

- Receiver Input: L1 (antenna sold separately)
- Tracking: 1 to 12, GPS T-RAIM satellite error management
- Acquisition Time: cold start, 250 seconds (typical)

### SAASM\*

- Receiver Input: L1/L2, P(Y) code (PPS), SAASM (antenna included)
- Tracking: 12 parallel, dual-frequency channels with RAIM (Receiver Autonomous Integrity Monitoring)
- Security: SAASM GPS receiver
- Acquisition Time: cold start, 250 seconds (typical)

## Warranty

### 5-Year Limited Warranty

- Rubidium oscillator (Option 04) is warranted for two years from date of shipment.
- Extended warranty is available.