



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 (up to 15) via 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).

(left) Front Panel with Option 07 showing Key Fill Loader Interface and Zeroize Function



PERFORMANCE

TYPICAL ACCURACY¹:

- 1PPS output ±50 nanoseconds of UTC
- RS-232/RS-485: Time code ±100 microseconds to ±1 millisecond of UTC, format dependent
- IRIG B/E ±20 microseconds to ±200 microseconds of UTC, format dependent
- Ethernet NTP: Output jitter within ±50 microseconds relative to UTC typical
- Internal Oscillator/10 MHz
 - TCXO: 1x10⁻¹⁰ typical 24-hour average locked to GPS/24-hour holdover (output dependent) unlocked
 - OCXO: 1x10⁻¹¹ typical 24-hour average locked to GPS, 2 x 10⁻⁸ per week typical aging/30-day holdover (output dependent) unlocked
 - Rubidium: 1x10⁻¹² typical 24-hour average locked to GPS, 1 x 10⁻¹¹ per month typical aging/2-year holdover (output dependent) unlocked

¹ All output specifications are relative to GPS reference, unless noted otherwise.

OUTPUTS AVAILABLE:

Type	Connector
Ethernet 10/100 Base-T	RJ45 (auto sensing)
RS-232 Serial Connector ²	DB9 female
RS-485 Once-per-Second ²	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

² 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, MDS encryption, Peering, Stratum 2, Autokey
- HTTP: Browser-based configuration and monitoring
- Telnet: Remote configuration
- FTP Server: Access to logs
- SNMP: Supports v1, v2, v2c, and v3 (no auth/auth/priv) with Enterprise MIB
- IPsec: IPv4/IPv6 Transport Mode
- IPv4/IPv6: Dual stack
- 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.
- 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.
- SCP: is used to securely transfer files to and from the time server over an SSH session.
- 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:

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

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

⁴ 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® 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.

MODEL NUMBER	9383	9388	9389
	Precision Time Server	Ethernet Time Server	Precision Time Server
TIMING REFERENCE			
GPS Receiver	✓	–	✓
SAASM GPS Receiver*	Option 07	–	Option 07
IRIG-B Input	Option 06	–	Option 06
Modem	Option 03	–	Option 03
External 1 Pulse Per Second	✓	–	✓
NTP (Stratum 2)	✓	✓	✓
Serial Time Codes	–	✓	–
INTERNAL OSCILLATOR			
TCXO	✓	✓	✓
OCXO	Option 05	–	Option 05
Rubidium	Option 04	–	Option 04
OUTPUTS			
Ethernet 10/100 Base-T	1	1	1
RS-232 Serial Time Port	2	1	1 (Option 02 has 2)
RS-485 Serial Time Port	2	1	1 (Option 02 has 2)
Alarm/Event Timer/Relays	3	3	3
IRIG B/E	1	–	–
1 Pulse Per Second	1	–	–
10 MHz	1	–	–
Front Panel Display	✓	–	Option 02
Network, Server, and Security Protocols	✓	✓	✓

* U.S. Government policy restricts the sale of Precise Position Service (PPS) GPS equipment such as Option 07 only to users authorized by the U.S. Department of Defense.

