



# NetClock<sup>®</sup> Time Server

## Model 9389



- **Stratum 1 NTP v2, v3, v4 Time Server**
- **Precision GPS time reference (optional IRIG or modem)**
- **Peering and stratum 2 (up to 15) via NTP servers**
- **High bandwidth NTP performance**
- **Synchronizes security systems, computers, network elements, specialty devices, wall clocks**
- **Meets regulatory compliance standards: Sarbanes-Oxley, HIPAA, Gramm-Leach-Bliley, OATS**
- **Supports internal audits including: audit trails, time-stamped records, log files, data archiving**
- **GPS back-up oscillators (OCXO and Rubidium)**
- **Web-based user interface**
- **IPv4/IPv6 dual stack**
- **Supports centralized user authentication (LDAP, RADIUS) and logging (Syslog)**
- **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**

Today's network and computer systems require time-sensitive data for such tasks as logging events, records management, network optimization and troubleshooting, and synchronizing operations. Spectracom's NetClock Model 9389 delivers worldwide, split-second timing with the highest security, reliability, and ease of management.

Enhanced security features ensure operational integrity and can be enabled or disabled based on your needs. These features include remote login and file transfer capabilities, providing the utmost security using industry standard interfaces.

The simplicity of installation, ease of management, and reliable operation of the 9389 reduces the cost of network administration. It includes full SNMP capability, support for enterprise directory servers to authenticate users, internal and external logging and monitoring of error messages through Syslog, DHCP for installation convenience, and IPv4/IPv6 dual stack for future network modernization.

Enhanced reliability features include optional oven-stabilized crystal oscillators (OCXO) and Rubidium oscillators to maintain timing if the GPS reference is lost. An optional dial-out modem provides back-up to GPS or functions as the primary reference for disaster recovery. NTP Peering allows for redundancy when multiple NetClock systems are deployed.

Model 9389 can track up to twelve GPS satellites simultaneously, providing highly accurate timing by synchronizing to the satellites' atomic clocks. A variety of time codes on multiple ports are included to meet the requirements of numerous systems. Alarm outputs and programmable timer outputs are also provided.

## Performance

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

Within 50 nanoseconds RMS of UTC time (with 3-D fix)

RS-232/RS-485: Time code ±100 microseconds

to ±1 millisecond of UTC, format dependent

Ethernet NTP: Output jitter within ±50 microseconds relative to UTC typical

### Internal Oscillator

- TCXO: 1x10<sup>-10</sup> typical 24-hour average locked to GPS/24-hour holdover (output dependent) unlocked
- OCXO: 1x10<sup>-11</sup> typical 24-hour average locked to GPS, 2 x 10<sup>-9</sup> per week typical aging/30-day holdover (output dependent) unlocked
- Rubidium: 1x10<sup>-12</sup> typical 24-hour average locked to GPS, 1 x 10<sup>-11</sup> 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)

| Type                                 | Connector             |
|--------------------------------------|-----------------------|
| Ethernet 10/100 Base-T               | RJ45 (auto sensing)   |
| RS-232 Serial Connector <sup>2</sup> | DB9 female            |
| RS-485 Once-per-second <sup>2</sup>  | 3.81mm Terminal Block |
| 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
- 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 (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                  |
| 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® 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 (optional)

- Status Indicators: "Power" and "Sync" multi-color LED
- Selectable 12 or 24 hour display, Hours, Minutes, Seconds, Day of Year

## 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: 6.0 lbs (2.72 kg); 6.5 lbs. (2.95 kg) with Rubidium option
- Rack mount hardware included (assembly required)

### Environmental

|           | Operating                          | Storage                            | MIL-STD-810F Method |
|-----------|------------------------------------|------------------------------------|---------------------|
| Temp      | 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

### Standard

- Receiver Input: L1 (antenna sold separately)
- Tracking: 1 to 12, GPS TRAIM satellite error management
- 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.

### Ordering Information

Specify NetClock Time Server, Model 9389, plus:

**Option 02:** Front Panel Display with 2 Additional Serial Ports

**Option 03:** Modem

**Option 04:** Rubidium Oscillator

**Option 05:** OCXO Oscillator

**Option 06:** IRIG-B Input

**Option 07:** Secure GPS (SAASM) for authorized users only

For additional Spectracom accessories, contact the Sales Department for more information.