

SONOMA N12 *Network Time Server*

CDMA-Synchronized, Dual Gigabit Ports

While installing an antenna on the roof is a typical requirement for most other time servers, with the CDMA-Synchronized Sonoma you can easily mount the antenna inside your building. The Sonoma can serve accurate time to any system running an NTP or SNTP client. With dual gigabit ports and a fast microprocessor for high-capacity packet throughput (7,500 requests/second), it can support hundreds of thousands of network clients with an NTP timestamp accuracy of <10 microseconds. The highly-integrated solid-state design is very reliable, and you can easily manage it via one of the network ports or the RS-232 serial port. A Web Interface (HTTPS) is also provided for status monitoring using your Internet browser.



Network Security Hardened

Extra care has been taken to "harden" the Sonoma against network attacks. There are only a handful of settings that you need to make and they are typically set only once in the lifetime of the product. Since this is a set-it-and-forget-it box, we have eliminated all extraneous protocols/services in order to minimize exposure to security holes. You can change critical settings via SSH or Telnet and monitor the alarm/status information by using HTTPS, SNMP, SSH or Telnet. Security-conscious users can disable any or all of the

risky protocols such as HTTPS, Telnet, Time and Daytime and restrict HTTPS, SNMP, SSH, Telnet access to specific hosts.

Time Synchronization to UTC via CDMA Cellular/PCS Signals

The Sonoma includes a proprietary CDMA receiver for synchronization to Coordinated Universal Time (UTC). It receives its timing information from the Global Positioning System (GPS) via the CDMA mobile telecommunications network used by many cellular/PCS telephones. (No subscriber fee required.) This means the antenna can be conveniently located inside buildings, anywhere a cell phone signal is available.

PTP/IEEE-1588 Grandmaster Clock Option

The Sonoma can be configured as an IEEE-1588-2008 compliant, Precision Time Protocol (PTP) Grandmaster Clock with high capacity and hardware timestamping. The PTP/IEEE-1588 option can be added to one or both of the gigabit ports and delivers the level of performance that is required in high-speed, low-latency systems.

Measurement Statistics and Charting

Real-time charting of NTP, Oscillator and CPU statistics is available via the Web Interface. Measurements are continuously computed and displayed in real-time with daily and weekly charts. The oscillator statistics are good for verification that the unit was locked at a certain time. NTP statistics show the NTP packet rate and the accuracy of the NTP and System Time relative to UTC. The CPU statistics show the free memory, processor load and operating temperature.

High Reliability and Free Technical Support for Life

The Sonoma uses EndRun's power efficient, fanless design that achieves an estimated MTBF of over 25 years (16 years with Rubidium). The system is made in America, backed by a 3-year warranty, and provided with free technical support via phone or email for life. No support contacts required.

Risk-Free Guarantee

If you are not satisfied with the Sonoma for ANY reason, simply return it within 60 days for a full refund less shipping fees. See www.endruntechnologies.com/guarantee.htm for details.

FEATURES

- CDMA-Synchronized.
- Dual gigabit ports.
- NTP server throughput of 7,500 requests per second.
- Optional PTP/IEEE-1588 with hardware timestamping.
- SNMP, SSH, HTTPS and more.
- IPv6 and IPv4 compliant.
- Secure Web Interface to monitor status via your Internet browser.
- Optional dual power supplies.
- Daily and weekly data plots: CPU, NTP and Oscillator Statistics.
- Serves NTP Stratum 1 time for 24 hours if CDMA signal is lost. Up to 140 days with an Oscillator Upgrade Option.
- Optional Serial Time Output: Sysplex, NMEA, NENA, and more.
- Three-Year Warranty.
- 60-Day Money-Back Guarantee.
- Free technical support and software upgrades for life.

KEY BENEFITS

- Indoor Antenna.
- Hundreds of thousands of NTP clients can be reliably synchronized within 1/2 - 2 milliseconds
- Accurate and secure source of network time inside your firewall.
- Easy to install and maintain.
- No costly antenna installation fees.
- No risk of lightning strike damage to your equipment rack.



SONOMA N12 Network Time Server Specifications

CDMA-Synchronized

CDMA RECEIVER:

- Digital Cellular Mobile Receive Band - 869-894 MHz.
- PCS Mobile Receive Band - 1930-1990 MHz.
- Japanese Cellular Mobile Receive Band - 860-875 MHz (optional configuration).
- TIA/EIA IS-95 CDMA Pilot and Sync Channels.
- TNC connector (female) on rear panel, $Z_{in} = 50\Omega$.

ANTENNA:

- Dual Band, 824-896 MHz/1850-1990 MHz, magnetic-base with integral 12 ft. RG-58/U cable with TNC connector (male). Extension cables and preamplifiers are available as options.

TIME TO LOCK:

- < 5 minutes, typical (TCXO).
- < 10 minutes, typical (OCXO/Rb).

HOLDOVER ACCURACY:

- TCXO (standard): 10 milliseconds/day. Serves Stratum 1 time for 24 hours after signal loss.
- Premium OCXO: 80 microseconds/day. Serves Stratum 1 time for 35 days after signal loss.
- Rubidium: 5 microseconds/day. Serves Stratum 1 time for 140 days after signal loss.

SYNCHRONIZATION ACCURACY:

- CDMA Receiver Accuracy: < 10 microseconds to UTC(USNO) when locked, typical.
- NTP Timestamp Accuracy: < 10 microseconds @ 7,500 requests/second.
- NTP Client Synchronization Accuracy: Network factors can often limit LAN synchronization accuracy to $\frac{1}{2}$ - 2 milliseconds, typical.

SUPPORTED PROTOCOLS:

- SNTP, NTP v2, v3, v4, SHA/MD5 authentication, and broadcast/multicast mode and autokey.
- SSH client/server with "secure copy" utility, SCP.
- SNMP v1, v2c, v3 with Enterprise MIB.
- HTTPS (Web Interface).
- TIME and DAYTIME server.
- TELNET client/server.
- FTP and DHCP clients.
- SYSLOG.
- IPv4 and IPv4/IPv6.
- Optional PTP/IEEE-1588-2008 (v2).

NTP CLIENT AND PTP SLAVE SOFTWARE:

- NTP client software is freely available. Refer to www.endruntechnologies.com/ntp-client.htm.
- For information about PTP slave software see www.endruntechnologies.com/ptp-slave.htm.

OPERATING SYSTEM:

- Linux Kernel 3.2.2.

NETWORK I/O:

- Two rear-panel RJ-45 jacks.
- Two 10/100/1000 Base-T Ethernet.

MAINTENANCE CONSOLE:

- RS-232 serial I/O on rear panel DB9M jack for secure, local terminal access.
- Parameters fixed at 19200 baud, 8 data bits, no parity, 1 stop bit.

SYSTEM STATUS INDICATORS:

- Sync LED: Amber LED pulses to indicate lock status.
- Alarm LED: Red LED indicates a serious fault condition.

FIRMWARE UPGRADES:

- Software is field-upgradeable and provided free-of-charge.

POWER:

- 10 watts with TCXO (standard configuration). 11-13 watts with OCXO. 16-23 watts with Rb.
- 90-264 VAC, 47-63 Hz, 1.0A maximum.
- 3-Pin IEC 320 on rear panel, 2-meter cord included.

SIZE:

- Chassis: 1.75"H x 17"W x 10.75"D (19" rackmount).
- Weight: < 5 pounds.
- Antenna: 14"H x 2" diameter at base.

ENVIRONMENTAL:

- Operating Temperature/Humidity: 0° to +50° C / 5% to 90% RH, non-condensing.
- Storage Temperature/Humidity: -40° to +85° C / 5% to 95% RH, non-condensing.

COMPLIANCE:

- CE, FCC, RoHS, WEEE.

OPTIONS:

- Premium OCXO, Rubidium, IEEE-1588v2 (PTP), Time Code Output, 1 PPS Output, -48 Vdc Input, Dual Power Supplies, Open-Collector Alarm Output, Sysplex Timer Output, 10 MPPS, Programmable Pulse Output. More options available - call or email.

PTP/IEEE-1588 (Grandmaster) - (option):

- IEEE-1588-2008 (v2) with hardware timestamping.
- Version 2 Parameters: Default Profile. Multicast. Two-Step Clock. Delay Mechanism: E2E or P2P. Delay Interval: 32 seconds. Transport: UDP/IPv4. Sync Interval: 1, 2, 4, 8, 16, 32, 64 or 128 packets / 1 second. Announce Interval: 1 packet per 1, 2, 4, 8 or 16 seconds.
- PTP Timestamp Resolution: 8 nanoseconds.
- For more information see: www.endruntechnologies.com/pdf/PTP-IEEE-1588.pdf

1 PPS OUTPUT - (option):

- 1 PPS: Positive on-time TTL pulse @ 50Ω or RS-422 levels.
- User-Selectable Width: 20 us, 1 ms, 100 ms, 500 ms.
- Stability: TDEV < 20 ns, τ < 10⁵ seconds.

DUAL POWER SUPPLIES - (option):

- Dual-Redundant Power Supplies with alarm indication in case of failure.
- AC/AC, AC/DC, or DC/DC is available.

TIME CODE OUTPUT - (option):

- Signal: Amplitude-Modulated (1 Vrms into 50Ω, 1 kHz carrier) or DC-Level Shift (3V into 50Ω).
- User-Selectable Format: IRIG-B120 (IEEE-1344), IRIG-B122, IRIG-B123, NASA-36, or 2137.

SERIAL ONCE-PER-SECOND TIME OUTPUT - (option):

- RS-232 output only port - transmits ASCII characters indicating current time.
- 9600 baud, 8 data bits, 1 stop bit, odd parity.
- IBM Sysplex Timer compatibility. Other formats available including NMEA, NENA - call us.



*Sonoma rear panel with optional dual power supplies.
Antenna input TNC connector on upper left. Two spare BNC connectors on lower left. One RS-232 connector.
Two 10/100/1000Base-T Ethernet ports.
Optional dual optional power supply connectors on right.*



ASSISTA INFOCOMM & SECURITY PTE LTD

Office: 61 Kaki Bukit Avenue 1, # 05-40 Shun Li Industrial Park, Singapore 417943.

Tel: (65) 6744 3178 Fax: (65) 6729 6748

Showroom: 11 Woodlands Close #09-23 Woodlands 11 Singapore 737853.

Tel: (65) 6337 2148 (Hotline Available 9am - 9pm Singapore Time, 7 days a week)

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