NTP Server/ GPS Network Time Server by EndRun Technologies in Singapore, Malaysia & Indonesia

NTP Servers/ Network Time Servers manufactured by EndRun Technologies USA are high-performance, reliable and secure Network Time Servers chosen by customers from a wide range of industries including defence, telecommunications, financial, healthcare, broadcast, power utilities, laboratories and more.

EndRun Technologies are expert in most aspects of the time & frequency field and are composed of people who are leaders in the timing & frequency solutions industry.

NTP Server Models using GPS

Tempus LX GPS Network Time Server

This NTP Server is a full-featured, high-performance, Stratum 1 Time Server using GPS as its timing source. The Tempus LX GPS Network Time Server uses GPS as its time-synchronization source and it will deliver accurate and reliable time throughout any system running an NTP or SNTP client. The Tempus LX supports up to 200,000 network clients with <10 microsecond NTP timestamp accuracy. If GPS signal is lost, the Tempus LX continues to serve Stratum 1 time for up to 140 days with a Rubidium oscillator upgrade option. The Tempus LX is IPv4 and IPv6 compliant.

Customers have the choices of optional timecode outputs such as IRIG-B. The user-selectable formats include IRIG-B120 (IEEE-1344), IRIG-B122, IRIG-B123, NASA-36, or 2137. Tempus supports MD5 Authentication, SNMP, SSH, SCP, TIME, DAYTIME, TELNET, FTP, DHCP and more.

Other optional outputs include 1 PPS output, alarm output, IBM Sysplex Timer once-per-second output,programmable pulse rate output, NENA and more.

Unison GPS Network Time Server

For enquiries, please call the **Sales Hotlines @ 6744 3178 or 6337 2148**
(available 9am-9pm Singapore time, everyday, including Public Holidays)

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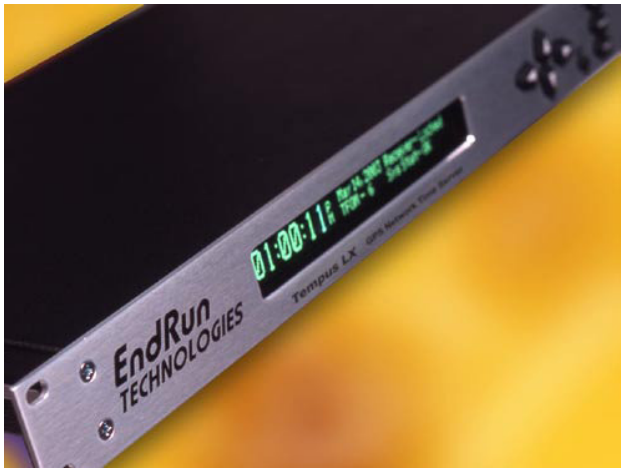
EndRun TECHNOLOGIES
"Smarter Timing Solutions"

Tempus LX *GPS Network Time Server*

A Stratum 1 Time Server Inside Your Firewall

The Tempus LX is a Stratum 1 Time Server that provides an accurate and reliable source of network time inside your firewall. The Tempus LX can serve accurate time to any system running an NTP or SNTP client and can support up to 200,000 network clients (workstations, servers, routers, etc.) with an NTP timestamp accuracy of < 10 microseconds. The highly-integrated solid-state design is extremely reliable, and you can easily manage it by using the network port, a local console on the RS-232 serial port, or via the vibrant display and keypad.



Network Security Hardened

Extra care has been taken with the Tempus LX to "harden" it against network attacks. There are only a small handful of settings that need to be made and they typically need to be 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 settings via SSH or Telnet and monitor the alarm/status information by using SSH, Telnet, or SNMP. Security-conscious users can disable any or all of the risky protocols such as Telnet, Time and Daytime or restrict access to SSH, Telnet and SNMP to specific hosts.

Best Holdover Performance

The Tempus LX will continue to serve Stratum 1 time for a substantial period if the GPS reference signal is ever lost. This is called the holdover period and it is dependent upon the quality of the oscillator and the quality of the software control algorithms. The standard Tempus LX is provided with a TCXO (drift is 10 milliseconds/day), and it will continue to serve accurate Stratum 1 time for a full 24 hours after signal loss. This is *the best holdover performance for any time server on the market* with a TCXO. For even better holdover performance you may want to consider an oscillator upgrade (see reverse).

Easy Installation

The rackmount unit is easily installed and the 10/100Base-T ethernet interface smoothly integrates with existing network equipment. The unit is up and running in a few minutes on networks supporting DHCP. Or, without DHCP, the unit can be configured with just a few simple front-panel keystrokes. Most GPS receivers need a roofmount antenna but the Tempus LX has the ability to operate in a single-satellite mode. This means that only one satellite needs to be in view of the antenna once a day in order to provide accurate time to your network. Because of this, many sites can avoid the added expense and trouble of rooftop installation by window-mounting the antenna. A window-mount antenna kit is provided free with the Tempus LX.

Superior Reliability

The superior reliability of the Tempus LX is the result of a very highly-integrated, solid-state design in which all components undergo a selection process for reliability. This is combined with a production process which integrates stringent quality assurance inspections and rigorous performance verification. These processes yield a Mean Time Between Failure (MTBF) for the Tempus LX of 25 years based on demonstrated field data.

Risk-Free Guarantee

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

A clean and reliable solid-state design.

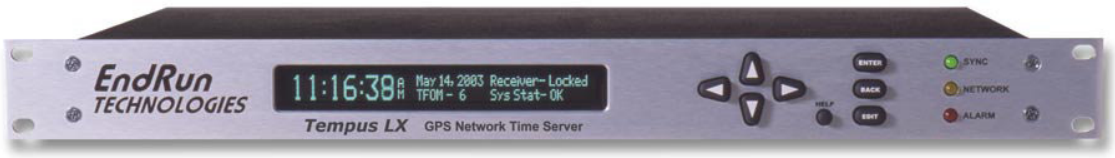
FEATURES

- NTP v4, SNMP v3, SSH and more.
- IPv6 and IPv4 Compliant.
- Optional PTP/IEEE-1588.
- User-Friendly Display & Keypad with Built-In Help Menus.
- Serves Stratum 1 Time for 24 Hours if GPS Signal Lost. Up to 400 Days with Oscillator Upgrade Option.
- Dynamic Platform Support.
- Free window-mount antenna kit.
- Three-Year Warranty.
- 60-Day Money-Back Guarantee.
- Free Technical Support and Software Upgrades for Life.

KEY BENEFITS

- Accurate and secure source of network time inside your firewall.
- Up to 200,000 network clients can be reliably synchronized within 2 milliseconds of each other.
- Easy to install and maintain.
- No costly antenna installation fees with window-mount capability.

Tempus LX GPS Network Time Server
Specifications



GPS RECEIVER:
- L1 Band - 1575.42 MHz.
- 8 Channels, C/A Code.

ANTENNA:
- TNC jack on rear panel, $Z_{in} = 50\Omega$.
- Integral +35 dB gain LNA and bandpass filter for out-of-band interference rejection.
- Rugged, all-weather housing capable of operation over -40° to +85°C.
- Mounting via 18" long, ¾" PVC pipe with clamps.
- 50' low-loss RG-59 downlead cable is standard. Other lengths are optional.

TIME TO LOCK:
- < 5 minutes, typical (TCXO)
- < 10 minutes, typical (OCXO/Rb)

HOLDOVER ACCURACY:
- TCXO (standard): 10 millisecs/day. Serves Stratum 1 time for 24 hours after signal loss.
- OCXO: 100 microsecs/day. Serves Stratum 1 time for 35 days after signal loss.
- Rubidium: 8 microsecs/day. Serves Stratum 1 time for 140 days after signal loss.

SYNCHRONIZATION ACCURACY:
- GPS Receiver Accuracy: < 30 nanoseconds to GPS (< 100 ns to UTC*) when locked.
- NTP Timestamp Accuracy: < 10 microseconds @ 200 packets/second (200,000 clients).
- NTP Client Synchronization Accuracy: Network factors can often limit LAN synchronization accuracy to ½ to 2 milliseconds, typical.
  *Constraints in the official GPS spec prohibit claiming an accuracy to UTC better than 100 ns.

SUPPORTED PROTOCOLS:
- SNTP, NTP v2, v3, v4, MD5 authentication, and broadcast/multicast mode and autokey.
- SSH server with "secure copy" utility, SCP.
- SNMP v1, v2c, v3 with Enterprise MIB.
- TIME and DAYTIME server.
- TELNET client/server.
- FTP and DHCP clients.
- SYSLOG.
- IPv4 and IPv4/IPv6 Hybrid.
- Optional PTP/IEEE-1588.

NTP CLIENT SOFTWARE:
- Please refer to www.endruntechnologies.com/ntp-client.htm.

NETWORK I/O:
- Rear panel RJ-45 jack.
- AMD PC-Net Fast III 10/100Base-T Ethernet.

SERIAL PORT I/O:
- 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: Green LED pulses to indicate lock status.
- Network LED: Amber LED indicates network activity.
- Alarm LED: Red LED indicates a serious fault condition.

ALPHANUMERIC DISPLAY/KEYPAD:
- Display: Brilliant 16x280 dot-matrix vacuum-fluorescent.
- Keypad: Enter, Back, Edit, Right, Left, Up, Down, Help.

FIRMWARE UPGRADES:
- Software is field-upgradeable and provided free-of-charge.

POWER:
- 90-264 VAC, 47-63 Hz, 0.5A Max. @ 120 VAC, 0.25A Max @ 240 VAC.
- 110-370 VDC, 0.5A Max. @ 120 VDC.
- 3-Pin IEC 320 on rear panel, 2-meter cord included.

SIZE:
- Chassis: 1.75"H x 17"W x 10.75"D.
- Weight: < 5 pounds.
- Antenna: 2.5"H x 3.5" diameter.

ENVIRONMENTAL:
- Temperature: 0° to +50° C.
- Humidity: 0 to 95%, non-condensing.

COMPLIANCE:
- CE, FCC.

OPTIONS:
- OCXO, Rubidium, IEEE-1588 (PTP), Timecode, 1 PPS, Alarm Output, Sysplex Timer Output, -48 Vdc Input, 10 MPPS, Programmable Pulse Rate Output. More options available - call us.

PTP/IEEE-1588 (Grandmaster) - (option):
- IEEE-1588-2002 (V1)
- PTP Timestamp Resolution: 1 microsecond.
- PTP Slave Synchronization Accuracy to the Grandmaster: 10 microseconds, typical, network topology dependent.

1 PPS OUTPUT - (option):
- 1 PPS: Positive TTL pulse @ 50Ω or RS-422 levels.
- User-Selectable Width: 20 us, 1ms, 100 ms, 500 ms.
- Accuracy: < 30 nanoseconds to GPS Time (< 100 ns to UTC*) when locked.
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- Stability: TDEV < 20 ns, $\tau < 10^5$ seconds.

TIMECODE OUTPUT - (option):
- Signal: 1 Vrms into 50Ω, 1 kHz carrier.
- User-Selectable Format: IRIG-B120 (IEEE-1344), IRIG-B122, IRIG-B123, NASA-36, or 2137.

ALARM OUTPUT - (option):
- Open Collector, 40V Max, 100 mA Max Saturation Current.
- High impedance after signal loss or at major hardware fault.

PROGRAMMABLE PULSE RATE OUTPUT - (option):
- Pulse: TTL squarewave into 50Ω.
- User-Selectable Rate: 1, 10, 100, 1K, 10K, 100K, 1M, 5M, 10M PPS and DC-Shift Timecode.
- Accuracy: $< 10^{-13}$ to UTC for 24-hour averaging times when locked.
- Stability: $\sigma_y(\tau) < 10^{-9}$ for $\tau < 10^2$ seconds,
  $\sigma_y(\tau) < 10^{-7}/\tau$ for $\tau > 10^2$ seconds.

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 - call us.

EndRun TECHNOLOGIES
"Smarter Timing Solutions"
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Unison *GPS Network Time Server*

A Stratum 1 Time Server Inside Your Firewall

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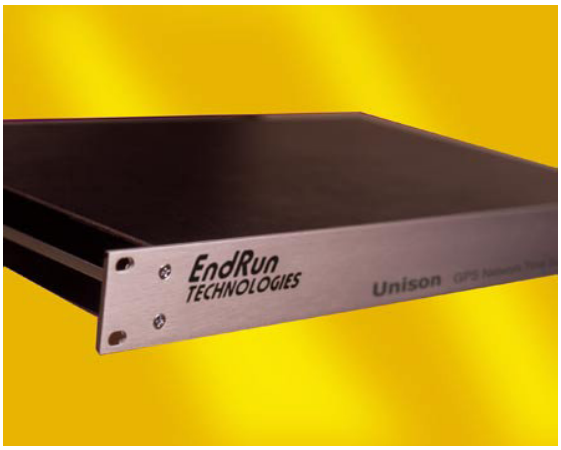

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FEATURES

- NTP v4, SNMP v3, SSH and more.
- IPv6 and IPv4 Compliant.
- Serves Stratum 1 Time for 24 Hours if GPS Signal Lost. Up to 100 Days with Oscillator Upgrade Option.
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- Free Window-Mount Antenna Kit.
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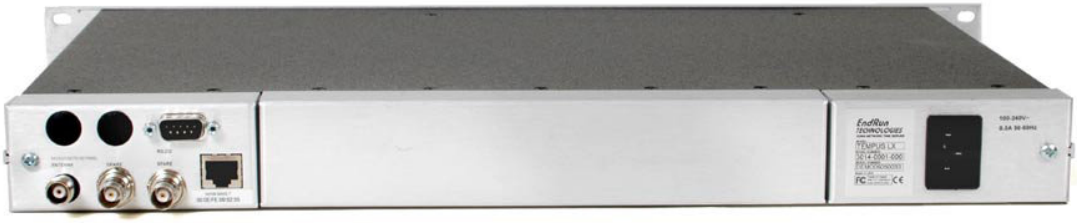

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