

Tempus LX

CDMA Network Time Server for Japan

The Tempus LX is a full-featured, Stratum 1 Network Time Server which is specially engineered to receive Japanese Code Division Multiple Access (CDMA) signals. This permits the unit to be installed inside the building with no outdoor antenna. The Tempus LX has an ultra-fast microprocessor for high-capacity packet throughput and supports many network protocols including NTP, SNTP, TELNET, FTP and DHCP. It also provides the ultimate in secure network management protocols including SNMP v3, the secure version of SNMP, and SSH, the "secure shell". The unit can be managed via SNMP, SSH, TELNET, or a local console on the RS-232 serial port, in addition to a vibrant 16x280 dot-matrix vacuum-fluorescent display with user-friendly keypad design.

FEATURES

- NTP v4, SNMP v3, SSH and more
- IPv6 and IPv4 Compliant
- High-Capacity NTP Packet Throughput
- Oscillator Upgrade Options
- Three-Year Warranty

KEY BENEFITS

- Easy indoor installation.
- Eliminates costly antenna installation fees.
- Provides accurate and secure network time.
- Reliably synchronizes up to 200,000 client computers.
- No subscriber fees.



CDMA Timing and Frequency Control

Utilizing a CDMA receiver, the Tempus LX Network Time Server receives precise timing signals via the CDMA cellular mobile telecommunications network (KDDI). This allows the Tempus LX to synchronize to UTC to the 10-microsecond level of accuracy. Network factors generally reduce client synchronization accuracy to the 1/2 - 2 milliseconds realm, which is typical of all high-performance network time servers.

Reliability

Precise synchronization of the CDMA base station transmissions is critical to proper operation of the mobile

telecommunications system throughout Japan. In most locations there are several CDMA base stations that Tempus LX can automatically select. In addition, since the antenna is inside the building, it is not susceptible to rooftop antenna failures caused by adverse weather conditions or maintenance activities.

Simple Installation

Most network time servers require a roof-mounted GPS antenna. But, in many Japanese cities it is often impossible to install a roof-mounted antenna. Since Tempus LX can receive timing signals inside the building, it does not need an outside antenna and saves installation and leasing costs. The rack-mounted unit can be easily installed where it is needed and the 10/100Base-T ethernet interface smoothly integrates with existing network equipment.

Security

Security is one of the hallmarks of an EndRun Technologies' NTP Server. The incorporation of SNMP v3 and SSH to perform monitoring and maintenance procedures, provides the ultimate in network security and is better than other protocols such as TELNET, FTP and older versions of SNMP. The SSH implementation includes SCP, the "secure copy" utility which allows users to perform maintenance and software upgrades safely. Security-conscious users can also disable any or all of the risky protocols such as Telnet, Time and Daytime. In addition, access via SSH, SNMP and Telnet can be restricted to specific hosts.

High-Capacity NTP Server

The Tempus LX can serve accurate time to any system running an NTP or SNTP client. Using an embedded LINUX operating system running on a 133 MHz processor, it delivers fast throughput and high reliability. The high-bandwidth NTP capability ensures that a typical timestamp accuracy of <10 microseconds can be sustained while handling hundreds of NTP requests per second. This translates into the support of up to 200,000 clients with no degradation in timing accuracy.

Three-Year Warranty

The Tempus LX is backed by a full three-year warranty against defects in material and workmanship.

Risk-Free Guarantee

If your standard Tempus LX does not meet your network timing needs for any reason, simply return it within 60 days for a full refund. See www.endruntechnologies.com/guarantee.htm for more details.

Tempus LX CDMA Network Time Server Specifications



CDMA RECEIVER:

- J-CDMA Mobile Receive Band - 832-870 MHz.
- TIA/EIA IS-95 CDMA Pilot and Sync channels.

ANTENNA:

- TNC jack on rear panel, $Z_{in} = 50\Omega$.
- Dual Band, 824-896 MHz/1850-1990 MHz, magnetic-base with integral 12 ft. RG-58/U cable and TNC plug.
- Extension cables and preamplifiers are available as options.

ALPHANUMERIC DISPLAY/KEYPAD:

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

LOCAL OSCILLATOR:

- TCXO. Medium and High-Stability OCXOs, or Rubidium (options).

TIME TO LOCK:

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

NETWORK I/O:

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

SUPPORTED PROTOCOLS:

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

CLIENT SYNCHRONIZATION ACCURACY:

- Timestamp accuracy: < 10 microseconds @ 200 NTP packets/second (200,000 clients).
- Network factors can limit LAN NTP synchronization accuracy to 1/2 - 2 ms, typical.

NTP CLIENT SOFTWARE:

- <http://www.endruntechnologies.com/ntp-client.htm>.

SYSTEM STATUS INDICATORS:

- Sync LED: Green indicator pulsates to indicate the lock status.
- Network LED: Amber indicator illuminates when the ethernet connection is up, and flashes when ethernet packets are received or transmitted.
- Alarm LED: Red indicator illuminates when a serious fault condition exists.

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.

FIRMWARE UPGRADES:

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

POWER:

- 85-270 VAC, 47-63 Hz, 0.5A Max. @ 120 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: 14"H x 2" diameter at base.

ENVIRONMENTAL:

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

COMPLIANCE:

- CE, FCC.

OPTIONS:

- OCXO, Rubidium, Timecode, 1 PPS, Alarm Output, Sysplex Timer Output, -48 Vdc Input, 10 MPPS, Programmable Pulse Rate Output.

1 PPS OUTPUT - (option):

- 1 PPS: Positive TTL pulse into 50 Ω .
- User-Selectable Width: 20 us, 1 ms, 100 ms, 500 ms.
- Accuracy: < 10 microseconds to UTC typical when locked.
- Stability: TDEV < 50 ns, τ < 10⁴ seconds.

TIMECODE OUTPUT - (option):

- Signal: 1 Vrms into 50 Ω , 1 kHz carrier.
- User-Selectable Format: IRIG-B (122, 123, IEEE-1344 compliant), NASA-36 or 2137.

PULSE RATE OUTPUT - (option):

- Pulse: TTL squarewave into 50 Ω .
- User-Selectable Rate: 1, 10, 100, 1K, 10K, 100K, 1M, 5M, 10M PPS and Timecode.
- Accuracy: < 10⁻¹¹ to UTC for 24-hour averaging times when locked.
- Stability: $\alpha_y(\tau) < 10^{-9}$ for $\tau < 10^2$ seconds,
 $\alpha_y(\tau) < 10^{-7}/\tau$ for $\tau > 10^2$ seconds.

ALARM OUTPUT - (option):

- Open Collector, 40V Max, 100 mA Max Saturation Current.
- High impedance after signal loss or at hardware fault.

SYSPLEX TIMER ONCE-PER-SECOND OUTPUT - (option):

- RS-232 output only port.
- ASCII characters indicating current time.
- 9600 baud, 8 data bits, 1 stop bit, odd parity.
- IBM Sysplex Timer compatibility.

Tempus LX is also available with GPS.

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