



## Time Server NTS-5000

- STRATUM 1 Network Time Server NTP/SNTP
- Rubidium atomic clock
- High accuracy time operation via GPS satellites
- Synchronize Computer Devices over LAN/WAN
- Fully redundant 2nd source of time via DCF77 (option)
- 1PPS time disciplined based on PLL/FLL technology
- SNMP Agent
- 2xLAN 10/100Base-T autosensing Ethernet Interfaces
- MD5 NTP Authentication
- Upgradeable Flash Memory
- Remote Configuration Support

The NTS-5000 Network Timeserver provides a high precision time directly to TCP/IP networks using NTP (Network Time Protocol). It synchronizes time of any NTP clients running on remote PC's. It supports both NTP and SNTP clients for most of current popular operating systems including: Microsoft Windows 95/98/Me/NT/2K/XP, Linux, FreeBSD, HP-UX, IBM AIX, IBM AS/400, SUN and other UNIX family systems. It can synchronize simultaneously thousands of servers, workstations and routers, including all CISCO product.

The NTS-5000 is ideally suited for delivering system-wide for financial institutions, network security, e-commerce. It supports official timestamps and it can operate in NTP authentication mode protected by MD5 algorithms. Unit supports broadcast, multicast, and passive client/server modes of time synchronization.

The high precision UTC time is powered by cesium atomic clocks coming via GPS (Global Positioning System) satellite system and internal rubidium clock. Fully redundant 2nd source of time via DCF77 (option). The NTS-5000 distributes UTC reference time to 2 isolated Ethernet 10/100Mbs sub-networks. All information is traced on front panel LCD display as well as it can be monitored over network using software: standard NTP utilities `ntpq`, `ntpd`, WWW service (supporting web browser), TELNET, SSH, SNMP.

It is also possible to use several NTS-5000 units simultaneously. This improves safety of time synchronization over network. All units can work independently or in primary/backup mode. This is one of the ways to set Time Failed Tolerance network. Every NTS-5000 can handle up to 3 backup NTS-5000 or NTS-3000 units. In case of GPS or hardware problems, backup NTS-5000 takes time control automatically. This technology is recommended for public timestamp certification networks, financial institutions and military purposes.

NTS-5000 unit can be configured as one timeserver, which provides time for LAN/WAN, or as three virtual timeservers, with separate IP networks connected via each of three Ethernet sockets.

The NTS-5000 timeserver is a multiprocessor system. It contains GPS satellite time receiver controlled by single chip microcomputer. It also contains a special microcomputer dedicated for handling NTP (2xLAN) service. This microcomputer is driven under control of special nanokernel UNIX family operating system. System contains 3 independent fast Ethernet 10/100Mbs. Single front panel serial port is dedicated for setup utility. The LCD display shows GPS communicates and status information.

## Input Synchronization Sources

- primary GPS satellite signal,
- rubidium atomic clock,
- 2nd backup DCF77 (optional),
- 1PPS one pulse per second signal,
- RTC quartz clock,
- up to three NTP backup servers, optionally authorized with MD5 symmetric keys, or stronger, assymmetric private/public keys.

## Supported client OS

- all UNIX systems, including AIX, HP/UX, Linux, all BSD,
- all Cisco routers,
- Novell Netware, including version 3, 4, 5, 6,
- Windows 95/98/Me/NT/2000/XP, both Server and Workstation versions.

## Remote configuration

- WWW graphical interface, secured with SSL
- telnet and SSH support

## Remote monitoring

- ntpq/ntpd support
- WWW networking and timing status page
- SNMPv2 MIB

## Network Protocols supported:

- NTP (RFC 1305), SNTP (RFC 2030)
- SNMPv2 Enterprise MIB II
- HTTP, HTTPS
- Telnet, SSH

## Long life

- NTS-5000 unit has natural cooling system
- there are no mechanical parts, such as fan or ventilator

## Output specification:

**Serial I/O:** Bidirectional RS-232, 9600, 8N1, /SETUP & DCF77 signal/, optional 1PPS output on RS232 signal levels

**Alphanumeric Front Panel Display:** 2-line, 20-character LCD.

## Rubidium clock

**Accuracy at shipment**  $5 \times 10^{-11}$

**Aging (after 30 days)**

$< 5 \times 10^{-11}$  (monthly)

$< 5 \times 10^{-10}$  (yearly)

**Short term stability (Allan variance)**

$< 2 \times 10^{-11}$  (1 s)

$< 1 \times 10^{-11}$  (10 s)

$< 2 \times 10^{-12}$  (100 s)

## Mechanical/Environmental

**Size:** 3.5" x 17" x 12" (8.8 cm x 43.2 cm x 30.2 cm)

**Power:** 85-264 Vac, 120 to 300 Vdc, 47 to 440 Hz, <15 watts, input current 1A max, EMI filter build in FCC-ClassB CCIPR22ClassB, EN55022ClassB VDE0878PT3 ClassB,

**Operating Temperature:** 0°C to +50°C

**Storage Temperature:** -40°C to +85°C Humidity: up to 95%, noncondensing

## Product Includes:

NTS-5000 Network Time Server (2U rack'19 metal case), GPS antenna, rubidium atomic clock, 200m cable, high frequency converter with surge protection, mounting mast, PDF manual, CD with NTP client software (all platforms), RS232 cable, power cord.

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