

- IEEE1588 Grandmaster/Slave
- NTP STRATUM 1 Timeserver
- IRIG-B STANAG4430 NASA36\*
- Redundant hardware
- Strong cybersecurity isolation
- UTC/ZULU time management
- GNSS anti jamming spoofing
- RF attack auto ON/OFF antenna
- GNSS 2x inputs (ANT1 ANT2)
- GPS/GALILEO/GLONASS/BEIDO
- Built-in OSC Rubidium & OCXO
- Extra long holdover w/o GNSS



- EURAMET audited & approved
- ITU T G.8272 PRTC compliant
- Direct serial ToD from 5071A
- 10x LAN 10GbE/1GbE/100M
- PTP, SyncE, NTP, IRIG, DCF77
- 10,000 NTP msg/s @1GbE
- 128 PTP msg/s @1GbE
- 1000 IEEE1588 clients
- SNMP v2/v3 MIB 2 RADIUS
- I/O 1PPS 10MHz 2.048Mbps

# NTS-5000 Rb OCXO

## NTP/PTP IEEE1588 Modular Time Server

**NTS-5000 Rb OCXO** is a carrier-grade Grandmaster clock with additional capabilities of cyber-security that provide a flexible technology suite to match the synchronization needs of evolving IPv4 and IPv6 networks.

The server enables communications service providers to build a robust, stable and reliable distributed network infrastructure ensured by multi-protocol use: IEEE1588, NTP, SyncE, IRIG-B, 1PPS, 10MHz etc.

The hardware redundancy is built in from scratch to each level of the architecture of the NTS 5000 time server Dual GNSS receivers (ANT 1 ANT 2 dual holdover oscillators (OCXO), and multiport LAN network interface expansion modules all ensure no impact on client synchronisation performance when failover occurs.

Separating clients provides the best cyber security protection, far superior to network redundancy models where random traffic pushes to reacquire synchronisation from a different grandmaster somewhere else in the network.

### GNSS Input Options

- Dual redundant GNSS input (ANT1/ANT2)
- GPS, GLONASS, Galileo, Beidou support

### Inputs

- 2x1PPS
- 2xToD
- 1xIRIG B AM
- 1xDCLS FO\*
- 1xDirect Cs atomic 5071A time scale UTC interface\*

### Outputs

- 2x1 GbE output SFP /Expander slots 1-4/ HW/stamps supporting PTP, NTP, and SyncE\*
- 10x1GbE output SFP /Expansion board 1/SW/stamps supporting PTP, NTP\*
- 2x10GbE SFP\*
- 2x100/10Mbps RJ4 HW/stamps supporting PTP, NTP, and SyncE\*
- 1xE1 (2.048 Mbps 2.048 MHz) unframed\*
- 1x1PPS
- 1x10MHz
- 1xIRIG B AM
- 1xToD (rs232)
- 2xIRIG AM or TTL (selectable)\*
- 2xIRIG DCLS FO\*
- 4xIRIG DCLS (rs422)\*
- 2xGNSS simulation (GPS L1 NMEA183)\*

### Client

- PTP IEEE1588 up to 10 00 clients/port
- PTP IEEE1588 up to 128 msg/s
- NTP up to 100,000 clients (default polling)
- NTP up to 10mln clients (1024s polling)
- NTP up to 10,000 clients/s (port)

\*option

### NTP Server

- Stratum 1 server through GNSS and/or atomic clocks
- Stratum 2 server when synchronised to remote Stratum 1

### PTP IEEE1588:2008

- Grandmaster, Sub Master, Slave
- 25ns accuracy Grandmaster 2 Salve HW/stamping

### PTP IEEE1588 Profiles via 2x LAN 1GbE Expanders 1-4

- Default
- Telecom ITU T G.8275.1 G.8275.2 G.8265.1
- Power & Utility IEEE C.37.238 v1 v2
- gPTP\*, TSN\* 802.1AS
- Broadcast\* AES67\*, SMPTE 2059.2\*

### SyncE (Expander 1-4 only)

- SyncE ITU ITG.8261

### Other SW/HW License Options

- Direct Cs atomic clock 5071 synchronisation to UTC/TAI
- Expander 1-4 PTP slave licence (32, 64, 128, 256 users)
- Expander 3-5 IRIG\*, AFNAR\*, STANAG4430\*, NASA36\* (contact ELPROMA for more Time Codes)

### Power Requirements

- 110-230VAC/20 70VDC/120 370VDC (dual redundant)
- 2A(DC) / 1A(AC) max. 80W (typical 60W)

### Hardware Modules

- Expander 1-4 ( 2 2xLAN, 4x IRIG I/O ports)\*
- Expansion (10 10xLAN, 4x IRIG I/O ports)\*
- OCXO module NTS 5000LITE & NTS 5000
- Rubidium module (only NTS 5000)

### Time Stamp Precision

- <5 ns RMS typical standard

### Frequency Accuracy

- Tracking to GPS: PRS/PRC/PRTC compliant
- Rubidium (G.812 type II)II)<1 1x10 11 /day
- OCXO (G.812 type I)I)<1 1x10 10 /day

### Rubidium holdover accuracy degradation on each next day

Days	1d	2d	3d	4d	5d	6d	7d	14d
ERROR µs	0,5	1,2	1,8	2,4	2,9	3,3	3,7	3,9

### OCXO holdover time accuracy degradation on each next day

Days	1d	2d	3d	4d	5d	6d	7d	14d
ERROR µs	0,6	2,8	7,2	13,7	22,1	32,9	45,9	184

## Protocols

- IEEE 1588-2008 (PTP Precision Time Protocol)
- NTPv4, NTPv3
- IPv4 / IPv6 optional
- DHCP
- SFTP,
- VLAN (1x PTP-slave, 9x PTP-master, 10x NTP)
- TELNET
- SYSLOG
- RADIUS
- SSH

## Physical Specifications

- Dimensions: 88,8 mm (H)×484 mm (W) ×300 mm (D)
- Weight: 6.1 kg



front

## Environmental Specifications

- Operating temperature: -5°C to +60°C
- Storage temperature: -55°C to +80°C
- Humidity: 5% to 100% with condensation
- MTBF 391000 hours

## Physical Specifications

- Dimensions: 88,8 mm (H)×484 mm (W) ×300 mm (D)
- Weight: 6.1 kg

## Environmental Specifications

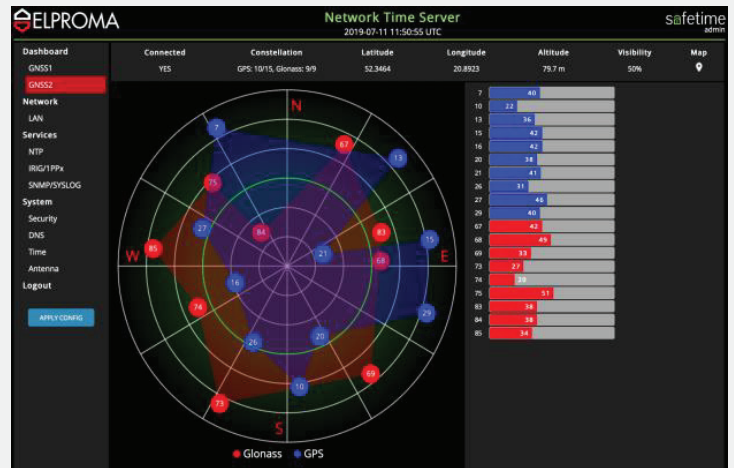
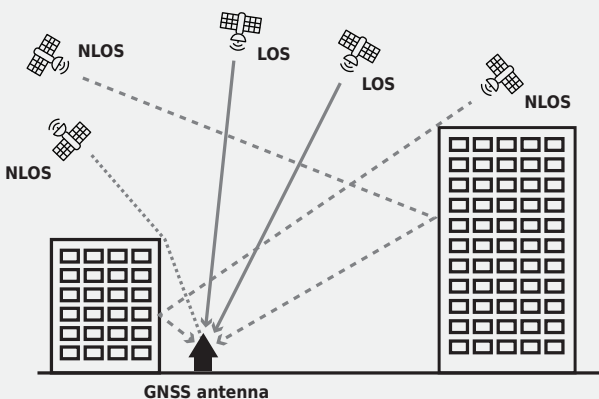
- Operating temperature: -5°C to +60°C
- Storage temperature: -55°C to +80°C
- Humidity: 5% to 100% with condensation
- MTBF 391000 hours



back

## GNSS satellite traceability

NTS 5000 has built in advanced GNSS satellite traceability SNMP external software supporting MIB 2. It is compatible with any OSS software. Our MIB 2 file defines one of the world's most significant event traps (databases, including GNSS jamming and spoofing recognition).



Optionally, customers can request a particular GNSS cyber security receiver version made by Furuno, who has developed a new unique technology to enhance the reception of GNSS signals. This unique functionality enables correct timing signals to be computed even when antennas are mounted in a lower part of the canyon, where GNSS signals are reflected, diffracted, jammed or spoofed.