ELPROMA TIME SYSTEMS

BANK / STOCK EXCHANGE

PUBLIC TRANSPORTATION

ARMY / POLICE BORDER GUARDS

PUBLIC INSTITUTION

- PTP IEEE1588 Grandmaster
- NTP Time Server STRATUM1
- GNSS Jamming* Detection
- GNSS Spoofing* Detection
- ATTACK Auto-ON Holdover
- HOLDOVER HQ OCXO
- NTP RFC 5905 - 5909
- SNTP RFC 4330 2030
- PTP IEEE1588:2008
- DAYTIME RFC867 RFC868

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- LAN 2x 100Mbps sw-stamp
- LAN 1GbE* hw-stamp PHY
- LAN 10GbE* sw-stamp
- IRIG-B AM(BNC) DCLS(DSUB9)*
- SyncE via Expander NIC
- REMOTE HTTP(S) TELNET, SSH
- SNMPv3 MIB2 RADIUS
- OUTPUT PPS PPM PPH 10MHz
- CRYPTO M D 5 RSA DSA SSL
- REDUNDANT 2x PWR Supply
- REDUNDANT 2x ANT* GNSS

NTS-4000

NTP/PTP IEEE1588 Network Time Server

NTS-4000 OCXO delivers time directly to network using NTP, PTP/IEEE1588 protocols. The default configuration is equipped with 2x LAN (LAN1, LAN2) 100/10Mbps speed. The LAN2 can be upgraded to 10GbE* SFP software timestamping interface.

The hardware timestamping option* is available on LAN3 (RJ45) and LAN4 (SFP). It is requiring additional EXPANDER* network card supporting 1GbE Ethernet. In case of using 1GbE HW-stamping, the LAN2 1x10GbE upgrade is not allowed. The maximum configuration of NTS-4000 supports 4x LAN: 2x 100/10Mbps & 2x 1GbE.

*option

The **NTS-4000** server takes ref. time from 2x independent redundant GNSS receivers. Built-in OCXO high performance oscillator ensures UTC when missing GNSS signals.

Server can be synchronized to external clocks using 1PPS, IRIG-B, RS232 (ToD) inputs. It also provides ref. time output using 1PPS, IRIG-B*, RS232, 10MHz, RS232(ToD).

Redundant Synchronization Inputs

- 2x RJ45-ANT1/ANT2 for connecting max. smart NTS-antenna:
  - Supported GNSS systems: GPS, GLONASS, GALILEO, BEIDOU
  - Supported RF receivers: single band L1/E1, optionally dual band L1+L2 or L1 +L5
  - Supported UTC accuracy: <5ns* or <15ns or <25ns depends on receiver option
  - Note1: Please refer to NTS-antenna specification (1pcs of included to std. product)
  - Note2: The „accuracy" to UTC means PPS stability, the max. time error to UTC**
- max. 10 remote NTP/PTP IEEE1588 time servers (number upgradable on requests)
- PPS BNC (50 Ohm) • IRIG-B AM (50 Ohm) • ToD (rs232 DSUB-9)

I/O

- All LAN interfaces are IEEE 802.3 compatible
- 2x LAN Ethernet 100Base-T (RJ45) LAN1-2
- 2x LAN Ethernet 1GbE* EXPANDER* LAN3-4
- 1x LAN Ethernet 10GbE* LAN2* update
- 2x Antenna INPUT or OUTPUT (RJ45)
- 3x RS232C(D-SUB9)
- 1x SMA* PPS-out (EXPANDER LAN3-4*)
- 5x BNC (50 Ohm): PPS, IRIG*, 10MHz
- 2x USB 2.0 (for firmware upload)

Network Time Protocol NTP v2, v3, v4 (LAN1-2)

- RFC1305 • RFC1119 • RFC5905 • RFC5906
- RFC5097 • RFC4330 • RFC2030 • RFC867 • RFC868

Precision Time Protocol PTP IEEE 1588 (LAN3-4)

Profiles:
- Default IEEE1588
- Telecom (incl. SyncE): ITU-I G.8265.1, ITU-I G.8275.1, ITU-I G.8275.2
- Broadcasting: SMPTE 2059.2
- Power & Power Utility: IEEE C37.238 (v2), IEC 61850-9-3
- (S)NTP Server
  - RFC4330 - RFC2030

Storage temperature: -55°C to +80°C
Humidity: up to 95%, MTBF 391000 hours

Remote configuration

- SNMP (v1,2,3) • MIB 2 • RADIUS • HTTP• HTTPS
- SSH • TELNET • NTPQ/NTPDC

Holdover

- OCXO HQ oscillator
- TCXO* Low-noise CHIP clocking
- DUAL* Both OCXO & TCXO clocking

Performance

- GNSS 1PPS-in @ 2-sigma/ < 5ns
- PTP master2slave sync (LAN3-4) < 25ns
- Network performance 9000 req/s
- Max. councurrent NTP clients 9.2 mln
- PTP max #SLAVE LAN3-4 32 (default)
- PTP max #SLAVE option: 128/256/450*

Time Accuracy & Time-Stamping

- GNSS receiver NTS-antenna pulse PPSinput: better than 5ns measured at 1-sigma
- GNSS receiver NTS-antenna pulse PPSinput: better than 15ns measured at 2-sigma
- Internal PPS pulse accuracy to UTC**: better than 5ns measured at 3-sigma
- LAN3-LAN4 harware time-stamping PTP/NTP better than 25ns
- LAN1-LAN2 software timestamping PTP/NTP better than 100us IEC61850 NTP/PTP, MiFID II NTP/PTP

Mechanical/environmental

- Size: 484x 300x 44,4 mm (rack'19 1U)
- Operating temp: -55°C to +80°C (receiver)
- Operating temp: 0°C to +60°C (server)
- Storage temp: -55°C to+80°C

Power supply

- Power: 110-230 VAC (1A), 50-60Hz
- 120-370 VDC (1A)
- Telecom: 48VDC option* 20-70 VDC (2A)
- Option: 2nd redundant* PWR-supply

HQ OCXO holdover measurement error is a difference between an indication of the NTS-4000 device under test 1PPS-output true value in relation to reference UTC(PL) signal provided by the Polish Central Office of Measures (atomic clock 5071A) .

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

*option