

NTS-4000

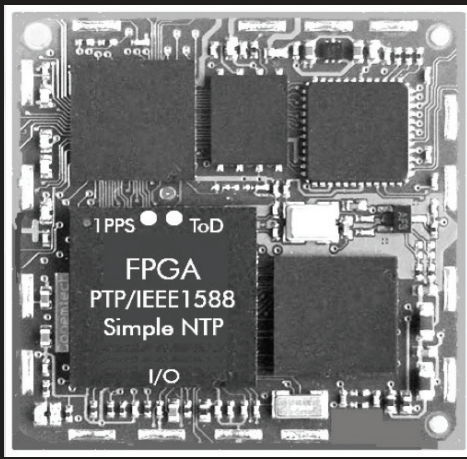
OCXO

NTP/PTP IEEE1588 Network Time Server

- PTP/IEEE1588 GRANDMASTER
- PRTC-A STRATUM-1 NTP
- Robust HQ OCXO holdover
- Low-noise TCXO* clocking

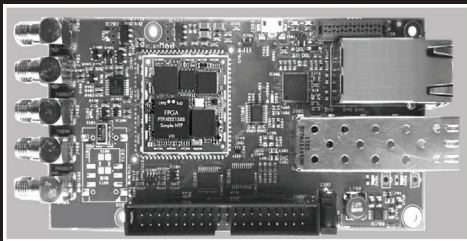


- Max 4x LAN (*New*)
Std. 2x LAN 100Mbps
Extra* 2x LAN 1GbE
or 1x LAN 10GbE
- Hardware* timestamping PHY
- PTP Power*, Telcom* profiles
- NTP RFC 5905-5909, 1305
- 2x Redundant ANT inputs
- 1PPS BNC Input/Output
- RS232/485 & USB interface
- SNMP v2,v3 & MIB2 agent
- RADIUS client*
- MD5, RSA, DSA, SSL security
- NTP MD5 SHA authentication
- HTTP, HTTPS, TELNET, SSH
- IRIG-B DCLS AM Input/Output
- Dual* redundant PWR-supply
- OCXO 10MHz BNC PRC-out



FPGA supports hardware timestamping

The miniature 2x2cm embedded PCB includes FPGA and it is a part of P-80 EXPANDER time-computer board



The EXPANDER P-80 computer option is autonomous PTP GRANDMASTER. It supports LAN3-LAN4 1GbE ETH

Network Time Protocol NTP v2, v3, v4 LAN1-2:

- RFC1305
- RFC1119
- RFC5905
- RFC5906
- RFC5907
- RFC4330
- RFC2030

Precision Time Protocol PTP IEEE1588 LAN3-4:

Profiles:

- Default
 - ITU-I G.8265.1
 - ITU-I G.8275.1
 - ITU-I G.8275.2
- Power
 - IEEE C37.238
 - IEC 61850-9-3
- (S)NTP Server
 - RFC4330
 - RFC2030

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

E-MAIL: info@elpromatime.com



NTS-4000 OCXO delivers time directly to network using NTP, PTP/IEEE1588 protocols. Default configuration is equipped with 2x LAN (LAN1, LAN2) 100/10 Mbps speed. The LAN2 can be updated on request* to 1x 10GbE SFP with software timestamping.

The hardware PHY timestamping is requiring additional EXPANDER* card supporting LAN3, LAN4 – both 1GbE. In such case, the 1x 10GbE LAN2 interface is not allowed. The max. configuration supports 4x LAN (2x 100/10Mbps; 2x 1GbE via EXPANDER).

NTS-4000 server is equipped with 2x independent redundant GNSS receiver inputs. 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).



EXPANDER CARD

(1) LAN2 1x 10GbE or (2) LAN3-4 1GbE or (3) 2nd redundant PWR-supply

Redundant Synchronization Inputs

- max. 2x NTS-antenna ANT1/ANT2 with built-in GNSS receiver and supporting:
 - GPS L1 (1575,42MHz)
 - GLONASS L1 (1598,06-1605,38MHz)
 - GALILEO* E1 (1575,42MHz)
 - BEIDOU* L1 (1561,09-1575,42MHz)
 Note: All PPS & GNSS pulse accuracy < 5ns
- Remote NTP/PTP time servers
- PPS BNC (50 Ohm) • IRIG-B AM (50 Ohm) • ToD (rs232 DSUB-9)
- New Dual Band* L1+L2 or L1+L5 multipath mitigation

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)

Remote configuration

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

Holdover

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

Performance

- GNSS 1PPS-in @ 1-sigma/ < 5ns
- PTP master2slave sync (LAN3-4) < 25ns
- Network performance 9000 req/s
- Max. concurrent 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 at 1-sigma
- GNSS receiver NTS-antenna pulse PPSinput: better than 15ns at 2-sigma
- Internal PPS pulse: better than 5ns
- LAN3-LAN4 hardware time-stamping PTP/NTP better than 25ns
- LAN1-LAN2 software timestamping PTP/NTP better than 100us (IEC61850 NTP/PTP)

Mechanical/environmental

- Size: 484 x 300 x 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, 120-370 VDC (1A)
- Telecom (48VDC) option: 20-70 VDC (2A)

STD HOLDOVER

GNSS less time	max. TIME ERROR	
	Rubidium (Rb)	OCXO
1s	0.1[ns]	5 [ns]
1minute	10 [ns]	300 [ns]
1hour	30 [ns]	560 [ns]
1day	0.8[us]	47 [us]
1week	11 [us]	2.2 [ms]
1month	0.2[ms]	40 [ms]
1year	16 [ms]	1.6 [s]

LOW-NOISE HOLDOVER

GNSS less time	max. TIME ERROR	
	Rubidium (Rb)+TCXO	OCXO+TCXO
1s	0.1[ns]	3 [ns]
1minute	9 [ns]	140 [ns]
1hour	25 [ns]	250 [ns]
1day	0.7[us]	22 [us]
1week	9 [us]	1.2 [ms]
1month	0.2[ms]	22 [ms]
1year	12 [ms]	0.9 [s]

* extra feature requiring additional hardware