

LEVEL-3

The GNSS Simulator & Synchronization TIME FIREWALL

Compatible to: [NTS-5000](#)
[NTS-4000](#) [NTS-3000](#)



- Isolates IT infrastructure from physical GNSS
- Protects any cyber-attack from physical GNSS
- 100% resistant to GNSS Jamming & Spoofing
- Replace GNSS ref. time by UTC via LAN or CLOUD
- Crypto-authenticated UTC via public Internet
- Qualified time from NMI incl. NIST, NPL, GUM ...
- Simulates GNSS antenna
- OXCO holdover 1U std. Rubidium* 2U (option)
- GNSS auto-calibration after power-on (GNSS)

* extra feature requiring additional hardware

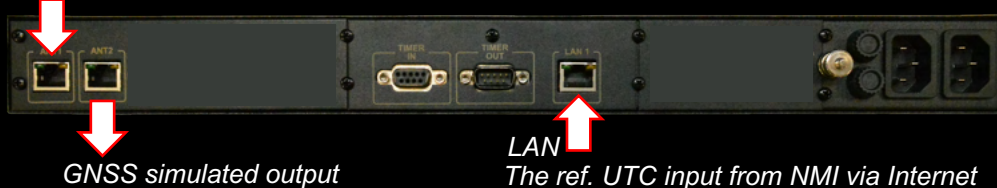
LEVEL-3 cyber-security appliance isolates synchronization of IT/OT of critical infrastructure from physical outside world of GNSS signals. It is fully compliant to US Directive EO 13905. The LEVEL-3 is a GNSS simulator device generating and delivering ref. UTC directly to ANT1/ANT2 of ELPROMA servers [NTS-3000](#), [NTS-4000](#), [NTS-5000](#). It is recommended for automated industry use, where there is a high risk of GNSS jamming/spoofing RF attack.

The ref. UTC time is delivered to LAN interface of LEVEL-3 using cryptographically authenticated NTP and PTP (IEEE158) protocols. The ref. UTC time is securely disseminated via public Internet or Cloud from US NIST, UK NPL, Polish GUM, Italian INRIM or any other National Institute of Metrology (NMI).

In case network failures or during cyber-attacks (DDoS attacks, TSA - Time Synchronization Attack, TDA -Time Delay Attack) the LEVEL-3 switches automatically to OCXO holdover mode. Optionally the Rubidium oscillator is available. The device supports GNSS simulation with accuracy better than 1 microsecond.

Technical Specification

GNSS optional GNSS input for calibration



GNSS simulated output

LAN
The ref. UTC input from NMI via Internet

Synchronization Inputs

- RJ45 (ANT1) optional* – used for GNSS calibration
- 2x LAN Ethernet 100Base-T (RJ45) labelled LAN1-2 providing ref. UTC from remote NMI via Internet/Cloud
Build-in NTP/PTP high performance client

Synchronization Outputs

- RJ45 (ANT2) GNSS simulation to NTS-3000/4000/5000 ANT1 /ANT2

Remote Management

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

Holdover

- HQ OCXO
- Rubidium* (requiring chassis upgrade to 2U)

Other I/O

- 3x RS232C (D-SUB9)
- 5x BNC (50 Ohm): PPS, IRIG, 10MHz
- 2x USB 2.0 (for firmware upload)

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

Redundant Power Supply

Power: 110-230 VAC (1A), 50-60Hz
120-370 VDC (1A)
Telecom: 48VDC option* 20-70 VDC
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



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* extra feature requiring additional hardware