ATMOS2 TIME SERVER

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Military-Grade Tactical System

The **ATMOS2 Time Server** delivers precision network synchronization and GNSS time distribution in a compact, ruggedized form factor built for the modern battlespace. Designed to slide seamlessly into other ATMOS nodes, it forms part of a scalable tactical computing stack, enabling reliable, secure time synchronization across deployed systems at the edge.

Powered by advanced timing architecture and protected against GNSS disruptions, the ATMOS Time Server ensures mission continuity in GNSS-denied or degraded environments. Its integrated Miniature Rubidium oscillator provides exceptional holdover capability, while dual redundant power and MIL-rated construction guarantee 24/7 uptime in the harshest conditions.

- Application-specific design
- Tested to meet military standards
- Built in the USA

Featured Specifications

Tactical Stack Integration
Fits in ATMOS modular node system

Timing
NTP v2, v3, v4 compliant
RFC 1305 and 5905
SNTP v3, v4

Dimensions
3.5″ Height
14.75″ Depth
8.5″ Width
13 lbs

MIL-SPEC Tested
Tested for shock and vibration
IP65 Sealed chassis

CORE SYSTEMS

ATMOS2 TIME SERVER

Technical Specifications

Dimensions
Height: 3.50 inches, Width: 8.50 inches, Depth: 14.75 inches

Timing Engine
GNSS receiver: L1 GPS / GLONASS, T-RAIM integrity monitoring
Holdover: Miniature Rubidium oscillator
Reference Outputs: 10 MHz (Sine, 10 dBm), 1PPS, IRIG, HaveQuick

Processor/Control
Embedded controller for timing management
Secure OS with hardened networking stack

Network Timing Services
NTP v2 / v3 / v4
PTP v2 (Master, Slave, Hybrid)
SNTP v3 / v4

Power
Input Voltage: 10–32 VDC
Onboard UPS

I/O Interfaces
GNSS RF In (SMA)
10 MHz Sine Out (SMA)
Pulse/DCLS TTL & 10 VDC In/Out
RS232 & RS485 Timing I/O
2× GbE (NTP, PTP)
Keyloader Port (DS101 / DS102)

Security
FIPS 140-2 cryptomodule
SSL / SSH / HSTS support
LDAP, RADIUS, TACACS+ authentication
Signed firmware updates
SNMPv3 secure management

Management & Communications
IPv4/IPv6 Dual Stack
VLAN Support
DHCPv4 / DHCPv6 / SLAAC
REST API configuration & monitoring
Syslog, SNMP, (S)FTP, SMTP

Environmental Specifications

Operational Temperature
MIL-STD-810F, Method 501.5, Procedures I/II: -15°C to +55°C

Storage Temperature
MIL-STD-810F, Method 501.5, Procedures I/II: -15°C to +55°C

Humidity
MIL-STD-810F, Method 507.4: 95% RH, 48 hours at 40 – 65°C

Altitude
MIL-STD-810F, Method 500.4: 12,500 ft operation;
40,000 ft transport

Vibration
MIL-STD-810G, Method 514.6: 4.43 GRMS, 5-20000Hz,
60 min/axis

Shock
MIL-STD-810G, Method 516.6: 20g, 11ms functional;
40g, 11ms crash hazard

EMC
MIL-STD-461F: CE & RE emissions

Timing Signals Table

Timing Signal	Coding / Modulation	Input / Output	Connector
GNSS RF	L1 GPS, GLONASS 72 channels, T-RAIM integrity monitoring	Input: 1 input	SMA, 5 VDC power supply to antenna
10 MHz	Sine, 10 dBm	Outputs: 4 outputs	SMA
Pulse/DCLS TTL level	1PPS, xPPS, IRIG, HaveQuick, alarm	Max 2 inputs, Max 5 outputs	I/O connector
Pulse/DCLS 10 VDC	1PPS, xPPS, IRIG, HaveQuick, alarm	Max 1 input, Max 1 output	I/O connector
RS232	NMEA 0183, other ASCII ToD formats	Max 3 inputs, Max 3 outputs	I/O connector
RS485	HaveQuick, xPPS	Max 3 inputs, Max 4 outputs	I/O connector
NTP over LAN (GbE)	NTP v3, v4; client, server	2	LAN connector
PTP over LAN (GbE)	PTP v2; Master, slave	2	LAN connector

Front Panel Connections Table

Interface	Type of Data	Connector
GNSS RF in	GNSS signal	SMA
Power in	DC power	Circular mil-type
Frequency out	10 MHz sine	SMA
Timing in/out	Pulse/DCLS, RS232, RS485, USB	Circular mil-type
GbE	NTP, PTP, navigation messages, monitoring	Circular mil-type
M-Code keyloader	DS101, DS102	Circular mil-type

Timing and Frequency Performance Table

Parameter	OCXO High Perf	mRO-50
Timebase Performances		
Relative Frequency Variation with Aging		
24 hours	1×10^{-10}	—
One month	3×10^{-10}	1×10^{-10}
One year	3×10^{-8}	1×10^{-9}
Relative Frequency Variation with Temperature	$\pm1\times10^{-9}$ (−40°C to +71°C)	$\pm1\times10^{-9}$ (−10°C to 65°C)
Short Term Stability (Allan Deviation)		
@1s	1×10^{-10}	1×10^{-9}
@10s	3×10^{-11}	3×10^{-11}
@100s	3×10^{-11}	1×10^{-11}
Phase Noise on 10 MHz Output		
@10 Hz	−115 dBc/Hz	−90 dBc/Hz
@100 Hz	−133 dBc/Hz	−110 dBc/Hz
@1 kHz	−147 dBc/Hz	−135 dBc/Hz
@100 kHz	−155 dBc/Hz	−140 dBc/Hz
Harmonic Distortion	−40 dBc	−40 dBc
Spurious	−60 dBc	−60 dBc
System Performance in Main Power Mode		
Frequency Accuracy Averaged Over 24 hours (GNSS Locked)	2×10^{-12}	1×10^{-12}
Maximum 1PPS Time Error in Holdover After 48 Hours of Disciplining		
4 hours	1.5 µs	0.2 µs
24 hours	10 µs	1.5 µs
7 days	0.4 ms	20 µs
Phase (1PPS) Accuracy to UTC When Locked on GNSS	±15 ns	±15 ns