# Data Sheet 119-0219 T300 1U Rack-mountable GPS NTP Server

TimeTools T300 time server is a cost-effective, accurate, Stratum-1 GPS referenced Network Time Protocol Server in a 1U rack-mountable enclosure.

It provides an accurate time reference to computer networks and can accurately synchronize any NTP or SNTP compatible system.


## Highlights

NTPv4 Stratum-1 GPS Network Time Server.

GPS accurate to 15 nanoseconds (GPS Locked).

NTP accurate to 3 microseconds (GPS Locked).

Synchronize in excess of 100,000 clients at default NTP polling frequency.

10/100 Mbit auto-sensing, auto-MDIX Ethernet port.

IPv4 and IPv6 Internet Protocols.

Extremely cost-effective.

Integrated universal AC mains input PSU.

Made in UK, with 6-year warranty and free lifetime support.

## Applications

- Network timing, measurement and synchronization.
- Synchronize Microsoft Windows, Linux, servers, workstations and network infrastructure.
- Automation Systems, SCADA, Network Monitoring and Control Systems.
- CCTV, DVR and Video Management Systems (VMS).
- Access Control Systems (ACS).
- Master clock for NTP synchronized clock systems.
- Accurately synchronize time critical processes to a traceable source of time inside your firewall.

## Key Features and Benefits

- Linux based true stratum-1 NTP time server.
- Extremely easy to install and configure.
- Simple web based configuration and status information.
- High-quality, 1U high, 19” rack-mountable aluminium enclosure.
- Large back-lit LCD display shows detailed status information.
- USB port for convenient firmware updates.

## GPS Timing Features

- 16 channel, high-sensitivity, GPS timing receiver with single-satellite in view operation.
- Operation with outdoor, indoor or window located antenna with limited sky view, saving on cabling costs.
- Timing receiver synchronizes to 15 nanoseconds ($15x10^{-9}$ sec, 1 sigma, GPS locked).
- Time-Receiver Autonomous Integrity Monitoring (T-RAIM) assures very high timing integrity.
- Fully automatic impending leap second warning and insertion, no user intervention required.
- Jam-resistant signal reception.

## NTP Timing Features

- NTP synchronization to <3 microsecond ($3x10^{-6}$ sec) UTC (GPS Locked).
- Ability to synchronize in excess of 100,000 clients at default NTP polling frequency.
- Peer to multiple external and internet based NTP servers.
- MD5 authentication for enhanced security.

## Reliable and Environmentally Friendly

- Based on extremely reliable industrial computing module.
- Very low-power consumption, less than 7W.
- RoHS compliant - Restriction on use of hazardous substances.

## Networking Features

- 10/100 Mbit Auto-Sensing, Auto-MDIX Ethernet port.
- NTPv4, SNTPv4, HTTP, HTTPS, SSH, SCP, SFTP, FTP, SNMPv1 and SNMPv2c alarms, DHCP, DHCPv6.
- IPv4 and IPv6 Internet Protocol.

## Warranty and Support

- Made in UK, with industry leading 6-year warranty.
- Free unlimited support and firmware updates for the lifetime of the product.

# Product Specification

**Interfaces**
10/100 Mbit Base-T, RJ45, Auto-Sensing Network Interface.
TNC RF Connector For Active GPS Antenna.
USB port for firmware updates.
RS232 Console Port for Configuration and Status.
Second RS232 (shared) Port for serial time code output.

**Operating System**
Flash-Based Linux Operating System with PPS Extensions.

**Internet Protocol (IP)**
IPv4, IPv6.

**Timing Protocols**
NTP v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905).
SNTP v3 (RFC 1769), SNTP v4 (RFC 2030).
NTP Peering, NTP Broadcast.
NTP MD5 Authentication.
Max. Clients at Default NTP Polling Freq.*1: 100,000

**Configuration and Monitoring Protocols**
HTTP, HTTPS, SSH, SCP, SFTP, FTP.
SNMPv1, SNMPv2 Trap Alarms.
Dynamic Host Configuration Protocol - DHCP (RFC 2131).
Dynamic Host Configuration Protocol - DHCPv6 (RFC 3315).

**Monitoring and Reporting**
SNMP v1/v2c Trap Alarms (Can be disabled).
GPS Satellites in View & Signal to Noise Ratio (SNR).

40 character x 2 line LCD display.
Red/Green Alarm LED.

**Timing (typical)**
GPS Accuracy: 15 nanoseconds ($15x10^{-9}$ sec, GPS Lock)
NTP Accuracy (GPS Lock): <3 microsecond ($3x10^{-6}$ sec)

**GPS Timing Receiver**
16 Channel GPS Receiver.
Time-Receiver Autonomous Integrity Monitoring.
High Sensitivity Outdoor/Indoor Antenna Operation.
Over-Determined Clock, Single Satellite Operation.

Positioning System: SPS, Timing
Update Rate: 1 Hz
Typical Min Acquisition Sensitivity: -148dBm cold start
Typical Min Tracking Sensitivity: -160dBm
Time to First Fix: <46s (50%), <50s (90%) cold start
Typical Time to Re-acquisition: <2s (90%)

**Mechanical \ Environmental**
Dimensions: 483 x 145 x 44 mm (19.0” x 5.71” x 1.73”)
Construction: 1U High 19" Rack-mount, Aluminium
Weight: approx 1.2Kg (2.6lbs)

Power: 100-240VAC 50-60Hz 0.1A
Fuses: Two, T0.315A LBC 250V
Power Consumption: <7W
Double Fused IEC Inlet

Operating Temperature 0°C ~ +50°C
Storage Temperature -20°C ~ +85°C
Working Humidity 90% RH non-condensing

**Antenna General Specifications**
T-3040 GPS Antenna

Size: 66.5mm diameter x 21mm High
Weight: 150g
Enclosure: Radome: EXL9330, Base: Zamak White Metal
Attachment Method: Through hole (M18 x 1 thread)
Environmental: IP67
Operating Temperature: -20°C ~ +85°C

LNA Gain: 40 dB typical.
Supply Current: 19mA typical.
Supply Voltage: 2.5 to 12 VDC nominal

**Approvals**
CE: 1999/5/EC
2011/65/EU
93/68/EEC
Safety: EN 60950-1: 2006+A2: 2013
EMC: ETSI EN 301 489-1: V1.9.2 (2011-09)
ETSI EN 301 489-3: V1.6.1 (2013-08)
ETSI EN 300 440-2 V1.4.1:2010-08
EN 61000-3-2: 2014
EN 61000-3-3: 2013
RoHS: EN 50581:2012



TimeTools

ISO 9001 REGISTERED FIRM

# Ordering Information

**Product Codes**

119-0219 T300-00  GPS NTP Server appliance.

**Scope of Supply – What is Included**

| | |
|---|---|
| T300 | GPS NTP Server Appliance. |
| T-3040 | Pole Mounting GPS Antenna . |
| MT4-GPS | Antenna Mount. |
| TCX-030 | 30m (100 ft) RG58 Cable. |

IEC Power Lead.
RS232 Serial Console Cable.
Quick Start Guide.
CD containing user-guide, installation guide and white-papers.

**Optional Accessories**

| | | |
|---|---|---|
| TCX-010 | | 10m RG58 Cable. |
| 119-0222 | TCX-030 | 30m RG58 Cable. |
| 119-0224 | TCX-050 | 50m LMR195 Equivalent Cable. |
| TCX-100 | | 100m LMR400 Equivalent Cable. |

Custom cable lengths available on request.

| | | |
|---|---|---|
| 119-0210 | SPP-GPS | Multi-strike maintenance-free surge suppressor |
| T-AD200-8 | | GPS Amplifier – 20db |

GPS over optical fibre systems.
GPS Splitters – 2 to 32 way, compact or rack-mount.
Digital  NTP Wall clocks.
Analog NTP Wall clocks.

*1. Assuming default 64 sec client NTP polling frequency. Even more clients can be synchronized by decreasing the polling frequency.

TimeTools Limited has relied on representations made by its suppliers in certifying this product as RoHS compliant.

TimeTools Limited is not responsible for the availability, operation or failure of operation of GPS/GNSS satellites.

In no event will TimeTools Limited be liable for any indirect, special, incidental, or consequential damages from the sale or use of this product. This disclaimer applies both during and after the term of the warranty. TimeTools Limited disclaims liability for any implied warranties, including implied warranties of merchantability and fitness for a specific purpose.

All specifications subject to change without notice.

Terms and conditions of sale available on request.



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