Data Sheet

TA610 Ultra-Fast GPS-Galileo NTP Time Server

TimeTools TA610 is an ultra-fast, security-hardened, GPS-Galileo (Multi-GNSS) referenced Stratum-1 Network Time Protocol (NTP) Server in a 1U rack-mountable enclosure. It can provide a precise time reference for computer networks of almost any size and can accurately synchronize any NTP or SNTP compatible client.

With a powerful Quad-Core, network optimized, 64-bit processor, the TA610 can process in excess of 50,000 NTP polls per second (3 million per minute) without affecting timing. Allowing a large number of network time clients to synchronise with extremely high precision.

Featuring Gigabit Ethernet (GbE) and an advanced, 92 channel, GNSS timing receiver which provides concurrent, or selectable, reception of GPS (US) and Galileo (EU) satellite systems for improved reliability and redundancy.

TimeTools TA610 also incorporates a high-stability Temperature-Compensated Crystal Oscillator (TCXO), which provides extended Stratum-1 operation in the event of any loss of GNSS signal lock.

Designed and Manufactured In The UK.

Security-Hardened, Enterprise-Class, Stratum-1 NTP v4 Network Time Server.

Ultra-Fast, 50,000 NTP Polls Per Second (3M/minute), For Precise Client Synchronization.

Advanced, 92 Channel, Multi-GNSS Receiver For Concurrent, or Selectable, Reception Of GPS (US) and Galileo (EU) Satellite Systems.

High-Stability, Temperature-Compensated Crystal Oscillator (TCXO) For Extended Stratum-1 Operation In The Event Of Any Loss of GNSS Signal Lock.

Network-Optimized Gigabit Ethernet (GbE).

NTP synchronization to <2 microseconds UTC (GPS Locked).

Powerful, Easy To Use, Web Interface With Command Line Interface For Advanced Users.

Full MD5, SHA1 and SHA256 NTP Authentication For Enhanced Security.

Peer To Multiple External NTP Servers For Improved Redundancy.

3-Year Warranty, Free Firmware Updates and Lifetime Support.

CE and UKCA Compliant With Full EMC and Electrical Safety Test Reports.

Made in Britain

Citation ISO Certification
Quality management ISO 9001: 2015
REGISTERED
Certificate No:200982013

TimeTools

Applications

- Synchronize Microsoft Windows, Linux, servers, workstations and network infrastructure.
- Network timing, measurement and synchronization.
- 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.
- Powerful, easy to use, Web interface with Command Line Interface for advanced users.
- High-quality, 1U high, 19” rack-mountable aluminium enclosure.
- Large back-lit LCD display shows detailed status information.
- USB Client port for convenient firmware updates.

NTP Timing Features

- Ultra-Fast, 50,000 NTP Polls Per Second (3 Million Per Minute), for precise client synchronization.
- High-Stability, Temperature-Compensated Crystal Oscillator (TCXO) for extended Stratum-1 operation in the event of loss of GNSS signal lock.
- NTP synchronization to <2 microseconds UTC (GNSS Locked).
- Ability to synchronize in excess of 50 million clients at default NTP polling frequency.
- Peer to multiple external and internet based NTP servers.
- Full MD5, SHA1 and SHA256 Authentication for enhanced security.

Networking Features

- Network-Optimized 10/100/1000 Mbit Auto-Sensing, Auto-MDIX Ethernet port.
- NTPv4, SNTPv4, HTTP, HTTPS, SSH, SCP, SFTP, FTP, SNMP v1/v2c/v3, DHCP, DHCPv6.
- IPv4 and IPv6 Internet Protocol.

Multi-GNSS Timing Features

- Advanced, 92 channel, multi-GNSS timing receiver providing concurrent multi-constellation reception of any combination of GPS (US) and Galileo (EU) satellite signals for improved reliability and redundancy.
- Timing receiver synchronizes to 30 nanoseconds RMS. (GNSS locked).
- Fully automatic impending leap second warning and insertion, no user intervention required.
- High sensitivity GNSS receiver.
- Advanced spoofing and jamming detection.
- Excellent RF interference mitigation.

Reliable and Environmentally Friendly

- Based on ultra-reliable industrial computing module.
- Very low-power consumption, less than 10W.
- CE and UKCA compliant with full EMC and Electrical Safety Test reports.
- RoHS compliant - Restriction on use of hazardous substances.

Warranty and Support

- 3-year warranty.
- Free firmware updates and unlimited email and telephone support for the lifetime of the product.

Product Specification

System
64-Bit Quad-Core ARM Cortex-A72 Processor @ 800MHz.
8GB eMMC Flash Memory.
1GB SDRAM.

Interfaces
10/100/1000 Mbit Base-T, RJ45, Auto-Sensing Ethernet.
TNC RF Connector For Active GNSS Antenna.
USB Client port for firmware updates.

Operating System
Flash-Based Linux Operating System.
Linux 6.2 LTS 64-Bit 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, Unicast, Broadcast.
NTP MD5, SHA1, SHA256 Authentication.
Max. NTP Polling Freq.: 50,000 polls per second (3M/min).
Max. Clients at Default NTP Polling Freq.: 50,000,000

Configuration and Monitoring Protocols
HTTP, HTTPS, SSH, SCP, SFTP, FTP.
SNMP: v1, v2c, v3
Dynamic Host Configuration Protocol - DHCP (RFC 2131).
Dynamic Host Configuration Protocol - DHCPv6 (RFC 3315).

Timing (typical)
GNSS Accuracy: RMS 30 nanoseconds (GNSS Lock).
99% 60 nanoseconds (GNSS Lock).
NTP Accuracy (GNSS Lock): <2 microseconds.
Holdover (Typ): ±0.5 ppm @ 25C (±43msec / 24 hours).
TCXO Crystal Ageing (First Year, 25°C, Typ.): ±3 ppm.
TCXO Freq Stability vs. Temp (-40°C to +85°C): ±5 ppm.

GPS/GNSS Timing Receiver
92 Channel Multi-GNSS receiver.
GPS L1 C/A and Galileo E1 B/C Frequency Bands.
Advanced spoofing and jamming detection.
Excellent RF interference mitigation.
High Sensitivity Operation.

Update Rate: 1 Hz
Typical Tracking Sensitivity: -166dBm
Time to First Fix: <29s cold start
Typical Time to Re-acquisition: <2s

Mechanical \ Environmental
Dimensions: 483 x 145 x 44 mm
Construction: 1U High 19" Rack-mount, Aluminium
Weight: approx.: 1.2Kg

Power: 100-240VAC 50-60Hz 0.1A
Fuses: Two: T2A LBC 250V
Power Consumption: <10W
Double Fused IEC Inlet.

Operating Temperature: -20°C ~ +60°C
Storage Temperature: -25°C ~ +70°C
Working Humidity: 80% RH non-condensing

MTBF (Processor Module): 143,000 hours
(PSU): 4,914,900 hours.

TW3040 GNSS Antenna Specification
Freq. Band: 1575.42 MHz ± 10 MHz
Size: 66.5mm diameter x 21mm high.
Weight: 150g
Enclosure: Radome: LEXAN™ EXL9330, Base: Zamak Metal.
Attachment Method: Through hole (M18 x 1 thread)
Environmental: IP69K
Compliance: IPC-A-610, FCC, CE RED, RoHS, REACH
Operating Temperature: -40°C ~ +85°C

LNA Gain: 40 dB typical.
Supply Current: 15mA typical.
Supply Voltage: 2.5 to 16 VDC nominal

Approvals
CE: 2014/53/EU
2011/65/EU (EU RoHS 2)
2015/863 (EU RoHS 3).

UKCA: The Radio Equipment Regulations 2017
The RoHS Regulations 2013

Radio: EN 303 413 V1.2.1 (2021-4)
EN 301 489-1 V2.2.3 (2019-11)
EN 301 489-19 V2.1.1 (2019-4)

EMC: EN 55032: 2015
EN 55035:2017
EN 61000-3-2: 2014
EN 61000-3-3

Safety: EN 62368-1:2014+AC:2015
RoHS: EN IEC 63000:2018

Made in Britain

Citation ISO Certification Quality management ISO 9001: 2015 REGISTERED
Certificate No:200982013

TimeTools

Ordering Information

Product Codes

TA610-P00 TimeTools TA610 NTP Server Appliance
High-Gain GPS-Galileo Timing Antenna.
GPS Antenna Mount.
20m Low-Loss Antenna Cable.
IEC Power Lead.
Quick Start Guide.
Manufactured in UK.
T610-P00 Commodity Code: 84719000

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 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.

Options and Extras

CN-UB-280DC-SB Phoenix Contact GNSS Surge Suppressor, essential for outdoor located Antennas.
Commodity Code: 85363010. Manufactured in Germany.

TCX-030S Pre-terminated 30m Low-Loss GNSS Antenna Cable.
(Replaces 20m Low-Loss Antenna Cable).
Commodity Code: 8536691000. Manufactured in UK.

TCX-050S Pre-terminated 50m Low-Loss GNSS Antenna Cable.
(Replaces 20m Low-Loss Antenna Cable).
Commodity Code: 8536691000. Manufactured in UK.

Customised Antenna Cables to accommodate specific installation requirements are available on request.

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