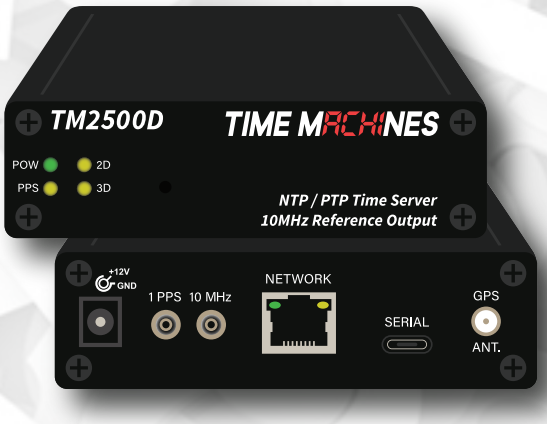
TIME MACHINES



MAJOR UPGRADES:
- GNSS support for GPS, GLONASS, Galileo, and BeiDou.
- Encryption support of HTTPS, SNMP, PTP, and NTPsec.
- Wide voltage range input from 9-48VDC.

OTHER FEATURES:
- High precision internal frequency corrected OCXO.
- 10MHz output synchronized to 1PPS.
- PTP options for IPv4, IPv6, Layer 2 (gPTP).
- Hardware PTP support without GNSS lock.
- Firmware updates are always free.

TM2500D - GNSS NTP/PTP NETWORK TIME SERVER

SYNCHRONIZED, ACCURATE TIME.

The TM2500D GNSS NTP/PTP Network Time Server is a ground up redesign of its predecessor the TM2500C. Based on the same processor platform as the TM3000A, all of the upgrades of the TM2500C are included, as well as numerous additions from the TM3000A. Designed for high precision timing plus the security options modern networks demand, a hardware timestamping gigabit network interface significantly improves jitter performance over previous 100Mbps only models. Full GNSS selectable support increases the flexibilty of antenna placement. The wider input voltage range broadens power supply options for installation. When paired with our PoE and WiFi based clocks, building and campus wide synchronized time systems can be created, as well as worldwide synchronized timing networks.

HOW IT WORKS.

The TimeMachines® TM2500D GNSS NTP/PTP network Time Server represents a complete re-design of our current technology. It supplies accurate time for computers and time keeping devices on the network. Simultaneously supporting both Precision Time Protocol (PTP) and Network Time Protocol (NTP), a Stratum 1 time source is available on the local network with no need for an internet connection. It uses an active multi-constellation GNSS antenna to maintain the current time as broadcast by planet wide satellites. In addition, a highly stable OCXO reference clock is included allowing it to serve time if GNSS lock is lost for periods of time.

Connect both the included power supply and GNSS antenna to base unit, then connect base unit to a local network.

Go to a computer on the network, point a browser to the device at its default ip address to enter the software setup within the web page.

Set parameters to match network, and the system will send out time packets to any device on the system that asks for an update from it.

TM2500D
GNSS NTP/PTP NETWORK TIME SERVER
GIGABIT ETHERNET INTERFACE

TIME MACHINES

APPLICATIONS & MARKETS:

TimeMachines® GNSS based time servers are suited to any application where coordination of events at multiple locations is required. Without coordinated network time, searching for problems across multiple system logs becomes much more difficult. Education, industrial facilities, military installations, public safety command rooms, government, broadcasting, and hospitals are all candidates for synchronized time systems.

TIME SERVER FEATURES & SPECIFICATIONS:

- Receive time information from GNSS satellites anywhere on the surface of the earth: GPS, GLONASS, Galileo, BeiDou.
- RFC1119/1305/5905 NTP Protocol to serve time (Network Time Protocol).
- NTPsec and NTP authentication support, including SHA256 and AES algorithms.
- IEEE 1588 2008 PTP Protocol, 802.1AS (gPTP), Telecom Profiles G.8265.1, G.8275.1, G.8275.2, Automotive Profiles, SMPTE, AES67.
- NTP Server Time Level: Stratum 1 when sourced from GNSS.
- NTP Server Time Precision: Better than 1mS + network jitter.
- PTP Server Time Precision: Better than 500nS + network jitter.
- Holdover time: PTP: User settable from 1 minute to infinite.
- 10M/100M/1000M auto sensing network interface.
- Unit is capable of serving 1900+ NTP synchronizations per second. Thats 1.5M+ devices updating every 15 minutes on the network.
- Compliant with FCC Part 15B and CE marked for radiated emissions and is a lead free product.
- Power Requirements: 8W at startup and 6W continuous at 12V DC. Supports 9-48V DC input.
- Environmental: Full accuracy temperature range, -40-70C, 95% humidity non-condensing. Storage Range: -40-70C.
- Startup temperature range -40-70C.
- Altitude -304m to 18km.
- Networking: Static or DHCP IPv4 addressing. https browser interface for setup. IPv6 support.
- Indications: Power, GPS 2D and 3D Lock, and 1PPS indications.
- Rear Connections: 2.5mm power connection, Ethernet, Serial, and GNSS via SMA. 1PPS and 10MHz via SMB.
- Supports +3.3V and 5V active GNSS antennas with internal jumper setting.
- Mechanical Dimensions: 5” x 4.2” x 1.3”.
- Each TM2500D includes a 12V international power supply and GNSS antenna with 5m cable.
- SMB Outputs are 3.3V logic gate outputs for both 1 PPS and 10MHz outputs.
- 10MHz accuracy is approximately 2.4E-11 at 1 second. Full Allan Deviation plot available on website.

GPS SPECIFICATIONS:

- Based on MediaTek MT3339 Chipset.
- 22 channel low power receiver module.
- Sensitivity: -165dBm.
- GNSS Time Precision: +/- 20ns RMS jitter.
- Antenna Connection: 1575.42MHz (L1 Band).
- TTFF (Time To First Fix).
- Cold start @-125dBm typically 33 seconds.
- Re-acquisition (<10s obstruction) typically 1 second.

ANTENNA SPECIFICATIONS:

- Active patch antenna with magnetic base.
- Size: 55mm x 50mm x 17mm thick, 110 grams.
- Amplifier: LNA +30dB, Noise: 2dB, VSWR: 2.5, Volts: 2.7-5.5V.
- Cable: RG174, 5m length, SMA male.
- Environmental: -40 to +85C.
- Waterproof to IPx6.

* Warranty coverage is one year from date of shipment. TimeMachines® liability under this warranty is limited to repairing or replacing the defective equipment, at TimeMachines® discretion. TimeMachines® will not cover any claim if it is found that the product has been subjected to abuse, used in a manner for which it is not designed or acts of nature beyond TimeMachines® control such as, but not limited to, lightning strikes, power surges, misuse, neglect, or if unauthorized repairs have been made or attempted by anyone other than authorized personnel by TimeMachines®. The standard warranty can be extended for an additional year with the purchase of the optional Service Agreement. In no event will TimeMachines® 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. TimeMachines® disclaims liability for any implied warranty, including implied warranties of merchantability.
* Specifications subject to change without notice. Check www.timemachinescorp.com for downloads/updates.

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