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LANTIME M600/GPS PTP: PTP/IEEE 1588 Grandmaster Clock and NTP Time Server with integrated GPS radio clock

The Meinberg LANTIME time server is used around the world to provide accurate time to networks of any size. It synchronizes all PTP/IEEE 1588 compatible clients and systems either NTP- or SNTP-compatible and uses a built-in Meinberg GPS radio clock as its reference time source. A highly stable and precise oscillator is capable of bridging interferences or a temporary loss of reception.

Important Note

This product is no longer available and may have been replaced by a newer product. We will, of course, continue to provide support for units that have already been purchased and are still in use. Please contact our [1]Sales Department for further details.

This product has been discontinued and has been replaced with: [2]

Key Features

- Synchronization of NTP and SNTP compatible clients
- Web-based status and configuration interface and console-based graphical configuration utility
- Supported net protocols: IPv4, IPv6, PTP/IEEE 1588-2002, NTP, SNTP, DAYTIME, DHCP, HTTP, HTTPS, FTP, SAMBA, SFTP, SSH, SCP, SYSLOG, SNMP, TIME, TELNET, W32TIME
- Alert-Notification system of status change by Email, WinMail, SNMP or an external connected display
- Full support for SNMP v1, v2c und v3 with dedicated SNMP daemon for configuring/status monitoring of system using SNMP traps
- USB Port for installing firmware updates, locking frontpanel menu access and backup/restore of configuration and log files
- Included GPSANTv2 antenna uses downconverter technology to enable long transmission routes of up to 1100 m (1200 yards)
- Five independent RJ-45 ethernet interfaces 10/100 MBit (1 x IEEE 1588)

Description

Being a very stable IEEE 1588 Grandmaster clock, the LANTIME M600 PTP not only provides a highly accurate source of synchronization for PTP clients ("slaves"), it additionally introduces the absolute time ("current time of day") to your PTP networks.

The GNU/Linux operating system of the LANTIMEs SBC (Single Board Computer) has been optimized to ensure a high level of security and reliability.

A large display shows the state of the internal GPS receiver and the NTP subsystem.

The configuration of the system can be done by using a standard web browser to access the extensive but straightforward html interface. Alternatively a text based and menu driven setup utility can be started from the shell prompt after logging into the unit via Telnet or SSH.

The security-related features of LANTIME time servers satisfy highest demands. The time synchronization data can be reliably signed and secured by symmetric keys (MD5) and the NTP autokey procedures. This protects the clients against manipulated time and man-in-the-middle attacks and allows them to verify that the NTP packets they received were send by the LANTIME. Additionally the whole LANTIME configuration can be done by using encrypted channels (e.g. SSH, HTTPS or SNMPv3). Every unused/unneeded protocol can be disabled in order to reduce possible points of attack.

In order to support network management systems the LANTIME time servers offer an extensive SNMP interface, which can be accessed by SNMP V1, V2.c and V3. It allows the monitoring of all relevant system parameters (including operating system parameters, network interface statistics, detailed GPS and NTP status information as well as the complete system configuration) and can be used to alter the LANTIME configuration via SNMP set commands, too.

The PTP/IEEE 1588 implementation of the LANTIME is fully compliant to the IEEE 1588 standard and therefore provides PTP management messages as well.

LANTIME time servers are designed to be deployed in IPv6 networks, the NTP time synchronization as well as the configuration interfaces (Web-based, SSH and SNMP) comes with IPv6 support. You can assign several IPv6 addresses and the system supports automatic configuration by IPv6 autoconf.

Because of its modular system architecture it is possible to equip a LANTIME time server with a number of different reference time sources. Optionally several additional frequency-, serial string- and pulse outputs are available and by combining two (even different) time sources and redundant power supplies, high-availability systems are no problem.

The LANTIME M600 PTP is equipped with high precision oscillator "OCXO HQ" (look at oscillator options for details) as standard. The oscillator determines the holdover characteristics (e.g. when the GPS signal is disturbed or jammed). Oscillator options "OCXO DHQ" and Rubidium are available to fulfill higher requirements.

Characteristics

Receiver Type	6 channel GPS C/A-code receiver
Status Indicators	Four bicolor LEDs indicating: - Reference time status - Time service status - Network link status - Alarm states
Type of Antenna	Included [3]GPSANTv2 antenna with innovative downconverter technology that allows transmission routes of up to 300 m using RG58 cable, 700 m using RG213 cable, and 1100 m using H2010 Ultraflex cable
Display	Vacuum fluorescent display (VFD), 256 x 64 dots
Control Elements	Eight push buttons to set up basic network parameters and to change receiver settings
Frequency Outputs	10 MHz via female BNC connector, TTL into 50 Ohm Synthesizer 1/8 Hz up to 10 MHz via female BNC connector, TTL into 50 Ohm Accuracy depends on oscillator (standard: OCXO HQ), look at [4]oscillator options
Pulse Outputs	Pulse per second (PPS) and pulse per minute (PPM) via female BNC connectors, TTL into 50 Ohm, pulse width: 200 msec, active high
Accuracy of Pulse Outputs	< ±50ns (OCXO HQ, OCXO DHQ)
Interface	Two independent serial RS-232-interfaces, menu configurable
Serial Time String Output	Baud rate: 300, 600, 1200, 2400, 4800, 9600, 19200 Baud Data format: 7N2, 7E1, 7E2, 8E1, 8N1, 8N2 Time telegram: [5]Meinberg Standard Time String , SAT, Uni Erlangen (NTP), SPA, Sysplex, RACAL, NMEA0183 (RMC,GGA,ZDA), Meinberg GPS, COMPUTIME, ION oder [6]Capture String
PWM Time Code Output	DCLS, TTL into 50 Ohm via female BNC connector, active high
AM Time Code Output	IRIG AM sine wave signal via female BNC connector: 3Vpp (MARK), 1Vpp (SPACE) into 50 Ohm
Supported Timecode Formats	**IRIG B002:** 100pps, DCLS signal, no carrier, BCD time of year **IRIG B122:** 100pps, AM sine wave signal, 1 kHz carrier, BCD time of year **IRIG B003:** 100pps, DCLS signal, no carrier, BCD time of year, SBS time of day **IRIG B123:** 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, SBS time of day **IEEE1344:** Code according to IEEE1344-1995, 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, SBS time of day, IEEE1344 expansion for date, time zone, daylight saving and leap second in Control Funktions Segment **AFNOR:** Code according to NFS-87500, 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, complete date, SBS time of day
Alarm output	Synchronous state of the module, relay output (changeover contact)

Network Interface	1 x 10/100 MBit with RJ-45, IEEE 1588 4 x 10/100 MBit with RJ-45
Universal Serial Bus (USB) Ports	1x USB port on front panel for: - installing firmware upgrades - performing backups and restoration of configuration files - copying security keys - locking & unlocking front buttons
Power Consumption	25W
Operating Voltage	85-264VAC (50/60Hz)
Supported Time String Formats	Meinberg Standard Timestring, Uni Erlangen Timestring, SYSPLEX Timer, NMEA, Computime, ABB-SPA, SAT, Arbiter
Form Factor	Three different variants are available, standard version is: 19" module case, height: 44.5mm (1U), width: 483mm (84HP), depth: 350mm (Pic. middle) optional available: /TGP: 19" desktop case, height: 157mm (3U), width: 257mm (42HP), depth: 316mm (Pic. top) /BGT: 19" module case, height: 132mm (3U), width: 483mm (84HP), depth: 260mm (Pic. bottom)
CPU	* AMD Geode
Operating System of the SBC	Linux with nano kernel (incl. PPSkit)
Network Protocols OSI Layer 4 (Transport Layer)	TCP, UDP
Network Protocols OSI Layer 7 (Application Layer)	Telnet, FTP, SSH (including SFTP, SCP), HTTP, HTTPS, syslog, SNMP
Internet Protocol (IP)	IPv4, IPv6
Network Autoconfiguration Support	IPv4: Dynamic Host Configuration Protocol - DHCP (RFC 2131) IPv6: Dynamic Host Configuration Protocol - DHCPv6 (RFC 3315) and Autoconfiguration Networking - AUTOCONF (RFC 2462)
Network Time Protocol (NTP)	NTP v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905) SNTP v3 (RFC 1769), SNTP v4 (RFC 4330) MD5 Authentication and Autokey Key Management

Precision Time Protocol (IEEE 1588)	PTP/ IEEE 1588-2002 including PTP Management Messages for monitoring and configuration
Time Protocol (TIME)	Time Protocol (RFC 868)
IEC 61850	Synchronization of IEC 61850-compliant devices using SNTP
Hypertext Transfer Protocol (HTTP)	HTTP/HTTPS (RC 2616)
Secure Shell (SSH)	SSH v1.3, SSH v1.5, SSH v2 (OpenSSH)
Telnet	Telnet (RFC 854-RFC 861)
Simple Network Management Protocol (SNMP)	SNMPv1 (RFC 1157), SNMPv2c (RFC 1901-1908), SNMP v3 (RFC 3411-3418)
Supported Temperature	Operational: 0 - 50 °C (32 - 122 °F) Storage: -20 - 70 °C (-4 - 158 °F)
Supported Humidity	Max. 85 % (non-condensing) at 40 °C
Contents of Shipment	Included in delivery is our [3]GPS antenna incl. converter unit and 20 m GPS antenna cable (RG58).
Technical Support	Meinberg offers free lifetime technical support via telephone or e-mail.
Warranty	Three-year warranty
Firmware Updates	Firmware is field-upgradeable, updates can be installed directly from the unit or via a remote network connection. Software updates are provided free of charge for the lifetime of your Meinberg product.
RoHS Status of Product	This product is fully RoHS-compliant.
WEEE Status of Product	This product is handled as a B2B (Business to Business) category product. To ensure that the product is disposed of in a WEEE-compliant fashion, it can be returned to the manufacturer. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will bear the costs for the waste disposal itself.
Additional Information	Additional information about the Meinberg LANTIME family of NTP time servers and other LANTIME models can be found on the [7]LANTIME overview page .

Manual

The English manual is available as a PDF file: [8]Download (PDF)

Links:

[1] mailto:sales@meinberg.de
[2] https://www.meinbergglobal.com/english/products/ims-lantime-m1000.htm
[3] https://www.meinbergglobal.com/english/products/gps-antenna-converter.htm
[4] https://www.meinbergglobal.com/english/products/specs/gpsopt.htm
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