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LANTIME PTP Grandmaster: Modular IEEE 1588 Grandmaster and NTP Server with integrated satellite receiver

As an ultra stable NTP and PTP time provider, a LANTIME Grandmaster not only represents a highly accurate source of synchronization for all network devices supporting the Precision Time Protocol (PTP), the Network Time Protocol (NTP) and the Simple Network Time Protocol (SNTP), it also offers a number of legacy time and frequency outputs for keeping non-networked devices in sync.

Key Features

- Synchronization of NTP and SNTP compatible clients
- Web-based status and configuration interface and console-based graphical configuration utility
- IMS - Intelligent Modular System platform
- Up to 10 PTP (IEEE 1588-2008) modules
- Redundant power and receiver option (eg GPS / GLONASS combination)
- Hot Plug
- Arbitrary combinations of modules
- Replacement or retrofitting of an ACM module (Active Cooling Module) possible during operation
- Meinberg's LANTIME time server is available with a variety of additional output options: IRIG Time Code, frequency synthesizer and programmable pulse outputs illustrate some of the many expansion options for your NTP server

Description

The PTP V2 (Multicast/Unicast) implementation is fully compliant to the IEEE 1588-2008 standard and provides PTP management messages as well. The PTP unit is able to synchronize one step clocks and two-step clocks in master mode. In slave mode, the all PTP units can handle both one-step clock and two-step clock synchronization messages.

MRS Capability
The Meinberg MRS technology (Multi Reference Sources) enables you to utilize one or more time and frequency references in prioritized order defined by your individual requirements. The Meinberg Intelligent Reference Switching Algorithm (IRSA) ensures that switching from a highly accurate reference source (e.g. GPS) to a less accurate one (e.g. IRIG or NTP) is delayed as long as the internal ultra stable oscillator is capable of maintaining an accuracy level that is better than the one of the next available reference source in the priority list.

Redundancy of reference time sources
The MRS technology offers a flexible solution to the changing availability of different synchronization sources for highly critical operating systems. The ability to use multiple independent sync references allows you to fulfill redundancy requirements of your network synchronization solution.

Lab environments
Monitoring and measurement of synchronization sources such as determining and logging the accuracy of an IRIG generator or a PPS source is easily done with the MRS functionality. Furthermore, LANTIME PTP Grandmaster systems are a perfect solution to test the PTP synchronization quality within existing network environments by automatically comparing the PTP input source to another high accurate reference source like GPS or 1PPS. All reference inputs can be measured against each other.

PTPv2 Translator
The MRS system allows you to translate PTP into a variety of output signals like 1PPS, 10MHz or IRIG. This feature makes it easy to transfer legacy timing signals over a IP based infrastructure while maintaining very high accuracy.

All LANTIME IEEE 1588 Grandmaster are 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 GNSS signal is disturbed or jammed). The oscillator option "OCXO DHQ" is available to fulfill higher requirements.

Meinberg PTP Grandmaster for different Industries**Broadcast:**
IEEE 1588 PTPv2 is the selected technology for synchronizing studio equipment over IP. A live networked infrastructure environment with COTS switch equipment and live networked video devices has already been presentedto the public in experimental case studies. Today it is already agreed that IEEE 1588 (PTP) will be the basis for synchronizing all clocks in a TV or radio studio. For the Audio-over-IP world, technologies like AES67 or RAVENNAalready use PTP as their choice for time synchronization.

Power and Industrial Automation:
A LANTIME PTP Grandmaster provides a collection of synchronization outputs for various devices such as IEDs and SCADA systems:

* IEEE 1588 Grandmaster Clock (Multi-Profile, incl. IEEE 1588-2008, IEEE C37.238-2011, C37.238-2017 IEC61588, IEC 61850-9-3, IEC 62439-3 Annex B and IEEE 802.1AS TSN/AVB)

* IRIG- and AFNOR time codes (DCLS and AM) In/Out

* (S)NTP time server with HW time stamping

Telecom Networks:
All Meinberg LANTIME systems have been designed to fulfill the synchronization requirements of modern 4G/LTE networks. The PTP implementation support both ITU-T profiles, ITU-T G.8265.1 for frequency and ITU-T G.8275.1

Characteristics

Supported Reference Signals

The following reference sources can be used to synchronize the system:

* **GPS** - Global Positioning System
* **GLONASS** - Russian GNSS
* **GALILEO** - European GNSS
* **BeiDou** - Chinese GNSS
* **PZF** - German DCF77 longwave radio signal
* **PTP/IEEE1588** - Precision Time Protocol
* **NTP** - Network Time Protocol
* **SyncE** - Synchronous Ethernet
* **Timecodes** - IRIG/AFNOR timecodes (AM/DCLS)
* **PPS** -Pulse Per Second
* **10MHz** - 10MHz reference frequency
* **2.048kHz** - 2.048kHz reference frequency
* **E1/T1** - Telecom Synchronization Input with full SSM/BOC support

The priority of all input signals can be freely configured in addition to a bias value and a precision level specification for each source.

Supported PTP Profiles

Default:
- IEEE 1588v2 (PTPv2)

Power:
- IEC 61850-9-3
- IEEE C37.238-2011
- IEEE C37.238-2017

Telecom:
- ITU-T G.8265.1 Frequency
- ITU-T G.8275.1 Phase/Time
- ITU-T G.8275.2 Phase/Time

Broadcast:
- SMPTE ST 2059-2
- AES67 Media Profile

AVB/TSN:

- IEEE 802.1AS

Frequency Outputs	Frequency Synthesizer for arbitrary frequencies between 0.125 Hz and 10 MHz, adjustable phase, output via external modules such as [1]IMS-BPE modules
Accuracy of Pulse Outputs	< ±50ns (OCXO SQ, OCXO MQ, OCXO HQ, OCXO DHQ)
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	50W (max. 100W)
Operating Voltage	Maximum power range: AD10: 90 - 265 V AC, 47-63 Hz / 90-250 V DC DC20: 20 - 60 V DC DC10: 10 - 36 V DC Redundant power supplies available
Form Factor	Modular rackmount 3U / 84HP chassis for standard 19" racks
CPU	* AMD Geode
Operating System of the SBC	GNU/Linux 4.x
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 / SHA-1 Authentication and Autokey Key Management
Parallel Redundancy Protocol (PRP)	PRP (IEC 62439-3)
Precision Time Protocol (IEEE 1588)	PTP/ IEEE 1588-2008 including * Network Protocols: - UDP/IPv4 (Layer 3) (Multicast/Unicast) - IEEE 802.3 (Layer 2) (Multicast) * Delay Mechanisms: - End-to-End (Multicast/Unicast) - Peer-to-Peer (Multicast) * 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
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 [2]LANTIME overview page .

Manual

There is no online manual available for this product.: [3]Contact us

Links:

[1] https://www.meinbergglobal.com/english/products/ims-output-modules.htm
[2] https://www.meinbergglobal.com/english/products/ntp-time-server.htm
[3] mailto:info@meinberg.de