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IMS - LANTIME M3000: Versatile and Modular Time and Frequency Synchronization Platform

The new LANTIME M3000 is a field-upgradeable and extremely flexible system that covers your synchronization needs - today and in the future.   [1]

The M3000 chassis has four power supply slots, two clock module slots, a seamless switchover card slot, a CPU slot and ten slots for additional input and output modules. Adding a second clock module and the required RSC switch module will turn the M3000 into a fully redundant solution. Up to four power supplies can be installed, offering protection against the failure of one or more power sources or power supply failures. Both wide range AC and a 20-60 V DC power supply model can be mixed and matched as required.

The possibility to add input and output modules as well as specialized communication cards for NTP and PTP/IEEE1588 network synchronization and remote management ensures that a LANTIME M3000 will fulfill all your synchronization requirements and the scalability and flexibility of the IMS platform concept enables it to cope with the changing demands of your critical applications.

Key Features

- Optimized space usage
- Synchronization of NTP and SNTP compatible clients
- Web-based status and configuration interface and console-based graphical configuration utility
- IEEE 1588 PTP Grandmaster / Slave (optional)
- E1 / T1 Input / Output Options
- 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
- Up to 24 additional LAN ports

Description

The LANTIME M3000 provides the following slot types:

* IMS-CLK: Up to two reference clock modules (redundant mode)

* IMS-SCU: Accepts an RSC module for redundant operation (two CLK modules installed) or an SPT module for a single CLK configuration

* IMS-PSU:Up to four high efficiency redundant power supplies (AC and DC versions available)

* IMS-CPU: Central processor module providing NTP / SNTP time synchronization as well as remote and local management and configuration interfaces

* IMS-IO: A variety of output signals for all types of synchronization tasks:
electrical and optical pulses, frequencies, time codes and serial time messages as well as additional network interfaces for network synchronization (IEEE-1588, NTP, Synchronous Ethernet) and additional remote management capabilities

High-End NTP Network Time Server for your Network
With up to 25,000 NTP requests per second (depening on the installed CPU module), the system is able to provide time for hundreds and thousands of NTP clients. The LANTIME CPU module supports the following protocols: NTP / SNTP (v2, v3, v4), PRP (IEC 62439-3), HTTP (S), SSH, Telnet, SNMP (v1, v2, v3), FTP, SFTP, DHCP/DHCPv6. For each system, up to 99 logical network interfaces are available (99 IPv4 and 99 IPv6 addresses). Enterprise-grade features such as IPv6/Dual Stack support, IEEE 802.1Q VLAN support, LACP/high availability bonding as well as DSCP and IEEE802.1p QoS/CoS traffic prioritization ensure that this product can be installed and operated in almost every critical environment, from a financial data center to a electrical substation or NGN telecommunication network to digital broadcasting infrastructure or air traffic control systems.

Synchronization for 2G / 3G / 4G base stations and LTE Advanced networks.
The PTP implementation supports both ITU-T profiles, ITU-T G.8265.1 for frequency and ITU-T G.8275.1 for frequency and phase. This enables accurate frequency and phase synchronization over packet networks for all network elements that require synchronization, including 2G / 3G / 4G base stations as well as LTE Advanced networks.

Scalable Synchronization Solution
All modules are hot-pluggable and can be configured via a central web interface or CLI. An almost endless number of combinations of input and output modules handles almost any synchronization task. The field-upgradeable and therefore highly scalable and flexible IMS concept will grow with your demands and adjusts to any future changes of your synchronization requirements. New technologies can be easily integrated into your existing devices as soon as a corresponding module is available.**Flexible Synchronization References:**
IMS-MRI:Standard reference input cards supporting a number of different input signals like 1PPS, 10MHz, IRIG DCLS, IRIG AM
IMS-ESI: Extended reference inputs for synchronization sources like E1/T1 framed and unframed signals

Both of these slot types can alternatively accept I/O cards and therefore can be used to add output modules or network interfaces.

Front Panel
The front panel of the LANTIME M3000 integrates an LC-Display with 4x16 characters and the LANTIME menu panel with 4 directional and 4 functional buttons. The LCD menu is extremely useful for an easy and fast local configuration of key parameters and for a quick check of the status of the system without the need of an additional external device. The full set of configuration options can be controlled and reviewed using the powerful graphical web interface or the extensive scriptable command line interface.

Due to the hot-plug capabilities of the IMS platform it is possible to add additional modules or replace modules with zero downtime and no negative impact on the system and its modules.

An optional Active Cooling Module (ACM) adds redundant fans to the system if airflow cannot be guaranteed due to blocked top/bottom cover or in high temperature environments. Two LED indicators on the front panel show the state of the Active Cooling Modules (Fan 1 and Fan 2). Of course the fan state is also accessible via the web interface, CLI and SNMP. ACM and power supply failures and a large number of additional synchronization related alarms can be communicated using several different protocols, for example mail/SMTP messages, SNMP traps, SYSLOG messages, or alarm relay cards.

IMS Modules
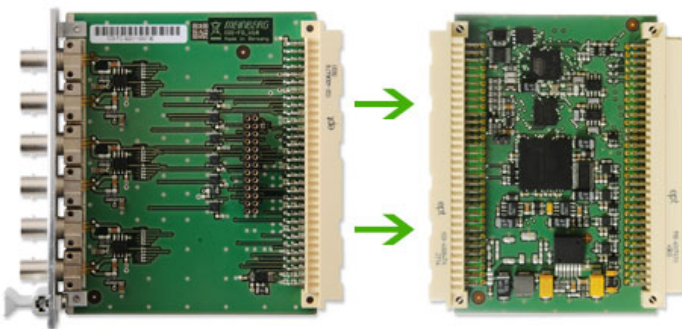
BPE and CPE Modules Most standard output signals like pulses (1PPS, 1PPM, programmable pulses) and frequencies (10 MHz, 2048 kHz, frequency synthesizer 1 kHz-10 MHz) are provided by two versatile I/O cards named BPE and CPE. Both of these two modules have been designed to cover a wide range of interface and signal/protocol requirements. The BPE modules distribute the signals generated by the reference receiver via the internal backplane to the available physical connections of the board. The modules of the BPE-8000 series also feature an electronic switch which allows the configuration of the output signals via the LANTIME web interface.

CPE modules feature a two-tier architecture with a back-end and front-end. The back-end is responsible for internally routing the IMS synchronization signals, provided by the reference clock via the internal backplane. The front-end autonomously generates a wide range of different signals by using an on-board microprocessor and makes a selection of these signals available via physical connectors.Due to this design of BPE and CPE modules, it is very easy to support a large number of different electrical or optical physical interfaces, like BNC, SMA, 2-pin DFK, D-SUB9 and ST/SC FO connectors.

An impressive number of specialized IMS modules covers other application requirements, for example E1/T1 framed/unframed synchronization signals with full SSM/BOC support or low phase noise 10 MHz sine wave frequency outputs. Additional network interfaces for NTP, PTP/IEEE 1588, SyncE and remote management access are available, too.

Characteristics

Reference Options	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.
Display	LC display, 4 x 16 characters
Control Elements	Eight push buttons to set up basic network parameters and to change system settings.
Status Info	Four bicolor LEDs showing status of: - reference time - time service - network - alarm Two status LEDs for the optional use of an ACM (Active Cooling Module) with two fans - Fan 1 and Fan-2.

Frequency Outputs	Accuracy depends on oscillator (standard: OCXO-SQ), see [2]oscillator list
Accuracy of Pulse Outputs	< ±50ns (OCXO SQ, OCXO MQ, OCXO HQ, OCXO DHQ)
Network Interface	**Basic Chassis:** CPU-C05F1 1 x 10/100 MBit, RJ45 CPU-C15G2 1 x 100/1000BASE-T RJ45 1 x 1000BASE-T SFP **Network Expansion - LNE Options:** Up to 24 additional network interfaces (GbE Gigabit Support) with 10/100/1000 MBit RJ45 connector or 1000BASE-T SFP (Multimode / Singlemode).
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 Supply	Maximum power range: AD10: 90-265 V AC, 47-63 Hz / 90-250 V DC DC20: 20
CPU	**CPU-C15G2** * Intel® Atom
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)	IP v4, IP v6
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)
Time Protocol (TIME)	Time Protocol (RFC 868)
Daytime Protocol (DAYTIME)	Daytime Protocol (RFC 867)
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)
Form Factor	Modular rackmount 3U chassis for standard 19'' racks 483 mm x 132 mm x 270 mm (W x H x D)
Ambient Temperature	0 ... 50 °C / 32 ... 122 °F
Humidity	Max. 85 %
Contents of Shipment	Product documentation and software on USB storage device.
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 category product. For disposal, it must be returned to the manufacturer to ensure WEEE compliance. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will cover 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 [3]LANTIME NTP Time Server Family Page .

Manual

There is no online manual available for this product.: [4]Contact us

Links:

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