



Meinberg Radio Clocks

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LANTIME M3000: Time and Frequency Synchronization Platform

Versatile and Modular Solution for Time and Frequency Synchronization Application

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

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 at any time together with an RSC switch module transforms the M3000 into a fully redundant solution. Up to four power supplies can be used, offering protection against the failure of one or more power sources or PSU failures. Both wide range AC and a 18-72VDC power supply model can be mixed and matched as required.

Key Features

- Selectable Reference Sources:

* [1][GPS](#): Satellite receiver for the Global Positioning System

* [2][GLN](#): Combined GPS/GLONASS satellite receiver (L1 frequency band), can also be used for mobile applications

* [3][MRS](#): (GPS, PPS, 10MHz, NTP): Multi Reference Source - several reference sources, adjustable following priority of signal

- Optimized space usage
- Synchronization of NTP and SNTP compatible clients
- Web based status and configuration interface [4][\(Demo\)](#) 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)
- Hot Plug
- Arbitrary combinations of modules
- Our LANTIME time server can be provided with a large number of additional output options: IRIG Time Code, frequency synthesizer and programmable pulse outputs are only a few of the many expansion options for your NTP server.
- Up to 40 additional LAN ports

Description

The M3000 standard 3RU chassis offers the following slot types:

- * IMS-CLK: Up to two reference clock modules (redundant mode)
- * IMS-RSC: Required for redundancy switchover operation
- * 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 and management and configuration interfaces
- * IMS-IO: A variety of output signals for all types of synchronization tasks: Pulses, frequencies, time codes, serial time messages) and of course more network interfaces (IEEE-1588, NTP/Management ports)

NTP Time Server for large Networks

With up to 10,000 NTP requests per second, the system is able to provide time for hundreds and thousands of NTP clients. The LANTIME module supports the following protocols: IPv4, IPv6, NTP / SNTP (v2, v3, v4), 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).

Scalable NTP Time Server System

All modules are hot-plug capable and the modules can be configured via the central web interface (from the CPU module). Almost infinite number of combinations of input and output modules are available to meet almost any synchronization task. Because of simple extension by upgrading the system with new modules the scalability of the M3000 system is ensured.

Slots for Input Signals:

IMS-MRI: Standard reference inputs

IMS-ESI: Extended reference inputs

Both of these reference input interfaces may also be used as I / O slot.

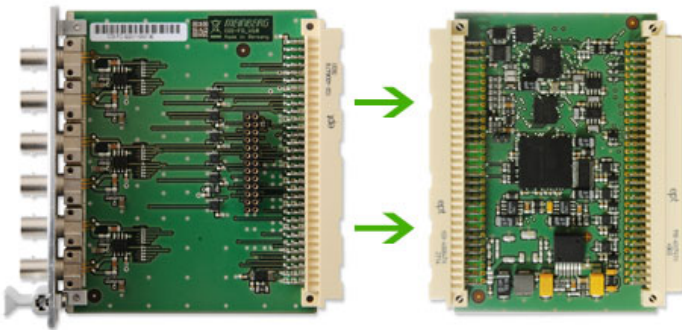
Front Panel

The front panel of LANTIME M3000 integrates the familiar LC-Display with 4x16 characters and the well known LANTIME menu panel with 4 directional and 4 function buttons. This allows for a simple and fast on-site configuration of the main parameters. Hundreds of configuration options for the LANTIME CPU and the IMS input and output modules can be changed using the powerful web interface.

Due to the hot-plug capabilities of the IMS platform it is possible to add additional modules without the need to power down the system. This is also true for replacing a module and therefore enables you to operate the system with minimum downtime. An optional Active Cooling Module (ACM) adds redundant fans to the system if airflow cannot be guaranteed due to blocked top and bottom covers. Two LED indicators on the front panel show the state of the Active

Cooling Modules (Fan 1 and Fan 2), which is also accessible via the web interface and SNMP. Failures of the ACM as well as power supply failures and a number of additional synchronization related alarms can be distributed using several different protocols (mail/SMTP, SNMP traps, SYSLOG, Alarm Relays).

IMS Modules



Most standard output signals like pulses (1PPS, 1PPM and freely programmable pulses) and frequencies (10MHz, 2.048MHz, frequency synthesizer 1kHz-10MHz) 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. They feature a two-tier architecture with a back-end and front-end. While the back-end is responsible for internally routing the backplane IMS synchronization signals (in case of the BPE) or for autonomously generating a wide range of different signals by using a microprocessor (on a CPE), the front-end makes a selection of the signals available on physical connectors. Due to this design, it is very easy to support a large number of different electrical or optical physical interfaces, like BNC, SMA, Twinax, 2-pin DFK, DSUB9 and ST/SC FO connectors.

Here is a list of the other already available IMS modules:

Characteristics

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	<p>Four bicolor LEDs showing status of:</p> <ul style="list-style-type: none"> - reference time - time service - network - alarm <p>Two status LEDs for the optional use of an ACM (Active Cooling Module) with two fans - Fan 1 and Fan-2.</p>
Frequency outputs	Accuracy depends on oscillator (standard: OCXO-MQ), see [5] oscillator options
Accuracy of pulse outputs	< ±100ns
Network Interface	<p>Basic Chassis: 1 x 10/100 MBit with RJ45 connector</p> <p>Network Expansion - LNE Options: Up to a maximum of 40 additional 10/100/1000Mbps (GbE Gigabit support) network interfaces with RJ45 connector.</p>
Power supply	<p>100-240 V AC (50/60 Hz) / 100-240 V DC</p> <p>Redundant Power Supplies and other DC input voltage ranges available upon request</p>
Power consumption	50W (max. 100W)
Universal Serial Bus (USB) Ports	<p>1x USB Port in front panel:</p> <ul style="list-style-type: none"> - install firmware upgrades - backup and restore configuration files - copy security keys - lock/unlock front keys
Single-Board-Computer	
	* Processor: AMD Geode
Operating System of the SBC	GNU/Linux 3.x
Network protocols OSI Layer 4 (transport layer)	TCP, UDP
Network protocols OSI Layer 7 (application layer)	TELNET, FTP, SSH (incl. 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: Autoconfiguration Networking - AUTOCONF
Network Time Protocol (NTP)	NTP v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905) SNTP v3 (RFC 1769), SNTP v4 (RFC 2030) MD5 Authentication and Autokey Key Management
Time Protocol (TIME)	Time Protocol (RFC 868)
Daytime Protocol (DAYTIME)	Daytime Protocol (RFC 867)
IEC 61850	Synchronization of IEC 61850 compliant devices by using SNTP
Hypertext Transfer Protocol (HTTP)	HTTP/HTTPS (RFC 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	Rackmount 3U chassis for standard 19" racks
Ambient temperature	0 ... 50°C / 32 ... 122°F
Humidity	Max. 85%
Scope of supply	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 at 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 the product	This product is fully RoHS compliant
WEEE status of the product	This product is handled as a B2B category product. In order to secure a WEEE compliant waste disposal it has to be returned to the manufacturer. Any transportation expenses for returning this product (at its end of life) have to be incurred by the end user, whereas 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 [6] LANTIME NTP Time Server Family Page

Manual

There is no online manual available for this product: [7][Contact us](#)

Links:

- [1] <http://www.meinberg.de/english/products/>
- [2] <http://www.meinberg.de/english/products/>
- [3] <http://www.meinberg.de/english/products/>
- [4] <http://www.meinberg.de/cgi-bin/mainv2/>
- [5] <http://www.meinberg.de/english/products/specs/gpsopt.htm>
- [6] <http://www.meinberg.de/english/products/ntp-time-server.htm>
- [7] <http://www.meinberg.de/mailto:info@meinberg.de>