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LANTIME M2000S: Modular Time and Frequency Synchronization Platform in 2U Rackmount Housing

Versatile and Modular Solution for Time and Frequency Synchronization Applications in a Compact 2RU Chassis [1]

The LANTIME M2000S is a field-upgradeable and extremely flexible system that covers your synchronization needs - today and in the future. Upgrading to more outputs, new connector and signal types and protocols is easier than ever with Meinbergs Intelligent Modular Synchronization platform (IMS).

The IMS LANTIME S models are an alternative for application environments where a display with function keys is not required for onsite configuration. This allows the S housing variants to be installed in racks which are only accessible from one side.

The LANTIME M2000S chassis can be installed in 19 inch racks as well as 21 inch racks (with an adapter). The reduced mounting depth of the S chassis enables you to mount the system in 300mm ETSI racks. All connections and control elements are placed on one side, allowing to mount this chassis on a wall or inside a rack that is only accessible from one side. The base M2000S chassis comes with three power supply slots, two clock module slots, a CPU slot and six slots for additional input and output modules. Adding a second clock module will turn the M2000S into a fully redundant solution. Up to three power supplies, that can be installed, offer a high level of protection against the failure of one or more power sources and power supply failures. Both wide range AC and DC power supply models can be mixed and matched as required.

Key Features

- Synchronizes NTP-compatible clients with support for NTP, SNTP, and NTS - Network Time Security
- Six free configurable IO slots with low space requirement. These slots can be used, for example, for 24 outputs (PPS, 10 MHz ...).
- Synchronization of NTP and SNTP compatible clients
- Web User Interface (WebUI) for configuration and status monitoring
- IEEE 1588 PTP Grandmaster / Slave (optional)
- E1 / T1 Input / Output Options
- Up to 6 PTP (IEEE 1588-2008) modules
- Optional redundant power supply and receiver configuration (e.g. GPS / GLONASS combination). Also available with DHQ oscillators
- Hot Plug
- Arbitrary combinations of modules
- Three available slots for AC/DC or DC power supplies
- 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 possibility to add input and output modules as well as specialized communication cards for NTP and PTP/IEEE1588 network synchronization (including Synchronous Ethernet support) and remote management ensures that a LANTIME M2000S 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.

All modules support hot plugging, allowing to replace faulty modules or add new capabilities to the system with zero downtime for unaffected modules and functions.

The LANTIME M2000S supports the following slot types:

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

* IMS-PWR:Up to three 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-ESI: Input references for 2048 kHz, 2.048MBit/s and variable frequencies:

* IMS-MRI: IRIG, 1PPS, 10MHz input module:

* 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

Includes: 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 management 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, each logical interface can be assigned to one VLAN ID). 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: a financial data center; an electrical substation; an NGN telecommunication network; a digital broadcasting infrastructure ; air traffic control systems and many many other environments.

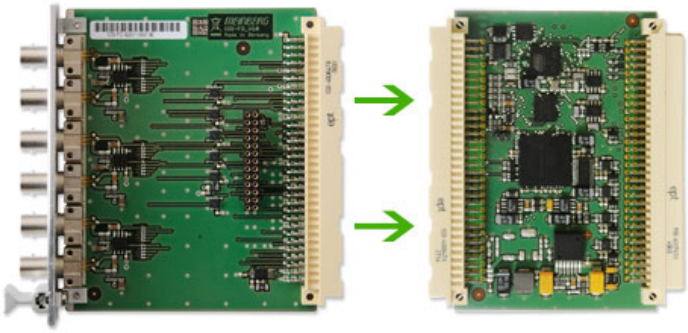
Scalable Synchronization Solution
All modules are hot-pluggable and can be configured via a central web interface or a CLI. An almost endless number of combinations of input and output modules handles almost any synchronization task and allows the system to fit into many different roles. The field-upgradeable and therefore highly scalable and flexible IMS concept will grow with your demands. New technologies can be easily integrated into your existing devices as soon as a corresponding module is available, supporting a new connector, signal type or protocol. This protects your investments as it removes the requirement to replace existing devices or add complete new systems when your sync requirements change.

Flexible Synchronization References:
IMS-MRI:Standard reference input cards supporting a number of different input signals like 1PPS, 10 MHz, IRIG DCLS, IRIG AM
IMS-ESI: Extended reference inputs for synchronization sources like E1/T1 framed and unframed signals
Both of these slot types (MRI / ESI) can alternatively accept I/O cards and therefore can be used to add output modules or network interfaces, resulting in a maximum of six output modules per chassis in combination with the remaining two I/O slots.

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.

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.

Overview IMS Modules

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.
Frequency Outputs	Frequency Synthesizer for arbitrary frequencies between 0.125 Hz and 10 MHz, adjustable phase, output via external modules such as [2]IMS-BPE modules
Accuracy of Pulse Outputs	< ±50ns (OCXO SQ, 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).

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	Rackmount 2U chassis for standard 19" racks
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)	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) Symmetric key-based authentication using MD5, SHA-1, or AES-128-CMAC hashes NTP v4 Autokey (private/public key pairs)
Network Time Security (NTS)	As of LTOS version 7.08, all Meinberg IMS LANTIME time servers offer full support for NTS (Network Time Security) in unicast client/server mode.
Parallel Redundancy Protocol (PRP)	PRP (IEC 62439-3)
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)
Physical Dimensions	483 mm x 76 mm x 248 mm (264 mm)* - width x height x depth * *The sizes in brackets take into account the connections and module handles.*
Supported Temperature	Operational: 0 - 50 °C (32 - 122 °F) Storage: -20 - 70 °C (-4 - 158 °F)
Supported Humidity	Max. 95 % (non condensing) at 40 °C (104 °F)
Contents of Shipment	The scope of delivery includes a CAB-CONSOLE-RJ45 cable for initial start of operation.
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 [3]LANTIME overview 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/products/ims-output-modules.htm
[3] https://www.meinbergglobal.com/english/products/ntp-time-server.htm
[4] mailto:info@meinberg.de