



## Meinberg Radio Clocks

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## LANTIME M450: Robust Rail Mount NTP Time Server with internal Meinberg reference clock

### NTP Time Server with Reference Clock for Industrial Applications

The LANTIME M450 Time Server offers an unparalleled flexibility and versatility and provides accurate time to your network in a compact and full-featured DIN railmount package for industrial applications such as power generation, transmission and distribution (substation automation), process control and industrial automation systems. The M450 includes an LC-Display and keypad and an extremely broad range of available options.

### Key Features

- Selectable Reference Sources: GPS: Satellite receiver for the Global Positioning System GNS: Combined GPS/GLONASS/Galileo/BeiDou satellite receiver, can also be used for mobile applications GNS-UC: GPS and Galileo Satellite Receiver with Up-Converter for Meinberg GPS Antenna/Converter PZF: DCF77 correlation receiver for middle europe MSF: Long wave receiver for Great Britain TCR: Time code receiver for IRIG A/B, AFNOR or IEEE1344 codes MRS: (GPS, PPS, 10MHz, NTP): Multi Reference Source - several reference sources, adjustable following priority of signal
- Synchronizes NTP-compatible clients with support for NTP, SNTP, and NTS - Network Time Security
- Web interface that is both powerful and easy to use
- Backlit LCD panel and function keys for local configuration
- Frequency signals and industry-specific sync signals via additional optional outputs
- USB port for installation of firmware updates, backup/restore of configuration and log files, and disabling/enabling access to front panel controls
- Command line interface for advanced power users with absolute control over every facet of the server's functionality
- Comprehensive networking support, including full HTTPS encryption for Web Interface and REST API with TLS certificate management
- Support for syslog, SNMP, and SMTP for comprehensive event logging, network integration, and notification functionality
- GNS models include Multi-GNSS antenna for reception of GPS, Galileo, BeiDou, and GLONASS signals
- GPS and GNS-UC models include Meinberg IF antenna of reception of GPS signals and, with GNS-UC models, also Galileo signals

## Description

The LANTIME M450 time server is available with an integral receiver as well as an IRIG timecode reader and can be customized with a lot of different options to deliver exactly the feature set that is required for a certain application/environment.

### Ultra compact Form Factor

The ultra compact form factor enables this NTP system to become the ideal time and frequency source in installations where every millimeter counts. With up to 6 network ports, this NTP appliance offers highest port density.

### Simple System Configuration

As with most LANTIME M-Series models, a large LCD panel showing the state of the internal time signal receiver and the NTP subsystem is combined with three bicolor LEDs (green/red) that indicate the status of the three main components: Reference Time (e.g. GPS or GLONASS), Time Synchronization Service (NTP) and Network (Link status). A fourth red LED is labelled ALARM and can be configured to signal any event that is covered by the notification handling routines.

### Oscillator Options

The LANTIME M450 GPS is equipped with a high precision oscillator "TCXO" (look at oscillator options for details). The oscillator determines the holdover characteristics (e.g. when a reference source signal like GPS is disturbed or jammed). For applications with higher stability/holdover requirements there are several oscillator options available (up to "OCXO HQ").

### Modular System Architecture

Because of its modular system architecture it is possible to equip a LANTIME M450 time server with a number of different reference time sources. Optionally several additional frequency-, serial string- and pulse outputs are available as well as power supplies for additional input voltage ranges.

In addition to the standard electrical interfaces a lot of output signals can be delivered on optical ports, too.

## Characteristics

<b>Status Indicators</b>	Four bicolor LEDs indicating: <ul style="list-style-type: none"> <li>- Reference time status</li> <li>- Time service status</li> <li>- Network link status</li> <li>- Alarm states</li> </ul>
<b>Display</b>	LC Display, 4 x 16 characters
<b>Control Elements</b>	Eight push buttons to set up basic network parameters and to change receiver settings
<b>Frequency Outputs</b>	10 MHz via female BNC connector, TTL into 50 Ohm Accuracy depends on oscillator (standard: TCXO), look at [1] <a href="#">oscillator list</a>
<b>Pulse Outputs</b>	Pulse Per Second (PPS), TTL level, pulse width: 200 ms
<b>Accuracy of Pulse Outputs</b>	Depends on oscillator option:
<b>Interface</b>	Single serial RS-232 interface (no serial interface in case of an internal time code receiver).
<b>Serial Time String Output</b>	<b>COM 0:</b> Baudrate: 300, 600, 1200, 2400, 4800, 9600, 19200 Baud Data Format: 8E1, 8E2, 8N1, 8N2, 8O1, 7E1, 7E2, 7N2, 7O1, 7O2 Time Telegram: [2] <a href="#">Meinberg Standard Time String</a> , SAT, NMEA RMC, Uni Erlangen (NTP), COMPUTIME, Sysplex, [3] <a href="#">Capture String</a> , SPA, RACAL, Meinberg GPS, NMEA GGA, NMEA RMC GGA, NMEA ZDA, ION, 6021 or IRIG-J
<b>Relay Outputs</b>	<b>Error Relay</b> <ul style="list-style-type: none"> <li>* Max. Switching Voltage: 125 V DC / 140 V AC</li> <li>* Max. Switching Current: 1 A</li> <li>* Max. Switching Power: 30 W DC / 60 VA AC</li> <li>* Response Time: Approx. 2 ms</li> </ul>
<b>Alarm output</b>	Synchronous state of the module, relay output (changeover contact)
<b>Network Interface</b>	2 Network ports: 1 x 10/100/1000Base-T RJ45 1 x 1000Base-T SFP Slot  Up to 25,000 NTP requests/second

<b>Universal Serial Bus (USB) Ports</b>	1x USB Port: - install firmware upgrades - backup and restore configuration files - copy security keys - lock/unlock front keys
<b>Power Consumption</b>	30 W (typical)
<b>Operating Voltage</b>	<b>AC/DC power supply (standard)</b> Rated voltage range: UN = 100-240 V AC (50-60 Hz) / 100-240 V DC Max. voltage range: Umax = 90-264 V AC (47-63 Hz) / 100-250 V DC  <b>Low DC (option):</b> Rated voltage: UN = 48 V DC Max. voltage range: Umax = 20-60 V DC
<b>Supported Time String Formats</b>	Meinberg Standard Timestring, Uni Erlangen Timestring, SYSPLEX Timer, NMEA, Computime, ABB-SPA, SAT, Arbiter
<b>Form Factor</b>	Fischer aluminium housing for DIN mounting rail
<b>CPU</b>	* Intel® Atom
<b>Operating System of the SBC</b>	Custom LANTIME OS based on Linux 4.x LTS Kernel.
<b>Network Protocols OSI Layer 4 (Transport Layer)</b>	TCP, UDP
<b>Network Protocols OSI Layer 7 (Application Layer)</b>	Telnet, FTP, SSH (including SFTP, SCP), HTTP, HTTPS, syslog, SNMP
<b>Internet Protocol (IP)</b>	IPv4, IPv6
<b>Network Autoconfiguration Support</b>	IPv4: Dynamic Host Configuration Protocol - DHCP (RFC 2131) IPv6: Dynamic Host Configuration Protocol - DHCPv6 (RFC 3315) and Autoconfiguration Networking - AUTOCONF (RFC 2462)
<b>Network Time Protocol (NTP)</b>	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
<b>Parallel Redundancy Protocol (PRP)</b>	PRP (IEC 62439-3)
<b>Time Protocol (TIME)</b>	Time Protocol (RFC 868)

<b>IEC 61850</b>	Synchronization of IEC 61850-compliant devices using SNTP
<b>Hypertext Transfer Protocol Secure (HTTPS)</b>	HTTP(S) for web interface and REST API access
<b>Secure Shell (SSH)</b>	SSH v1.3, SSH v1.5, SSH v2 (OpenSSH)
<b>Telnet</b>	Telnet (RFC 854-RFC 861)
<b>Simple Network Management Protocol (SNMP)</b>	SNMPv1 (RFC 1157), SNMPv2c (RFC 1901-1908), SNMP v3 (RFC 3411-3418)
<b>Physical Dimensions</b>	105 x 189 x 146 mm (W x H x D)
<b>Supported Temperature</b>	Operational: 0 - 50 °C (32 - 122 °F) Storage: -20 - 70 °C (-4 - 158 °F)
<b>Supported Humidity</b>	Max. 85 % (non-condensing) at 40 °C
<b>Contents of Shipment</b>	Included in delivery is a Meinberg outdoor antenna incl. mounting kit, pre-assembled antenna cable (except TCR and RDT models).
<b>Technical Support</b>	Meinberg offers free lifetime technical support via telephone or e-mail.
<b>Warranty</b>	Three-year warranty
<b>Firmware Updates</b>	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.
<b>RoHS Status of Product</b>	This product is fully RoHS-compliant.
<b>WEEE Status of Product</b>	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.
<b>Additional Information</b>	Additional information about the Meinberg LANTIME family of NTP time servers and other LANTIME models can be found on the [4] <a href="#">LANTIME overview page</a> .

#### Manual

There is no online manual available for this product.: [5][Contact us](#)

#### Links:

[1] <https://www.meinbergglobal.com/english/specs/gpsopt.htm>

[2] <https://www.meinbergglobal.com/english/specs/timestr.htm>

[3] <https://www.meinbergglobal.com/english/specs/capstr.htm>

[4] <https://www.meinbergglobal.com/english/products/ntp-time-server.htm>

[5] <mailto:info@meinberg.de>