LANTIME M150

Product Highlights

- A powerful Stratum 1 NTP server capable of processing up to 25,000 requests per second
- Compact DIN/TS35 rail-mounted chassis, also suitable for desktop use
- Engineered to order with a selection of reference receiver module options (GNSS and DCF77)
- Available with an AC/DC or a “low DC” (20–60 V) power supply unit to meet your specific needs

High-Performance NTP Time Server in a Compact Chassis

The LANTIME M150 is designed by Meinberg to offer superior NTP server performance in an industrial environment with a robust rail-mounted chassis. Built to order with a selection of signal receivers to enable you to synchronize your server to the remote timing signal that you trust most, the LANTIME M150 servers can be built to support timing signals from any of the main satellite navigation systems in operation (GPS, Galileo, BeiDou, GLONASS) or from a long-wave timing signal radio service (DCF77).

Meinberg’s custom Linux-based LANTIME OS, a slim & secure operating system developed specially for the needs of a time server, powers the LANTIME M150 under the hood, providing access to all the security, network, and monitoring features that you could ever need from an enterprise-grade synchronization appliance.

The powerful Web UI enables you to quickly and easily configure and monitor your LANTIME device, while the CLI provides power users with unparalleled flexibility and efficiency. The comprehensive LANTIME OS REST API provides a complete toolkit for your network orchestration and automation needs, and SNMP support allows you to integrate your Meinberg systems into your existing network management system.

Basic System Specifications

Processor	Intel Atom E3805 dual-core SoM (1.33GHz, 1 MB L2 cache, 3 W TDP)
Operating System	Custom LANTIME OS based on Linux 4.x LTS kernel
Main Memory	2GB DDR3L onboard
Flash Disk	4 GB eMMC Flash

Monitoring & Alarms

Supported Protocols	SNMP v1, SNMP v2, SNMP v3
Notification Channels	Email (SMTP), syslog
Log Access	Logs can be viewed and downloaded in the Web Interface, downloaded via the FTP service, or accessed via the command line interface

NTP Support

NTP Protocols	NTP v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905) SNTP v3 (RFC 1769), SNTP v4 (RFC 2030)
Security Features	Symmetric key-based authentication using MD5, SHA-1, or AES-128-CMAC hashes NTP v4 Autokey (private/public key pairs) NTS encryption (RFC 8915) for NTP v4 in unicast client mode
Performance	Up to 25,000 NTP requests per second

Meinberg Funkuhren GmbH & Co. KG
Lange Wand 9. 31812 Bad Pyrmont
Germany

sales@meinberg.de
www.meinbergglobal.com

Phone: +49 5281 9309-0

Management Interfaces

Network	Web Interface (HTTP/HTTPS TLS v1.3) SSH v2 (command line interface) Telnet (command line interface) REST API (HTTP/HTTPS TLS v1.3)
Serial Console	8P8C (“RJ45-like”) connector for serial terminal access

Oscillator Options

The LANTIME M150 is shipped as standard with a “**TCXO**” (temperature-controlled crystal oscillator), which provides excellent holdover performance if your server loses synchronization with its upstream reference for any reason. The LANTIME M150 may also be shipped on request with a more powerful holdover solution; the options available and their performance metrics are listed below:

Type	Holdover Performance (1 Day)*	Holdover Performance (1 Year)*
TCXO	± 4.3 ms	± 16 s
OCXO SQ	± 65 µs	± 4.7 s
OCXO HQ	± 10 µs	± 788 ms

* Full holdover performance requires the system to have been synchronized for 24 hours previously.

Available Receiver Types

GPS Receiver*	12-channel L1 C/A code receiver for reception of signals from the GPS satellite constellation
GNS Receiver	72-channel receiver for reception of signals from the GPS (L1), Galileo (E1 B/C), BeiDou (B1I), and GLONASS (L1OF) satellite constellations
GNS-UC Receiver*	72-channel receiver for reception of signals from the GPS (L1 C/A code) and Galileo (E1 B/C) satellite constellations
PZF Receiver	Receiver with quadrature demodulator for reception of signals from the DCF77 long-wave transmitter in Mainflingen, Germany

* These receivers require a Meinberg IF antenna (included with the system as standard)

Operational Specifications

Acoustic Noise Emissions	0 dB(A)
Supported Operating Temp.	0 to 50 °C (32 to 122 °F)
Supported Storage Temp.	-20 to 70 °C (-4 to 158 °F)
Supported Relative Humidity	Max. 95 % at 40 °C (104 °F), non-condensing
Supported Altitude	Max. 2000 m / 6562 ft (above sea level)

Chassis Specifications

Dimensions	126 mm x 105 mm x 189 mm (4.94 in x 4.13 in x 7.44 in) [W x H x D]
Material	Aluminum (extruded section)
IP Rating	IP30
Fixture Mount	DIN rail (EN 60715) / TS35 rail

Accessories Included

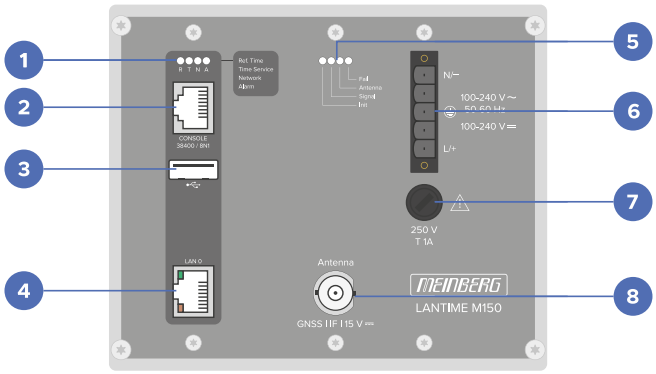
- Two-part AC power cable (5-pin MSTB to IEC 60320 C14 cable, IEC 60320 C13 cable to local mains plug) **or** 5-pin MSTB connector for assembly of a suitable power cable for DC power sources.
- Printed setup guide explaining the basic setup process and antenna installation.
- Models with a GPS or GNS-UC clock receiver include a Meinberg GPSANTv2 antenna for outdoor installation, a mounting kit containing all the accessories required to mount the antenna on a pole or wall, and a 20 m (65.6 ft) RG 58 coaxial cable with pre-fitted connectors as standard*.
- Models with a GNS clock receiver include a multi-GNSS antenna for outdoor installation, a mounting kit containing all the accessories required to mount the antenna on a pole or wall, and a 20 m (65.6 ft) Belden H155 coaxial cable with pre-fitted connectors as standard*.
- Models with a PZF clock receiver include a long-wave antenna, a mounting kit for outdoor installation, and a 10 m (32.8 ft) RG58 coaxial cable with pre-fitted connectors as standard*.

* Meinberg also offers customized antenna cables to accommodate your specific installation requirements. Please reach out to your Meinberg Sales Representative for more information.

Support & Compliance

Technical Support	Free lifetime support via telephone and email, including firmware updates
Warranty	Three-year warranty, extendable upon request
Firmware Updates	Firmware is field-upgradable; updates can be installed from a connected USB storage medium, via the Web UI (upload via a web browser), or via the CLI (download from a server). LANTIME OS allows you to install multiple firmware versions onto the device concurrently and select which one should be used when the system starts.
Conformity Declarations	CE, UKCA
RoHS Compliance	The product is fully RoHS-compliant.
WEEE Status	The purchase of this product is considered to be a “B2B” transaction (non-household product) for the purposes of the European Union Waste of Electrical and Electronic Equipment Directive; the product falls under Category 6, “Small IT and Telecommunications Equipment”. For disposal, it can 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.

LANTIME M150 Front View



1 Status LEDs

Ref. Time (R)	Indicates whether the reference clock is providing a valid timebase.
Time Service (T)	If lit, the internal NTP service of the server is synchronized with the reference clock.
Network (N)	Shows whether there is a valid link-up on the network interface.
Alarm (A)	Advises of a general system fault that requires attention.

2 Serial Console Port (Terminal Access)

The serial console port is a standard RS-232 interface with an 8P8C (“RJ45-like”) female connector that can be used to establish a direct serial connection (38400 baud, 8N1 framing) between the LANTIME M150 and any device running suitable terminal software (e.g., a laptop) for direct command line access. The connection can be established using any suitable RS-232 cable or adapter (e.g., RJ45 to D-Sub 9, Yost wiring standard).

3 USB Interface

The USB interface can be used for:

- saving a backup of the LANTIME OS configuration to an external storage medium (such as a USB flash drive) and restoring this backup (or copying a standard configuration between multiple LANTIME servers)
- creating a backup of log files (such as SyncMon logs)
- loading and saving cryptographic certificates
- connecting an external Meinberg LDU display to check the status of the device and set up an initial IP address

4 Network Interface

Network Interface	1x RJ45 10/100/1000-BASE-T interface (Gigabit Ethernet) with link status LEDs
Network IP Addressing	IPv4 (with DHCP support), IPv6 (with DHCPv6 and Autoconf support)
Network Services (Supported Protocols)	HTTP(S) for web interface and REST API access FTP for access to log files and uploading firmware updates Telnet and SSH for command line access SNMP for monitoring

5 Receiver Clock Status LEDs

The specific LEDs will depend on whether the LANTIME M150 is equipped with a GNSS satellite receiver or a PZF long-wave receiver. The front view illustration represents a LANTIME M150 fitted with a GPS receiver and may vary in other models.

GNSS Satellite Receiver (Type GPS, GNS, GNS-UC)	
“Fail” LED	If lit, this reveals if that clock is having problems with synchronization.
“Ant.” LED	Indicates that there is no functional connection to the antenna or that there is a short-circuit in the connection with the antenna.
“Nav.” LED	Shows the state of the geolocation process.
“Init.” LED	Provides an indication of initialization state of the clock and onboard oscillator.

DCF77 Long-Wave Receiver (Type PZF)	
“Init” LED	Provides an indication of the initialization state of the clock and onboard oscillator.
“Field” LED	Indicates the detection of adequate DCF reception.
“Ant Fail” LED	If lit, indicates problems with the antenna connection.
“Fail” LED	Used to report problems with clock synchronization.

6 Power Supply

Connector Type	5-pin MSTB female connector Power supply cable provided for AC mains power supply 5-pin MSTB male connector supplied for assembly of cable for DC power supply
Voltage Range	AC/DC power supply unit: 100–240 V AC (50–60 Hz), 100–240 V DC “Low DC” power supply unit: 20–60 V DC (rated), 48 V DC (nominal)
Power Consumption	20 W typical

7 Replaceable Fuse

Fuse Standard	IEC 60127 (5 x 20 mm)
Rated Voltage	250 V
Rated Current	1 A
Fuse Type	Slow-blow

8 Antenna Connector

The specifications of the antenna and its connector are dependent on the selected clock receiver. The illustration represents a LANTIME M150 fitted with a GPS receiver and may differ on other models.

GPS Receiver	- Connector type: BNC female or Type-N female - Termination impedance: 50 Ω - Recommended cable: RG58 (max. length 300 m), RG213 (max. length 700 m) - Voltage output: 15 V (for powering Meinberg GPS IF antenna system)
GNS-UC Receiver:	- Connector type: BNC female or Type-N female - Termination impedance: 50 Ω - Recommended cable: RG58 (max. length 300 m), RG213 (max. length 700 m) - Voltage output: 15 V (for powering Meinberg GPS IF antenna system)
GNS Receiver	- Connector type: SMA female - Termination impedance: 50 Ω - Recommended cable: Belden H155 (max. length 70 m) - Voltage output: 5 V (for powering antenna)
PZF Receiver	- Connector type: BNC female - Reception frequency: 77.5 kHz - Termination impedance: 50 Ω - Recommended cable: RG58 (max. length 300 m) - Voltage output: 5 V (for powering Meinberg PZF antenna system)