



LANTIME MRS/2PTPv2



PTP NETWORK MEASUREMENT AND TEST SYSTEM

REDUNDANT IEEE 1588 PTPv2 GRANDMASTER

HIGH END PTP TRANSLATOR



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Intelligent switching between available synchronization sources:

- GPS
- Time Code (IRIG/AFNOR with DCLS or modulated)
- 1PPS
- 10 MHz
- PTP IEEE1588-2008
- up to 7 external NTP servers
- NMEA(RMC) serial string + 1PPS (option)

GPS satellite controlled clock with MRS option

The LANTIME M600/MRS/2PTPv2 is a multi reference source time server and measurement device. The integrated reference time base is a high precision oscillator (OCXO-HQ). This oscillator can be disciplined either by the integrated GPS receiver, an external 1PPS source, an IRIG/AFNOR time code, up to 7 other NTP time servers, a PTP IEEE 1588-2008 grandmaster, or an optional NMEA(RMC) serial time string combined with a 1PPS signal. All input references can be compared to each other to determine their accuracies or offsets. The built-in PTP units can be configured to act either as a slave or as a grandmaster. In either case, the OCXO oscillator is used as a reference for the internal NTP service, even if GPS reception or an external reference is unavailable. All outputs including the serial output, the 1PPS output or the 10MHz output will be driven by the internal oscillator.

Features:

- Synchronization of IEEE 1588-2008 compatible clients
- Synchronization of NTP and SNTP compatible clients
- Selectable PTPv2 grandmaster and/or slave mode
- Accepts a large number of sync references: GPS, 1PPS, 10MHz, Time Code (DCLS and AM), PTP, NTP and – optionally a serial NMEA(RMC) time string
- Web based status and configuration interface and console based graphical configuration utility
- Supported net protocols: IPv4, IPv6, PTPv2/IEEE 1588, NTP, SNTP, DAYTIME, DHCP, HTTP, HTTPS, FTP, SAMBA, SFTP, SSH, SCP, SYSLOG, SNMP, TIME, TELNET, W32TIME
- Alert-Notification system of status change by Email, WinMail, SNMP or an external display
- Full SNMP v1,v2,v3 support with own SNMP-daemon for status and configuration and SNMP trap messages
- USB port to perform updates, lock front panel and backup/restore configuration and log files
- Optional antenna connected with up to 300m (1000') of standard RG58 coaxial cable
- 7 independent RJ-45 ethernet interfaces 10/100 MBit (2 x IEEE 1588)
- Evaluating PTP/IEEE 1588 performance in your own network environment
- High-End client or converter (e.g. from PTP to 1PPS, 10 MHz oder IRIG)
- Perfectly usable as mobile measuring and test station

Optional expansions and/or configurations available

MRS functionality

Meinberg's MRS technology (Multi Reference Sources) enables you to utilize one or more time and frequency references in a prioritized order defined by your individual requirements. Our Intelligent Reference Switching Algorithm (IRSA) insures that switching from a highly accurate reference source (e.g. GPS) to a less

accurate one (e.g. IRIG or NTP) is delayed as long as the internal ultra stable oscillator is capable of maintaining an accuracy level that is better than the next available reference source in the priority list.

The LANTIME M600/MRS/2PTPv2 is equipped with a high precision oscillator OCXO-HQ as standard. This oscillator determines the holdover characteristics when the GPS signal is temporarily unavailable. The OCXO-DHQ oscillator option is available to fulfill higher requirements.

Application fields for MRS technology:

• Redundancy of input references:

The MRS technology offers a flexible solution to the changing availability of different synchronization sources for highly critical operating systems. The ability to use multiple independent sync references allows you to fulfill redundancy requirements of your network synchronization solution.

• Lab environments:

Monitoring and measurement of synchronization sources such as determining and logging the accuracy of an IRIG generator, a PPS source or the PTP slave synchronization is easily done with the MRS. All reference inputs can be measured against each other, and the high quality VF-Display provides a graphical representation of the measurements between different reference sources.



• PTPv2 Translator:

The MRS system allows you to translate PTPv2 into a variety of output signals like 1PPS, 10MHz or IRIG. This feature makes it easy to transfer legacy timing signals over a IP based infrastructure while maintaining very high accuracy.

IEEE 1588 Grandmaster and/or Slave:

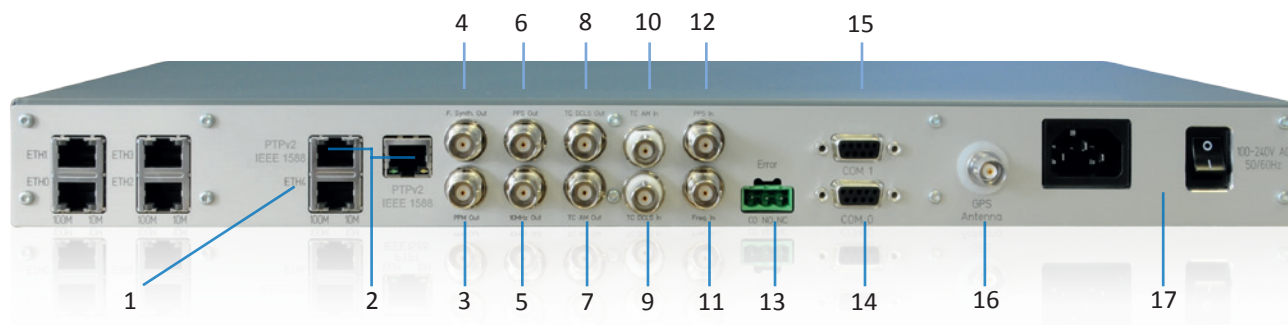
The 3-in-1 IEEE 1588 solution provides...

... an ideal testing environment for PTP performance due to an additional IEEE 1588-2008 PTP LAN interface, which enables the LANTIME M600/MRS/2PTPv2 to act as a GPS synchronized grandmaster clock and simultaneously operate as a slave clock receiving time from its own grandmaster.

... Grandmaster redundancy if both IEEE 1588-2008 PTP LAN interfaces are configured to act as grandmaster clocks, to create a highly redundant time synchronization reference.

... the ability to function as a translator between two PTP networks that use different communication layers or profiles.

The system supports multicast and unicast operation, Layer 2 (Ethernet) and Layer 3 (UDP/IPv4) communication, End-to-End (E2E) or Peer-to-Peer (P2P) delay mechanism and configurable message intervals for sync, announce and delay request messages. One-step and two-step mode is supported in slave clock mode, as a grandmaster the M600 can be run in two-step mode.



Front Panel:

RS232 front panel interface, 9pin D-Sub male connector for initial setup and configuration

USB (Rev. 1.1) front panel interface to:

- install firmware upgrades
- backup and restore configuration files
- copy security keys
- lock/unlock front panel keys

Bicolor LEDs: Ref. time (e.g. GPS), time synchronization Service (NTP) and network-link status
Red alarm LED (configurable)

Graphical VF Display, 256 x 64 dots

Network Interfaces:

- 1 | Five LAN interfaces, RJ45 connector, status LEDs for link, activity; speed (10/100 MBit)
- 2 | Two IEEE1588-2008 PTPv2 LAN ports, RJ45 connector, status LEDs for link, activity; speed (10/100 MBit)

IEEE 1588 Support

- PTP management messages
- Multicast and unicast operation
- Supported profiles: Default, Telecom and Power
- Layer 2 (Ethernet) and Layer 3 (UDP/IPv4)
- End-to-End (E2E) or Peer-to-Peer (P2P) delay mechanism
- Configurable intervals for sync, announce and delay measurements
- Two-step grandmaster*, one-step and two-step in slave clock mode

Signal Outputs:

- 3 | Pulse Per Minute (PPM), TTL into 50 Ohm, pulse duration 200 msec, active high, female BNC connector
- 4 | Frequency Synthesizer, from 0.1 Hz up to 10 MHz, TTL into 50 Ohm, female BNC connector
- 5 | Reference Frequency 10 MHz, TTL into 50 Ohm, female BNC connector
- 6 | 1PPS, TTL into 50 Ohm, pulse duration 200 msec, active high, female BNC connector
- 7 | Time Code, pulse-width modulated DC output (IRIG/AFNOR DCLS), TTL into 50 Ohm, active high, female BNC connector
- 8 | Time Code, amplitude modulated (IRIG/AFNOR AM) sine waveoutput, peak-to-peak voltage: 3 V into 50 Ohm, female BNC connector
- 13 | Alarm relay output, change-over contact, 3pin DFK connector
- 14, 15 | RS232 interface, 9pin D-Sub female connector with following data formats:
 - Meinberg Standard-Telegram, SAT, NMEA0183(RMC)
 - Uni Erlangen (NTP), COMPUTIME, SYSPLEX-1
 - SPA, RACAL (ports can be configured independently)

Reference Inputs:

- 9 | Time Code DCLS (unmodulated) input, BNC connector, isolated by opto-coupler
 - Insulation voltage: 3750 Vrms
 - Internal series resistor: 330 Ohm
 - Max. input current: 25mA
 - Diode forward voltage: 1.0V to 1.3V
- 10 | Time Code AM (modulated) input, BNC connector, isolated by transformer
 - Insulation voltage 3000 VDC
 - Input impedance: 50 Ohm, 600 Ohm, 5 kOhm
 - Internally selectable by jumper (default 600 Ohm)
 - Input signal : 600mV to 8V (Mark, peak-to-peak)

selectable Time Code Inputs, AM/DCLS:

- B122/123 / B002/003
- B126/127 / B006/007
- IEEE1344 (AM and DCLS)
- AFNOR NFS 87-500 (AM and DCLS)

- 11 | 10 MHz, TTL input, female BNC connector

- 12 | 1PPS input, TTL, pulse duration > 5µs, active high, female BNC connector

- 16 | Meinberg GPS antenna input, BNC connector, isolated

System Components:

- GPS C/A code receiver
- OCXO-HQ timebase
- Two independent PTPv2 IEEE 1588 hardware time stamp units (TSU)
- Single board computer with Linux operating system, supporting the following protocols: NTP/SNTP v4, Time protocol (RFC 868), Daytime protocol (RFC 867), SNMP v1,2,3, SNMP Traps, SSH v2, IP v4, IP v6, DHCP client, HTTP(S), Email, FTP, Telnet, Syslog
- 17 | Power Supply 100-240 VAC (also available in different DC variants)
- Metal 19" modular chassis, 1U/84HP, slimline, 483 mm wide x 43 mm high x 285 mm deep

LANTIME MRS/2PTPv2

3-in-1 Solution: Redundant PTP Grandmaster, Measurement/Testing Tool and PTP Translator

