



Meinberg Radio Clocks

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PTP270PEX: IEEE1588-2008 slot card for computers (PCI Express)

The PTP270PEX provides sub-microsecond accuracy for computers. The card has been designed to add ultra precise time stamping capabilities to your data acquisition and measurement applications. The PCI Express card can be installed in any single lane PCIe slot and offers an impressive selection of time, pulse and frequency outputs.

Key Features

- PCI Express Interface
- IEEE 1588-2008 (PTP V2) compatible ordinary clock
- Pulse per second and 10 MHz output
- Memory Mapped I/O time reads for high access rates
- RS232 interface
- IRIG-B/AFNOR time code generator
- Plug and Play
- Driver software for all popular operating systems

Description

This PTP PCI Express slot card is the best choice for adding a highly accurate time base to your servers or workstations over a simple Ethernet connection. The time source for the card is a IEEE1588 grandmaster clock like the LANTIME M600/GPS/PTP. In the past, sub-microsecond accuracy in PCs could be achieved with GPS synchronized devices only but now with PTP there is no need for complex antenna cabling to every PC.

The integrated single board computer (SBC) is running the PTP stack and provides a PCI Express interface that is compatible with other Meinberg PCIe devices. In this way the board PTP270PEX can be operated by using the standard Meinberg driver package and there is no need to run a PTP software on the computer. The card can be used as a stratum 0 reference time source for NTP and transforms any machine into a Stratum 1 NTP server without consuming additional physical space in your server room.

Being the first PCI Express PTP V2 compatible timing device on the market, the PTP270PEX comes with a truckload of features to enable software developers to overcome the timing limitations of COTS operating systems like Linux or Windows. The powerful and highly functional Meinberg API (Application Programming Interface) delivers an easy to use and portable way of accessing all Meinberg bus level timing devices. The Meinberg SDK can be downloaded free-of-charge.

Legacy interfaces like IRIG DCLS, 1PPS or 10 MHz can be used to connect other equipment to the PCIe slotcard and transfer the time base over dedicated cable connections to systems which cannot be synchronized via NTP or other network protocols.

The memory mapped access feature offers a fast, simple and efficient way of reading the board time with high precision at very high rates.

The device is designed to be a timing device only and cannot be used as a standard network interface card.

The drivers package for **Windows** contains a time adjustment service which runs in the background and adjusts the Windows system time continuously and smoothly. A monitor program is also included which lets the user check the status of the device and the time adjustment service, and can be used to modify configurable parameters.

The driver package for **Linux** contains a kernel driver which allows the board to be used as a reference time source for the NTP daemon which is shipped with most Linux distributions. This also turns the computer into a NTP time server which can also provide accurate time to other NTP clients on the network. Some command line tools can be used to setup configurable parameters and monitor the status of the board.

Characteristics

Accuracy	+/-20 ns to grandmaster clock
Status info	4 Status LEDs: <ul style="list-style-type: none"> * System Status * Outputs active * PTP packet sent * PTP packet received
Frequency outputs	Frequency output 10 MHz, TTL level
Pulse outputs	Pulse Per Second (PPS), TTL level, pulse width: 200ms
Accuracy of pulse outputs	+/- 100 ns (relative to the used IEEE 1588 Grandmaster Clock, after initial synchronization phase)
Interface	Single serial RS232 interface
Unmodulated time code output	DCLS, TTL into 50 ohm (active high or active low)
Generated time codes	<ul style="list-style-type: none"> * B002: 100pps, DCLS signal, no carrier, BCD time of year * B003: 100pps, DCLS signal, no carrier, BCD time of year, SBS time of day * IEEE1344: Code according to IEEE1344-1995, 100pps, BCD time of year, SBS time of day, IEEE1344 expansion for date, time zone, daylight saving and leap second in Control Functions segment (CF) * AFNOR: Code according to NFS-87500, 100pps, BCD time of year, complete date, SBS time of day
Time-Trigger inputs	Resolution: 20 nsec, triggered by falling TTL slope Time of trigger event readable via PCI Express interface
Computer interface	Single lane (x1) PCI Express (PCIe) Interface PCI Express r1.0a compatible
Network Interface	1 x 10/100 MBit with RJ45, IEEE 1588
Power supply	+3.3V, @ 600mA +12V, @ 300mA
Board type	Standard height board (101 x 150 mm)
Precision Time Protocol (IEEE 1588)	PTP/ IEEE 1588-2008 Multicast including <ul style="list-style-type: none"> * Network Protocols: <ul style="list-style-type: none"> - UDP/IPv4 (Layer 3) - IEEE 802.3 (Layer 2) * Delay Mechanisms: <ul style="list-style-type: none"> - End-to-End - Peer-to-Peer * PTP Management Messages for monitoring and configuration

Ambient temperature 0 ... 50°C / 32 ... 122°F

Humidity Max. 85%

Options **Oscillator upgrade:**

* OCXO-LQ, -MQ or -HQ (instead of TCXO) for extended Holdover capabilities
(see [1][oscillator table](#) for further details)

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.

Manual

The english manual is available as a PDF file: [2][Download \(PDF\)](#)

Links:

[1] <http://www.meinberg.de/english/specs/gpsopt.htm>

[2] <http://www.meinberg.de/download/docs/manuals/english/ptp270pex.pdf>