GPS170PEX: GPS Clock for Computers (PCI Express)

The GPS170PEX card from Meinberg 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.

Important Note

This product is no longer available and may have been replaced by a newer product. We will, of course, continue to provide support for units that have already been purchased and are still in use. Please contact our [1]Sales Department for further details.

This product has been discontinued and has been replaced with: [2]

Key Features

- PCI Express Interface
- 2 time trigger inputs
- Pulses per second and per minute
- Memory Mapped I/O time reads for high access rates
- RS-232 interface
- IRIG-B/AFNOR time code outputs
- Plug and Play
- DCF77-simulation
- Included GPSANTv2 antenna uses downconverter technology to enable long transmission routes of up to 1100 m (1200 yards)
- Configurable time scale (UTC/local, GPS time, TAI)
- Driver software for all popular operating systems
- Including GPS antenna, 20m standard cable and manual on USB key

Description

This PCI Express slot card is the best choice for adding a highly accurate time base to your servers or workstations. It 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 GPS timing device on the market, the GPS170PEX 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, including ISA, PCI, PCI-X, PCI Express and USB time synchronization products.

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

The new Memory Mapped Access feature offers a fast, simple and efficient way of reading the current time with high precision.

The **Windows** driver package includes a time synchronization service which runs in the background and adjusts the Windows system time continuously and invisibly. This package also includes a monitor program to enable the user to check the status of the device and time adjustment service. If the monitor program is run with administrator rights, it can also be used to modify configurable parameters.

The **Linux** and **FreeBSD** driver packages include a kernel driver which allows the product to be used as a reference time source for the NTP daemon included in most Unix-like operating systems. This also allows the computer to be used as an NTP time server to provide accurate time to NTP clients on the network. Some command line tools can be used to modify configurable parameters and monitor the status of the clock in use.
Please contact Meinberg's Support Team for more information on using the card with other operating systems: techsupport@meinberg.de.

The device's serial port is not required for operation but can be used to update the card's firmware, or to provide another computer with the current time via a serial time string.

Characteristics

Receiver Type	6 channel GPS C/A-code receiver
Status Indicators	Fail-LED shows that the internal timing has not been synchronized or that a system error occurred Lock-LED shows that the calculation of the position has been achieved after reset
Type of Antenna	Included [3]GPSANTv2 antenna with innovative downconverter technology that allows transmission routes of up to 300 m using RG58 cable, 700 m using RG213 cable, and 1100 m using H2010 Ultraflex cable
Synchronization Time	Max. 1 minute in normal operating conditions Max. 25 minutes (average 12 minutes) upon first initialization or in the absence of saved satellite data
Frequency Outputs	Frequency output 10 MHz, TTL level
Pulse Outputs	3 Programmable TTL outputs, per default configured as: Channel 0: Pulse per second (TTL, RS232 level), pulse duration: 200 msec Channel 1: Pulse per minute (TTL), pulse duration: 200 msec Channel 2: DCF77 compatible pulses (TTL level), pulse width: 100/200 msec
Accuracy of Pulse Outputs	< ± 250ns
Interface	Single serial RS-232 interface
Serial Time String Output	Baudrate: 300, 600, 1200, 2400, 4800, 9600, 19200 Baud Data format: 7N2, 7E1, 7E2, 8E1, 8N1, 8N2 Time telegram: [4]Meinberg Standard-Telegram, SAT, Uni Erlangen (NTP), SPA, NMEA0183 (RMC) or [5]capture-telegramm
Statusbyte	Informations about free running mode, daylight savings time and DST pre-switch anouncement, synchronization since last reset, GMT/UTC time and validity of the hardware clock data
PWM Time Code Output	DCLS, TTL into 50 ohm (active high or active low)
AM Time Code Output	IRIG AM sine wave signal: 3Vpp (MARK), 1Vpp (SPACE) into 50 ohm
Supported Timecode Formats	**IRIG B002:** 100pps, DCLS signal, no carrier, BCD time of year **IRIG B122:** 100pps, AM sine wave signal, 1 kHz carrier, BCD time of year **IRIG B003:** 100pps, DCLS signal, no carrier, BCD time of year, SBS time of day **IRIG B123:** 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, SBS time of day **IEEE1344:** Code according to IEEE1344-1995, 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, SBS time of day, IEEE1344 expansion for date, time zone, daylight saving and leap second in Control Funktions Segment **AFNOR:** Code according to NFS-87500, 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, complete date, SBS time of day

Time-Trigger inputs	Resolution: 100 nsec, triggered by falling TTL slope Time of trigger event readable via computer slot or optional second RS232-interface
Electrical Connectors	BNC female connector for antenna BNC female connector for modulated timecode 9 pin sub D male connector
Computer interface	Single lane (x1) PCI Express (PCIe) Interface PCI Express r1.0a compatible
Backup Battery Type	When main power supply fails, hardware clock runs free on quartz basis, almanac data is stored in RAM Life time of lithium battery min. 10 years
Operating Voltage	+3.3V, @ 190mA +12V, @ 400mA
Board type	Standard height board (101 x 150 mm)
Supported Temperature	Operational: 0 - 50 °C (32 - 122 °F) Storage: -20 - 70 °C (-4 - 158 °F)
Supported Humidity	Max. 85 % (non-condensing) at 40 °C
Options	**Oscillator upgrade:** * OCXO-LQ, -MQ or -HQ (instead of TCXO) for extended Holdover capabilities (see [6]oscillator table for further details)
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.

Manual

The English manual is available as a PDF file: [7]Download (PDF)

Links:

[1] mailto:sales@meinberg.de

[2] https://www.meinbergglobal.com/english/products/gps180pex.htm

[3] https://www.meinbergglobal.com/english/products/gps-antenna-converter.htm

[4] https://www.meinbergglobal.com/english/products/specs/timestr.htm

[5] https://www.meinbergglobal.com/english/products/specs/capstr.htm

[6] https://www.meinbergglobal.com/english/specs/gpsopt.htm

[7] https://www.meinbergglobal.com/download/docs/manuals/english/gps170pex.pdf