GPS180PEX: Low Profile GPS Clock (PCI Express)

The board GPS180PEX is designed as a low profile board for computers with PCI Express interface. The rear slot cover integrates the antenna connector, a BNC connector for modulated time codes, a 9pin D_SUB male connector and two status LEDs. With this standard height bracket you can use the D_SUB connector for I/O signals like RS-232 - PPS and PPM and you can use this interface for firmware updates.

The GPS180PEX will be delivered with a low profile bracket. You can mount this part instead of the standard bracket, to run the GPS180PEX in computers with smaller housing (e.g. 1U server).

Key Features

- PCI Express Interface
- 2 time trigger inputs
- Programmable Pulse Outputs
  NEW: Frequency Synthesizer and Time Code Mode
- Memory Mapped I/O time reads for high access rates
- RS232 interface
- IRIG-B/AFNOR time code outputs
- Plug and Play
- DCF77-simulation
- Antenna connected with up to 300m of standard coaxial cable RG58
- NEW: Configurable time scale (UTC/local, GPS time, TAI)
- Driver software for all popular operating systems
- Including [1]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.

The GPS180PEX 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 drivers package for **Windows** contains a time adjustment service which runs in the background and adjusts the Windows system time continously 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.

Additional drivers packages are available for **DOS**, **Novell NetWare**, and **OS/2**. At the bottom of this page there's a link to the download area.

The device's serial port can be used to update the card's firmware. Additionally it can be connected to the serial port of a computer to use the card as reference time source under operating systems where a serial time string is supported, e.g. by NTP, but no kernel device driver is available.

Characteristics

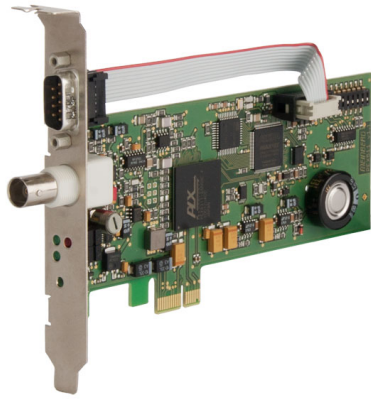|	
Type of receiver	12 channel GPS C/A-code receiver
Type of antenna	Remote powered [2]GPS antenna/converter unit, up to 300m distance to antenna with RG58 and up to 700m distance with RG213 cable
Status info	Fail-LED shows that the internal timing has not been synchronized or that a system error occurred Lock-LED shows that the calculation of the position has been achieved after reset
Synchronization time	Max. 1 minute in normal operation mode, approx. 12 minutes after a cold start (discharged buffer battery)
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	Depends on oscillator option: Standard: TCXO
Interface	Single serial RS232 interface
Data format PC interface	Binary, byte serial (compatible with Meinberg DCF77 Slot Card PEX511)
Data format of interfaces	Baudrate: 300, 600, 1200, 2400, 4800, 9600, 19200 Baud Data format: 7N2, 7E1, 7E2, 8E1, 8N1, 8N2 Time telegram: [3]Meinberg Standard-Telegram, SAT, Uni Erlangen (NTP), SPA, NMEA0183 (RMC) or [4]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
Unmodulated time code output	DCLS, TTL into 50 ohm (active high or active low)
Modulated time code output	IRIG AM sine wave signal: 3Vpp (MARK), 1Vpp (SPACE) into 50 ohm
Generated time codes	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 IRIG B006: 100 pps, DCLS Signal, no carrier, BCD time-of-year, Year IRIG B126: 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time-of-year, Year IRIG B007: 100 pps, DCLS Signal, no carrier, BCD time-of-year, Year, SBS time-of-day IRIG B127: 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time-of-year, 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 C37.118: Like IEEE1344 - with turned sign bit for UTC-Offset AFNOR: Code according to NFS-87500, 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, complete date, SBS time of day

Generated time codes	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
	IRIG B006: 100 pps, DCLS Signal, no carrier, BCD time-of-year, Year
	IRIG B126: 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time-of-year, Year
	IRIG B007: 100 pps, DCLS Signal, no carrier, BCD time-of-year, Year, SBS time-of-day
	IRIG B127: 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time-of-year, 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
	C37.118: Like IEEE1344 - with turned sign bit for UTC-Offset
	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
Board type	Low Profile card (68,90 x 150 mm)
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 [5]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: [6]Download (PDF)

Links:

[1] http://www.meinberg.de/english/products/gps-antenna-converter.htm
[2] http://www.meinbergglobal.com/english/products/gps-antenna-converter.htm
[3] http://www.meinberg.de/english/products/specs/timestr.htm
[4] http://www.meinberg.de/english/products/specs/capstr.htm
[5] http://www.meinberg.de/english/specs/gpsopt.htm
[6] http://www.meinberg.de/download/docs/manuals/english/gps180pex.pdf

PEX511: DCF77 Computer Clock (PCI Express)

DCF77 radio clock for synchronization of computers and networks in PCIe form factor, can be used in both low profile and regular PCIe slots.

Notice: End-of-Life Status announced. This product is only available in a small number of pieces. It is going to be replaced by the highly accurate [1]PZF180PEX, which provides many new features. The PZF180PEX can already be ordered.

Key Features

- PCI Express Interface
- Plug and play
- Pulses per second and per minute
- RS232 interface
- Receiver status LEDs
- Buffered hardware clock
- Configurable time zone
- Driver software for all popular operating systems

Description

The board PEX511 has been designed for the reception of the DCF77 signal, the transfer of the time information to a computer with PCI Express interface and the translation of the received codes into a serial telegram.

The module is designed as a x1-board (single lane) in "low profile" format. It is equipped with a standard height bracket with integrated D-Sub connector making the serial interface, the pulses per second and the pulse per minute available. For installation in a "low profile" computer, an adequate bracket can be mounted that is included in delivery. The signals of the D-Sub connector are not available in this case.

The drivers package for **Windows** contains a time adjustment service which runs in the background and adjusts the Windows system time continously 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.

Additional drivers packages are available for **DOS**, **Novell NetWare**, and **OS/2**. At the bottom of this page there's a link to the download area.

The device's serial port can be used to update the card's firmware. Additionally it can be connected to the serial port of a computer to use the card as reference time source under operating systems where a serial time string is supported, e.g. by NTP, but no kernel device driver is available.

Characteristics

Type of receiver	Narrowband DCF77 quadrature receiver with automatic gain control, bandwidth: approx. 20Hz
Status info	RF Signal: Indicated by LED, antenna alignment enhanced by utility program Free running: Indicated by LED and utility program, without RF signal the clock runs on quartz basis Modulation: Indicated by LED and utility program
Reception Control	Multiple check of received time telegram Plausibility control by using two complete time telegrams
Pulse outputs	Pulses per second (RS232/TTL level) and per minute (TTL level), pulse duration: 100 msec, active high (only available with "standard height" bracket or with additional "low profile" bracket).
Interface	One serial RS232 interface (only available with "standard height" bracket or with additional "low profile" bracket).
Data format PC interface	[2]Binary, byte serial
Data format of interfaces	Baudrate: 300, 600, 1200, 2400, 4800, 9600 baud Framing: 7E2, 8N1, 8E1, 8N2 Output string: 32 ASCII characters with date, time and status information

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
Electrical connectors	BNC female connector 9 pin sub D male connector (only available with "standard height" bracket or with additional "low profile" bracket)
Computer interface	Single lane (x1) PCI Express (PCIe) Interface PCI Express r1.0a compatible
Backup battery type	In case of supply voltage failure the on-board RTC keeps the time based on XTAL for more than 150 hours (buffer capacitor) Optional: lithium backup battery (life time: 10 years)
Board type	Low profile board (68,90 x 150 mm)
Ambient temperature	0 ... 50°C / 32 ... 122°F
Humidity	Max. 85%
Scope of supply	Scope of supply includes: - an active ferrite antenna [3]AI01 and 5m of RG174 coaxial cable with BNC connectors. Optional: [4]AW02 with RG58 and patch cord, other length of cable - "low profile" bracket
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

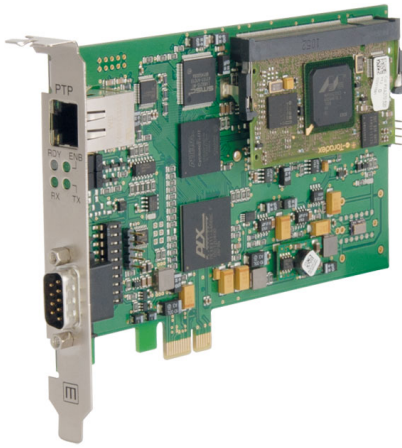The english manual is available as a PDF file: [5]Download (PDF)

Links:

[1] http://www.meinberg.de/english/products/
[2] http://www.meinberg.de/english/specs/timepack.htm
[3] http://www.meinberg.de/english/products/dcf77-indoor-antenna.htm
[4] http://www.meinberg.de/english/products/dcf77-outdoor-antenna.htm
[5] http://www.meinberg.de/download/docs/manuals/english/pex511.pdf

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 providesa PCI Express interface that is compatible with other Meinberg PCIe devices. In thisway the board PTP270PEX can be operated by using the standard Meinberg driverpackage 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 continously 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: * 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	* 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 * Network Protocols: - UDP/IPv4 (Layer 3) - IEEE 802.3 (Layer 2) * Delay Mechanisms: - End-to-End - Peer-to-Peer * PTP Management Messages for monitoring and configuration

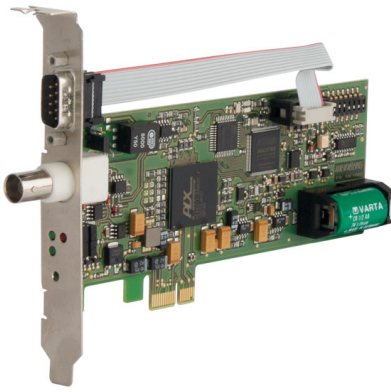|	
Ambient temperature	0 ... 50°C / 32 ... 122°F
Humidity	Max. 85%
Options	**Oscillator upgrade:**
	* OCXO-LQ, -MQ or -HQ (instead of TCXO) for extended Holdover capabilities (see [1]oscillator table for further details)
RoHS-Status of the product	This product is fully RoHS compliant
WEEE status of the 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

TCR511PEX: IRIG Time Code Receiver for Computers (PCI Express)

Reception of IRIG-A/B or AFNOR time codes for synchronization of computers and networks in PCI Express form factor, can be used in both low profile and regular PCIe slots.

Key Features

- PCI Express Interface
- Plug and play
- Pulses per second and per minute
- RS232 interface
- Status LEDs
- Buffered hardware clock
- Reception of time code formats IRIG A/B or AFNOR
- Configurabel time zone
- Driver software for all popular operating systems

Description

The board TCR511PEX has been designed to receive different IRIG-A/B and AFNOR codes. The decoded date and time can be read via the PCI Express interface and is also transmitted via the board's RS-232 port. The receiver's automatic gain control (AGC) allows the reception of modulated IRIG signals within an amplitude range from 600mVpp to 8Vpp. In addition, the TCR511PEX provides an optocoupler input for decoding unmodulated codes with TTL- or RS485-level for example. A buffered real time clock keeps time and date after power down.

The module is designed as a x1-board (single lane) in "low profile" format. It is equipped with a standard height bracket with integrated D-Sub connector making the serial interface, the input for unmodulated IRIG codes, the pulses per second and the pulse per minute available. For installation in a "low profile" computer, an adequate bracket can be mounted that is included in delivery. The D-Sub connector is only available when using an additional bracket in this case.

The drivers package for **Windows** contains a time adjustment service which runs in the background and adjusts the Windows system time continously 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.

Additional drivers packages are available for **DOS**, **Novell NetWare**, and **OS/2**. At the bottom of this page there's a link to the download area.

The device's serial port can be used to update the card's firmware. Additionally it can be connected to the serial port of a computer to use the card as reference time source under operating systems where a serial time string is supported, e.g. by NTP, but no kernel device driver is available.

Characteristics

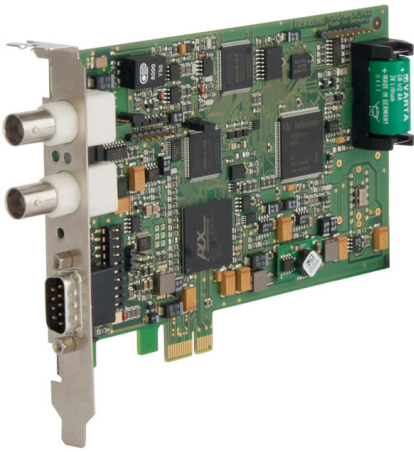|	
Status info	3 status LEDs for indication of: detection of a correct code, synchronization of the internal timing and holdover mode
Input signal	Modulated IRIG A/B or AFNOR signal, input insulated by transformer, input impedance selectable by jumper: 50, 600 or 5000 ohm unmodulated (DC level shift) IRIG A/B or AFNOR signal, input insulated by photocoupler (DC level shift only available with "standard height" bracket or with additional "low profile" bracket).
Accuracy free run	±1·10E-6 if the decoder was synchronous for at least 1 h
IRIG Time Code Input	IRIG-A133, A132, A003, A002, B123, B122, B003, B002 and AFNOR NFS 87-500 (other codes on request)
Pulse outputs	Pulses per second (RS232/TTL level) and per minute (TTL level), pulse duration: 200 msec, active high (only available with "standard height" bracket or with additional "low profile" bracket).
Precision of timebase	±5 µsec referred to IRIG-reference marker
Interface	One serial RS232 interface (only available with "standard height" bracket or with additional "low profile" bracket).
Data format PC interface	[1]Binary, byte serial
Data format of interfaces	Baudrate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 baud Framing: 7E2, 8N1, 8E1, 8N2 Output string: 32 ASCII characters with date, time and status information
Statusbyte	Information about holdover mode, synchronization since last reset and the validity of the RTC data.
Electrical connectors	BNC female connector 9 pin sub D male connector (only available with "standard height" bracket or with additional "low profile" bracket)
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, life time of lithium battery min. 10 years
Board type	Low profile board (68,90 x 150 mm)
Ambient temperature	0 ... 50°C / 32 ... 122°F
Humidity	Max. 85%
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]<u>Download (PDF)</u>

Links:

[1] http://www.meinberg.de/english/specs/timepack.htm
[2] http://www.meinberg.de/download/docs/manuals/english/tcr511pex.pdf

TCR170PEX: IRIG Time Code Receiver and Generator for Computers (PCI Express)

The TCR170PEX receives [1]IRIG-A/B or AFNOR time codes and can be used for synchronizing the system time of its host PC. The IRIG output of this card can generate an IRIG signal for other IRIG time code readers. The output format is independent from the incoming IRIG signal - a perfect solution to your IRIG conversion requirements.

Key Features

- Generation of IRIG-B or AFNOR time codes
- 2 time-trigger-inputs
- PCI Express Interface
- Plug and play
- Programmable Pulse Outputs
- Memory Mapped I/O time reads for high access rates
- 2 RS232 interfaces
- Status LEDs
- Reception of time code formats IRIG A/B or AFNOR
- Configurable time zone
- Driver software for all popular operating systems
- Optional optical input and/or output for time codes
- DDS frequency synthesizer

Description

The board TCR170PEX has been designed to receive and to generate IRIG and AFNOR time codes.

It is used in applications like data acquisition, standalone computer time synchronization (for systems without a network connection or higher accuracy requirements) or as an IRIG converter device.

Receiver: the module provides two input channels for decoding of modulated and unmodulated time codes in IRIG-A/B or AFNOR format. The receiver's automatic gain control (AGC) allows the reception of modulated IRIG signals within an amplitude range from 600 mVpp to 8 Vpp. In addition, the TCR170PEX provides an optocoupler input for decoding unmodulated codes with TTL- or RS-422 level for example. **The board can be delivered with an optical input for unmodulated codes optionally.**
The decoded date and time can be read via the PCI Express interface and is also transmitted via the board's RS-232 port. A buffered real time clock keeps time and date after power down.

Generator: the board TCR170PEX can generate time codes in IRIG-B or AFNOR format. These signals are provided as modulated (3 Vpp/1 Vpp into 50 ohm) and unmodulated (TTL into 50 ohm and RS-422) time codes. **An optical output for unmodulated codes is available on request.**

The independent configuration of the time code and its offset to UTC of the receiver and the generator allows the use of TCR170PEX for time code conversion applications.

The drivers package for **Windows** contains a time adjustment service which runs in the background and adjusts the Windows system time continously 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.

Additional drivers packages are available for **DOS**, **Novell NetWare**, and **OS/2**. At the bottom of this page there's a link to the download area.

The device's serial port can be used to update the card's firmware. Additionally it can be connected to the serial port of a computer to use the card as reference time source under operating systems where a serial time string is supported, e.g. by NTP, but no kernel device driver is available.

If you are going to use the TCR170PEX in your own applications, please download our software development kit which contains libraries and sample code and shows how to access the card from within your software.

All drivers and API sample source code can be downloaded free of charges from our website and we are happy to assist you if you face any difficulties in using the Meinberg driver API in your software development process.

Characteristics

Status info	2 status LEDs for indication of: detection of a correct code, synchronization of the internal timing and holdover mode
Input signal	Modulated IRIG A/B, IEEE1344 or AFNOR signal, input insulated by transformer, input impedance 50 ohm, 600 ohm or 5 kohm selectable by jumper unmodulated (DC level shift) IRIG A/B, IEEE1344 or AFNOR signal, input insulated by photocoupler
Accuracy free run	±1·10E-8 if the decoder was synchronous for at least 1 h
IRIG Time Code Input	IRIG-A133, A132, A003, A002, B123, B122, B003, B002, IEEE1344 and AFNOR NFS 87-500 (other codes on request)
Frequency outputs	Frequency synthesizer 1/8 Hz up to 10 MHz (TTL, sine 1,5Vrms)
Pulse outputs	Three programmable pulse outputs, TTL level Channel 0 also with RS232 level
Precision of timebase	±5 µsec referred to IRIG-reference marker
Interface	Two independant serial RS232 interfaces
Data format PC interface	[2]Binary, byte serial
Data format of interfaces	Baudrate: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 baud Framing: 7E2, 8N1, 8E1, 8N2 Output string: 32 ASCII characters with date, time and status information
Statusbyte	Information about holdover mode, synchronization since last reset and the validity of the RTC data.
Generated time codes	IRIG-B123, B122, B003, B002, IEEE1344 and AFNOR NFS 87-500 (other codes on request)
Output signal	Modulated IRIG-B or AFNOR signal, 3 Vpp (high) and 1 Vpp (low) into 50 ohm unmodulated (DC Level Shift) IRIG-B or AFNOR signal, TTL into 50 ohm and RS-422, active high or active low selectable by jumper
Time-Trigger inputs	Triggered by falling TTL slope Time of trigger event readable via computer slot or optional second RS232-interface
Electrical connectors	Female BNC-connectors male 9-pole D-Sub 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, life time of lithium battery min. 10 years
Board type	Standard height board (101 x 150 mm)

Ambient temperature	0 ... 50°C / 32 ... 122°F
Humidity	Max. 85%
Options	- Optical input and/or output for time codes, ST connector for GI 50/125µm or GI 62,5/125µm gradient fibre - OCXO LQ/MQ/HQ (specifications look at [3]oscillator options) for higher accuracy in holdover mode
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.

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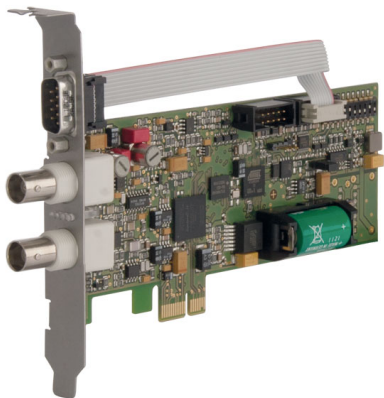The english manual is available as a PDF file: [4]Download (PDF)

Links:

[1] http://www.meinberg.de/english/products/info/irig.htm
[2] http://www.meinberg.de/english/specs/timepack.htm
[3] http://www.meinberg.de/english/specs/gpsopt.htm
[4] http://www.meinberg.de/download/docs/manuals/english/tcr170pex.pdf

PZF180PEX: Low Profile DCF77 Clock (PCI Express)

The board PZF180PEX is designed as a low profile board for computers with PCI Express interface. The rear slot cover integrates the antenna connector, a BNC connector for modulated time codes, a 9pin D_SUB male connector and two status LEDs. With this standard height bracket you can use the D_SUB connector for I/O signals like RS-232 - PPS and PPM and you can use this interface for firmware updates.

The PZF180PEX will be delivered with a low profile bracket. You can mount this part instead of the standard bracket, to run the PZF180PEX in computers with smaller housing (e.g. 1U server).

Key Features

- PCI Express Interface
- 2 time trigger inputs
- Programmable Pulse Outputs
  NEW: Frequency Synthesizer and Time Code Mode
- Memory Mapped I/O time reads for high access rates
- RS232 interface
- IRIG-B/AFNOR time code outputs
- Plug and Play
- DCF77-simulation
- DCF77 Antenna (cable length up to 300m)
- Driver software for all popular operating systems

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 reference time source for NTP and transforms any machine into an NTP server without consuming additional physical space in your server room.

The PZF180PEX 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 drivers package for **Windows** contains a time adjustment service which runs in the background and adjusts the Windows system time continously 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.

Additional drivers packages are available for **DOS**, **Novell NetWare**, and **OS/2**. At the bottom of this page there's a link to the download area.

The device's serial port can be used to update the card's firmware. Additionally it can be connected to the serial port of a computer to use the card as reference time source under operating systems where a serial time string is supported, e.g. by NTP, but no kernel device driver is available.

Characteristics

Type of receiver	Quadrature receiver for optimized evaluation of the DCF signals (amplitude and phase modulation)
Type of antenna	DCF77 outdoor antenna AW02
Status info	The Field-LED is switched on if a DCF-signal with at least minimum field strength needed for the correlation reception is detected at the input of the receiver. Whenever the reception of the pseudorandom PZF signal is not possible but the AM signal is available, the 'Field'-LED starts to blink once per second with a pulse duration of 100 or 200ms, corresponding to the demodulated DCF pulses.
Synchronization	Compared to the former PZF computer clock the PZF180PEX not just provides the capability to evaluate the common amplitude modulated AM signal it is also able to decode the high-precision pseudorandom phase noise. If the PZF signal is disturbed an cannot be received, the PZF180PEX automatically switches over to decode the AM signal, if available, and ensures synchronization.
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	Better than +/- 50
Interface	Single serial RS232 interface
Data format PC interface	Binary, byte serial (compatible with Meinberg DCF77 Slot Card PEX511)
Data format of interfaces	Baudrate: 300, 600, 1200, 2400, 4800, 9600, 19200 Baud Data format: 7N2, 7E1, 7E2, 8E1, 8N1, 8N2 Time telegram: [1]Meinberg Standard-Telegram, SAT, Uni Erlangen (NTP), SPA, NMEA0183 (RMC) or [2]capture-telegramm
Unmodulated time code output	DCLS, TTL into 50 ohm (active high or active low)
Modulated time code output	IRIG AM sine wave signal: 3Vpp (MARK), 1Vpp (SPACE) into 50 ohm
Generated time codes	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 IRIG B006: 100 pps, DCLS Signal, no carrier, BCD time-of-year, Year IRIG B126: 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time-of-year, Year IRIG B007: 100 pps, DCLS Signal, no carrier, BCD time-of-year, Year, SBS time-of-day IRIG B127: 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time-of-year, 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 C37.118: Like IEEE1344 - with turned sign bit for UTC-Offset AFNOR: Code according to NFS-87500, 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, complete date, SBS time of day

Generated time codes	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 IRIG B006: 100 pps, DCLS Signal, no carrier, BCD time-of-year, Year IRIG B126: 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time-of-year, Year IRIG B007: 100 pps, DCLS Signal, no carrier, BCD time-of-year, Year, SBS time-of-day IRIG B127: 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time-of-year, 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 C37.118: Like IEEE1344 - with turned sign bit for UTC-Offset 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	In case of supply voltage failure the on-board RTC keeps the time based on XTAL for more than 150 hours (buffer capacitor) Optional: lithium backup battery (life time: 10 years)
Board type	Low Profile card (68,90 x 150 mm)
Ambient temperature	0 ... 50°C / 32 ... 122°F
Humidity	Max. 85%
Scope of supply	Scope of supply includes: - an active ferrite antenna [3]AI01 and 5m of RG174 coaxial cable with BNC connectors. Optional: [4]AW02 with RG58 and patch cord, other length of cable - "low profile" bracket
Options	**Oscillator upgrade:** OCXO-LQ, -MQ or -HQ (instead of TCXO) for extended Holdover capabilities
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.

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Links:

[1] http://www.meinberg.de/english/products/specs/timestr.htm
[2] http://www.meinberg.de/english/products/specs/capstr.htm
[3] http://www.meinberg.de/english/products/dcf77-indoor-antenna.htm
[4] http://www.meinberg.de/english/products/dcf77-outdoor-antenna.htm
[5] http://www.meinberg.de/download/docs/manuals/english/pzf180pex.pdf