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 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 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, if run with administrator rights.

The driver packages for **Linux** and **FreeBSD** contain a kernel driver which allows the board to be used as a reference time source for the NTP daemon which is shipped with most Unix-like operating systems. This also turns the computer into an NTP time server which can also provide accurate time to NTP clients on the network. Some command line tools can be used to setup configurable parameters and monitor the status of the board.
For usage of the card on other operating systems please contact Meinberg support: techsupport@meinberg.de.

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

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 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

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
Warranty	Three-Year Warranty
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.

Manual

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

Links:

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