



Meinberg Radio Clocks

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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 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.

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	$\pm 1 \cdot 10^{-8}$ 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 μ sec 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.

Manual

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/products/./specs/timepack.htm>
- [3] <http://www.meinberg.de/english/specs/gpsopt.htm>
- [4] <http://www.meinberg.de/download/docs/manuals/english/tcr170pex.pdf>