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TCR180: Time Code Receiver and Generator (Eurocard)

IRIG or AFNOR time code generator and receiver with various time code output signals

Key Features

- 2 time-trigger inputs
- Unmodulated outputs with TTL level
- RS-232 interface
- Status LED
- Time information coded in IRIG-A/B or AFNOR format
- High accurate sinewave carrier for modulated output

Description

The TCR180 serves to decode and generate modulated (AM) and unmodulated (DC Level Shift) IRIG-A/B, AFNOR, C37.118 or IEEE1344 time codes. AM-codes are transmitted by modulating the amplitude of a sine wave carrier, unmodulated codes by variation of the width of pulses.

As standard the module TCR180 is equipped with a TCXO (Temperature Compensated Xtal Oscillator) as master oscillator to provide a high accuracy in holdover mode of +/- 1 * E-8. Optionally an OCXO (Oven Controlled Xtal Oscillator) is available for better accuracy.

Time Code Receiver:
Automatic gain control within the receive circuit for unmodulated codes allows decoding of IRIG-A/B, AFNOR, C37.118 or IEEE1344 signals with a carrier amplitude of 600 mVpp to 8 Vpp. The input stage is electrically insulated and has an impedance of either 50 ohm, 600 ohm (standard) or 5 kohm, selectable by a jumper.

DC Level Shift Input insulated by optocoupler with internal series resistance of 220 ohm..

Time Code Generator:
The generator of TCR180 is capable of producing time codes in IRIG-A/B, AFNOR, C37.118 or IEEE1344 format. The codes are available as modulated (3 Vpp / 1 Vpp (MARK/SPACE) into 50 ohm) and unmodulated (DC Level Shift) signals (TTL into 50 ohm).

Regarding time code and its offset to UTC, the receiver and the generator can be configured independantly. Thus TCR180 can be used for code conversion. As an option the module can be delivered with optical inputs/outputs (Time Code DCLS) instead of the modulated signal paths.

Characteristics

Status Indicators	Synchronous state of time code generator indicated by LED
IRIG Time Code Input	IRIG - A002/A132, A003/A133, A006/A136, A007/A137, B002/B122, B003/B123, B006/B126, B007/B127, IEEE 1344, AFNOR NFS 87-500 and IEEE C37.118 (other codes on request)
Frequency Outputs	Frequency synthesizer 1/8 Hz up to 10 MHz (TTL, sine 1,5Vrms)
Pulse Outputs	Three programmable outputs, TTL level (option) PPS and PPM, pulse length 200 msec DCF Simulation
Accuracy of Pulse Outputs	Better than +/- 1
Precision of timebase	Required accuracy of time code source: +/- 100ppm
Interface	Single serial RS-232 interface
PWM Time Code Output	Unmodulated outputs (DCLS), TTL into 50 ohm
AM Time Code Output	IRIG AM sine wave signal via female BNC connector: 3Vpp (MARK), 1Vpp (SPACE) into 50 Ohm
Supported Timecode Formats	**IRIG A002:** 1000pps, DCLS signal, no carrier, BCD time of year **IRIG A132:** 1000pps, AM sine wave signal, 10 kHz carrier, BCD time of year **IRIG A003:** 1000pps, DCLS signal, no carrier, BCD time of year, SBS time of day **IRIG A133:** 1000pps, AM sine wave signal, 10kHz carrier, BCD time of year, SBS time of day **IRIG A006:** 1000pps, DCLS signal, no carrier, BCD time of year, BCD year **IRIG A136:** 1000pps, AM sine wave signal, 10kHz carrier, BCD time of year, BCD year **IRIG A007:** 1000pps, DCLS signal, no carrier, BCD time of year, BCD year, SBS time-of-day **IRIG A137:** 1000pps, AM sine wave signal, 10kHz carrier, BCD time of year, BCD year, SBS time-of-day **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, BCD year **IRIG B126:** 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time of year, BCD year **IRIG B007:** 100 pps, DCLS Signal, no carrier, BCD time of year, BCD year, SBS time-of-day **IRIG B127:** 100 pps, AM sine wave signal, 1 kHz carrier frequency, BCD time of year, BCD 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	Triggered by falling TTL slope Pulse repetition time: 1.5 msec min. Resolution: 800 nsec
Dimensions of the front panel	4HP/3U (20mm x 128mm)
Electrical Connectors	96-pin DIN 41612 connector
Backup Battery Type	**CR2032 (lithium button cell)** In the event of loss of power to the main system, this battery powers the real-time clock and also ensures that GNSS almanac data is properly buffered in RAM. Lifetime of lithium battery: Min. 10 years
Operating Voltage	+5 V DC
Current Draw	ca. 450 mA
Board type	Eurocard
Board Dimensions	160 mm x 100 mm, 1,5 mm Epoxy
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
Warranty	Three-year warranty
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: [1]Download (PDF)

Links:

[1] https://www.meinbergglobal.com/download/docs/manuals/english/tcr180sv.pdf