



Timecode Reader/Generator

Model TPRO-cPCI



- IRIG-A, IRIG-B, NASA36 timecode reader
- IRIG-B timecode generator
- Time-Tag input
- Freewheel capability
- Programmable periodic output (pulse/squarewave) and interrupt capability
- Programmable start/stop time output and interrupt capability
- High-performance, 2.5 ppm oscillator

The TPRO-cPCI provides high-accuracy timing functions on a plug-in board for the Compact PCI computer bus. The board has an on-board clock, which is kept in sync to an external timecode input. Several timing functions are derived from the on-board clock, including a programmable periodic pulse rate output ("heartbeat"), a programmable start/stop output ("match"), a selectable frequency output ("oscillator out," 1 kHz, 1, 5, or 10 MHz), and a time-stamping input ("time-tag").

The TPRO-cPCI obtains time from an input timecode, which can be formatted as IRIG-A, IRIG-B, or NASA36. The board automatically detects which format is being used. An AGC circuit on the time code input accommodates a wide range of input amplitudes. The timecode conveys the day, hour, minute, and second. The on-board 10 MHz oscillator is disciplined to the time code input carrier frequency. The board's IRIG-B timecode output is in-sync with the incoming timecode.

The TPRO-cPCI can be used as a stand-alone timecode generator. The computer programs the day, hour, minute, and second. The board then continues to count from that time, using the on-board oscillator as the time-base reference. This is called "freewheeling."

The host computer communicates to the board through a set of memory-mapped registers. When the computer boots up, the board identifies itself to the Compact PCI bus by specifying the unique Subsystem Vendor ID. The host computer can then read the instantaneous time and command the board to set time, and/or to provide an interrupt at a periodic rate, at a specified time, and/or when a time-tag event occurs.

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Specifications

Timecode Input

Code Format (Autodetect)

IRIG-A (A132), IRIG-B (B122), NASA36

Amplitude

1.2 Vp-p min, 8.0 Vp-p max

Polarity

Detected automatically

Modulation Ratio

2:1 min, 3:1 typ, 4:1 max

Input Impedance

>10K Ohms

Input Time Accuracy

Better than 25 ppm
(not suitable for tape playback)

Common Mode Voltage

Differential input, ± 100 V max

Timecode Output

Code Format (Autodetect)

IRIG-B (B122)

Amplitude (Adjustable)

4.0 Vp-p typical (0 V–20 Vp-p)
into ≥ 600 Ohm load

Modulation Ratio (Adjustable)

3:1

Output Impedance

50 Ohms

On-Board Clock

Resolution

1 μ S

Range

366:23:59:59:999999

Propagation Delay Correction

–999 μ S through +999 μ S
(1 μ S resolution)

Stability

Disciplined to timecode: 2×10^{-7}
Undisciplined: 1×10^{-6}

Accuracy

IRIG-A time code: 10 μ S max
IRIG-B, NASA36 time code: 15 μ S max

Oscillator Output

Frequency

1 kHz, 1 MHz, 5 MHz, 10 MHz or Off
(software selectable)

Type

RS-422

Differential Output Voltage

2.5 Vp-p (1 MHz)
1.8 Vp-p (10MHz) into 120 Ohms

Timebase Accuracy

Same as on-board clock

Time-Tag Input

Input Voltage

–0.1 V min, +0.4 V max for logic 0
+2.2 V min, +5.1 V max for logic 1
Tags rising edge

Input Current

–600 μ A for logic 0
100 μ A for logic 1

Rise/Fall Time

150 nS max

Repetition Rate

2000 events per second maximum

Timing Resolution

1 μ S

Heartbeat Output

Output Voltage

High: 2.4 V min at 2.5 mA
Low: 0.4 V max at –2.5 mA

Wave Shape

Pulse

Pulse Width

100 nS, 330 nS, 1 μ S, 1 ms

Pulse Polarity

Software selectable

Range

200 nS to 65.5 seconds

Power-on Default Rate

Off

Match Output

Output Voltage

High: 3.8 V min at 6 mA
Low: 0.3 V max at –6 mA

Settability

1 μ S

In-Sync Flag Output

Type

Open Collector
External Pullup

Voltage

+27 VDC max

Current

–20 mA max

Polarity

Conducts to ground when board is
sync'd to GPS or timecode.

Bus Interface

Interface

PICMG 2.0 compliant

I/O Address

64 bytes

General

Size

H 106.7 mm, L 175.26 mm

Power (from cPCI bus)

+5 VDC @ 425 mA max
+12 VDC @ 225 mA max
–12 VDC @ 50 mA max

Operating Temperature

5° to +50° C (41° to +122° F)

Storage Temperature

–40° to +85° C (–40° to +185° F)

Connectors

DB15 input/output

Drivers

Major operating systems are supported.

Ordering Information

Model TPRO-cPCI

0709-TPRO-cPCI(E)

Specifications subject to change or improvement without notice.
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