



Timecode Reader/Generator

Model TPRO-PCI-U



- **IRIG-A, IRIG-B, NASA36 timecode reader**
- **IRIG-B timecode generator**
- **Time-Tag input**
- **Programmable periodic output (pulse/squarewave) and interrupt capability**
- **Programmable start/stop time output and interrupt capability**
- **Freewheel capability**
- **3.3V and 5.0V compliant**

The TPRO-PCI-U performs timing and synchronization functions referenced to an input timecode signal. The board synchronizes its on-board clock to the incoming timecode. The on-board clock's time is also provided as an IRIG-B output. Other features include a time-tag TTL input, a programmable "heartbeat" pulse or squarewave output (with interrupt capability), and a programmable "match" start/stop time output (with interrupt capability).

The board continues to increment time ("freewheel") in the absence of an input timecode. Thus, the board can be used as an IRIG-B timecode generator by setting the initial time via the PCI bus.

The input timecode format (IRIG-B, IRIG-A, or NASA36) is automatically detected. Synchronization to the input timecode is also automatic and can be enabled/disabled via the PCI bus. A propagation delay offset may be specified to compensate for cable delays.

The timecode input is an amplitude modulated sine wave. An automatic gain control (AGC) circuit permits a wide range of input amplitudes. The timecode input is differential; the board does not reference this signal to ground. A single-ended input (referenced to ground) is also acceptable.

The board can be ordered with Option "-M" to synchronize to a one-pulse-per-second (1 PPS) input instead of an incoming timecode. In this case, the initial time is programmed via the PCI bus and the board begins counting on the next 1 PPS pulse.



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 100 ppm
(not suitable for tape playback)

Common Mode Voltage

Differential input, ± 100 V max

Timecode Output

Code Format

IRIG-B (B122)

Amplitude (Adjustable)

2.6 Vp-p typical

Modulation Ratio (Adjustable)

3:1

Output Impedance

600 Ohms

On-Board Clock

Resolution

1 μ S

Range

366:23:59:59:999999

Date Format

Integer (001-366)

Propagation Delay Correction

-1000 μ S through +8999 μ S

Propagation Delay Setting

Programmed over PCI bus

Synchronization Time

<20 seconds

Stability

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

Time-Tag Input

Input Voltage

-0.5 V min, +0.8 V max for logic 0
+2.0 V min, +5.5 V max for logic 1
Tags rising edge

Input Current

<5 mA for logic 0 and logic 1

Rise/Fall Time

500 nS max

Repetition Rate

1000 events per second maximum

Timing Resolution

1 μ S

1 PPS Sync Input (Option -M only)

Input Voltage

2.4 V min, 16.0 V max (high)

Rise/Fall Time

500 nS max

Trigger Edge

Rising

1 PPS Accuracy

Must be 100 ppm or better

Heartbeat Output

Output Voltage

High: 3.8 V min at 6 mA
Low: 0.4 V max at -6 mA

Wave Shape

Pulse or squarewave

Pulse Width

150 nS min, 450 nS max

Pulse Polarity

Negative

Squarewave

45%-55%

Timing

Falling Edge on-time

Range

1.000 μ S to 21.845 mS in 1 μ S steps

Power-on Default Rate

100 PPS (Pulse)

Match Output

Output Voltage

High: 3.8 V min at 6 mA
Low: 0.4 V max at -6 mA

Settability

1 μ S

Bus Interface

PCI Local Bus

2.3 compliant
PCI-X compatible

General

Size

H 106.7 mm, L 175.26 mm

Power (from PCI bus)

+5 Vdc @ 425 mA max
+12 Vdc @ 225 mA max
-12 Vdc @ 50 mA max

Operating Temperature

-30° to +70° C (-22° to +158° F)

Storage Temperature

-40° to +80° C (-40° to +176° F)

Connectors

BNCs for timecode input and output
DB15 (socket) for timecode input,
output, heartbeat output, match output,
time-tag input, and 1 PPS input.

Options

-M

Sync to external 1 PPS

-HB1PPS

1 PPS extended frequency range for
heartbeat output

-FXB

RS-422 Driver for the heartbeat output
(includes option -HB1PPS)

-HDRV

Provides RS-422 Driver for the
heartbeat output

-DCLOBNC

Provides DC shift-level output; eliminates
the modulated IRIG-B output

Drivers

Linux* 64/32 bit, Windows 64/32 bit,
Solaris 10

*Contact Sales for specific kernel versions.

Ordering Information

Model TPRO-PCI-U (+ option #)

0507-TPRO-PCI-U(C)

Specifications subject to change or improvement without notice.
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