



Timecode Reader/Generator

Model TPRO-PCI-U2



- **PCI local bus operation**
- **PCI-X compatible**
- **Universal PCI bus signaling (3.3V and 5.0V/33 or 66 MHz)**
- **Autodetects IRIG-A, B, or NASA36 time code inputs; optional 1PPS input**
- **$\pm 1\mu\text{s}$ accuracy to input**
- **Zero latency time reads**
- **Freewheel capability**
- **IRIG-B timecode generator**
- **External event time capture/interrupt**
- **Programmable frequency output/interrupt**
- **Programmable alarm output/interrupt**

The TPRO-PCI-U2 is a synchronized timecode reader/generator card. The input timecode format (IRIG-B, IRIG-A, or NASA36) is automatically detected and synchronization to the input timecode is automatic, enabled/disabled through the PCI bus.

The board can synchronize to an external 1PPS in lieu of an incoming timecode. The TPRO-PCI-U2 provides precise, zero-latency time via the PCI bus on 33 and 66 MHz systems. With a 32-bit data interface, the unit offers better than 1 μs data access. Universal signaling allows the unit to function in either 5.0V or 3.3 volt backplanes.

The 10 MHz oscillator, central to the TPRO-PCI-U2 timing functions, permits the board to increment time ("freewheel") based on the last known reference in the absence of an input source. When the timing reference is reestablished, the board synchronizes automatically.

The TPRO-PCI-U2 may be used as an IRIG-B timecode generator. The user simply sets the initial time through the PCI bus. A propagation delay offset may be specified to compensate for cable delays. Other features include multiple event time-tag TTL inputs, a programmable periodic pulse or "heartbeat," and a programmable "alarm" start/stop time output.

Key to the TPRO-PCI-U2 functionality is the ability to generate interrupts. With one of the many available Spectracom driver packages, the user may configure the card using interrupt-driven algorithms that support our customers' unique applications. The software packages include a demonstration program to exercise the board's functionality, as well as a clock utility to synchronize the host system.



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
2.6 Vp-p typical

Modulation Ratio
3:1

Output Impedance
600 Ohms

DCLOBNC

FXB

HB1PPS

1PPS Sync Input (Option M)

Input Voltage
2.4 V min, 16.0 V max (high)

Rise/Fall Time
500 nS max

Trigger Edge
Rising

1PPS Accuracy
Must be 100 ppm or better

On-Board Clock

Resolution
1 µS

Range
366:23:59:59:999999

Date Format
Integer (001–366)

Propagation Delay Correction
–1000 µS through +8999 µS

Propagation Delay Setting
Programmed over 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 µS

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 (programmable)

Pulse Width
150 nS min, 450 nS max

Pulse Polarity
Negative

Squarewave
45%–55%

Timing
Falling Edge on-time

Range
1.000 µS to 21.845 mS in 1µS steps
(1 MHz to 45.7771 Hz)

Power-on Default Rate
100 PPS (Pulse)

Time Match Output

Output Voltage
High: 3.8 V min at 6 mA
Low: 0.4 V max at –6 mA

Settability
1 µS

Bus Interface

PCI Local Bus
3.0 compliant
PCI-X compatible
32-bit data interface
better than 1 us data access

General

Size
H 106.7 mm, L 175.26 mm

Power (from bus)
+5 Vdc @ 425 mA max
+12 Vdc @ 225 mA max
–12 Vdc @ 50 mA max

Operating Temperature
–30° to +70° C (–22° to +156° F)

Storage Temperature
–40° to +80° C (–40° to +176° F)

Connectors
BNC and DB-15

Agency Approvals



Drivers

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

*Contact Sales for specific kernel versions.

Ordering Information

**TPRO-PCI-U-2 Timecode
Reader/Generator (+ option #)**

Option

–CC: Conformal Coating