Timecode Reader/Generator

Model TPRO-PCI-66U

- 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
- ±1ms 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-66U 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-66U 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 3.3V backplanes.

The 10 MHz oscillator, central to the TPRO-PCI-66U 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 re-established, the board synchronizes automatically.

The TPRO-PCI-66U 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-66U functionality is the ability to generate interrupts. With one of the many available Orolia 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

1PPS Sync Input
- **Input Voltage:** 2.4 V min, 16.0 V max (high)
- **Rise/Fall Time:** 500 nS max

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 x 10⁻⁷
- Undisciplined: 1 x 10⁻⁶

Time-Tag Input
- **Input Voltage:** −0.5 V min, +0.8 V max for logic 0
- **Rise/Fall Time:** 500 nS max
- **Input Current:** ≤5 mA for logic 0 and logic 1

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 μS data access

General
- **Size:** H 106.7 mm, L 175.26 mm

Drivers
- Linux* 64/32 bit, Windows 64/32 bit, Solaris 10
- *Contact Sales for specific kernel versions.

Ordering Information
- TPRO-PCI-66U Timecode Reader/Generator (+ option #)

Option
- **−CC:** Conformal Coating

Agency Approvals