

# Timecode Reader/Generator

Model TPRO-PMC



- **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-PMC provides high-accuracy timing functions on a plug-in board with a PMC interface. The board's on-board clock is kept in sync to an external timecode input. Several timing functions are derived from the onboard clock, including a programmable periodic pulse rate output ("heartbeat"), a programmable start/stop output ("match"), a selectable frequency output ("oscillator out" at 1 kHz, 1, 5, or 10 MHz), and a time-stamping input ("time-tag").

The TPRO-PMC obtains time from an input timecode, which can be IRIG-B or IRIG-A format. The board detects the format that is being used automatically. 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 provides an IRIG-B timecode that is in-sync with the incoming timecode output.

The TPRO-PMC 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 timebase reference. This is called "freewheeling."



## Specifications

### Timecode Input

**Code Format (Autodetect):** IRIG-A (A132), IRIG-B (B122), NASA36

**Amplitude:** 1.2 V<sub>p-p</sub> min, 8.0 V<sub>p-p</sub> 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:** IRIG-B (B122)

**Amplitude (Adjustable):**

4.9 V<sub>p-p</sub> typical (0 V–20 V<sub>p-p</sub>)  
into ≥ 600 Ohm load

**Modulation Ratio (Adjustable):** 3:1

**Output Impedance:** 50 Ohms

### On-Board Clock

**Resolution:** 1 μS

**Range:** 366:23:59:59:999999

**Propagation Delay Correction:**

–999 μS through +999 μS (1 μS resolution)

**Stability:**

Disciplined to timecode:  $2 \times 10^{-7}$

Undisciplined:  $1 \times 10^{-6}$

**Accuracy:**

IRIG-A time code input: 10 μS max

IRIG-B, NASA36 time code input: 1.5 μS max

### Oscillator Output

**Frequency:**

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

**Type:** RS-422

**Differential Output Voltage:**

2.5 V<sub>p-p</sub> (1 MHz)

1.8 V<sub>p-p</sub> (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 μA for logic 0

100 μA for logic 1

**Rise/Fall Time:** 150 nS max

**Repetition Rate:** 2000 events per second maximum

**Timing Resolution:** 1 μS

### 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 min, 330 nS, 1 μS, 1 mS

**Pulse Polarity:** Software selectability

**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 μS

### In-Sync Flag Output

**Type:**

Open Collector

External Pullup

**Voltage:** +27 VDC max

**Current:** –20 mA max

**Polarity:**

Conducts to ground when board is synced to GPS or timecode.

### Bus Interface

**PCI Local Bus:**

2.3 compliant

PCI-X compatible

### General

**Size:** (H) 74 mm x (L) 149 mm (2.91" x 5.87")

**Power (from PCI 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:** Micro-D25

### Drivers

Major operating systems are supported.

## Ordering Information

Model TPRO-PMC