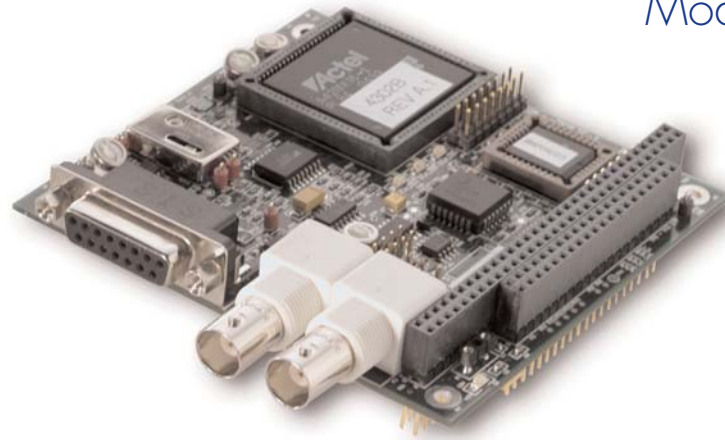




Timecode Reader/Generator

Model TPRO-PC104



- IRIG-A, IRIG-B, NASA36 timecode reader
- IRIG-B timecode generator
- IRIG-B output
- Time-Tag input
- Freewheel capability
- Programmable start/stop time output and interrupt capability

The TPRO-PC104 performs timing and synchronization functions referenced to an input timecode signal, synchronizing its on-board clock to this timecode and providing its clock time as an IRIG-B output. Other features include a time-tag TTL input, programmable "heartbeat" pulse or squarewave output (with interrupt capability), and programmable "match" start/stop time output (with interrupt capability).

The board continues to increment time ("freewheel") in the absence of an input timecode. It can serve as an IRIG-B timecode generator after initial time is set via the 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 ISA bus. A propagation delay offset may be specified to compensate for cable delays.

An automatic gain control (AGC) circuit permits a wide range of input timecode 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.

One-pulse-per-second (1 PPS) input synchronization is also available (Option "-M"). In this case, the initial time is programmed via the ISA bus and the board begins counting on the next 1 PPS pulse.

PC104 Interface

The board occupies 16 consecutive addresses in I/O (not memory) space. Base address and interrupt level are selected using jumpers. All board functions can be used without interrupts and can be accessed using 8-bit transfers. The time can also be read using four 16-bit transfers. Binary-coded decimal (BCD) format is used for setting and reading the time.





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 PC104 bus

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 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 32 mA (source)
Low: 0.4 V max at –645 mA (sink)

Wave Shape

Pulse or squarewave (programmable)

Pulse Width

150 nS min, 450 nS max

Pulse Polarity

Negative

Squarewave

45% to 55%

Timing

Falling edge on-time (pulse or squarewave)

Range

1.000 μ S to 21.845 μ S in μ S increments
(1 MHz to 45.7771 Hz)

Power-on Default Rate

100 PPS (pulse)

Match Output

Output Voltage

High: 3.8 V min at 32 mA (source)
Low: 0.4 V max at –64 mA (sink)

Settability

1 μ S

Bus Interface

I/O Address

16 consecutive addresses

I/O Base Address

0000–0FF00 (jumper selected)

Interrupt Level

IRQ 2–7, 10–12, 14, 15 (jumper selected)

Time Between Accesses

100 μ S minimum

Necessary Accesses

4 (read time, 16-bit mode)
14 (read time, 8-bit FIFO mode)
12 (read time-tag, 8-bit FIFO mode)
11 (set time, heartbeat, or match)

DMA Transfers

None

General

Size

H 95.89 mm, L 90.17 mm

Power (from ISA bus)

+5 Vdc @ 0.7 mA max
+12 Vdc @ 175 mA max
–12 Vdc @ 20 mA max

Operating Temperature

–30° to +70° C (–22° to +158° F)

Storage Temperature

–40° to +80° C (–40° to +176° F)

Connectors

BNC and DB15 depending on
input/output

Options

–M

Sync to 1 PPS input instead of timecode

–HB1PPS

Heartbeat output range (with 1 PPS as
factory default)

–LOR1

Six synchronized outputs on twelve-pin
header

–TTLAY2

Reports decoded IRIG-B input bits
50–98 in the FIFO, in response to user
command

Drivers

Major operating systems are supported.

Ordering Information

Model TPRO-PC104 (+option #)

0407-TPRO-PMC(B)

Specifications subject to change or improvement without notice.
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