DISCONTINUED PRODUCT
Contact Spectracom for Replacement Options

GPS Timing Board
Model TSAT-VME

- GPS-synchronized timecode generator
- GPS, IRIG-A, IRIG-B, NASA36, XR3, and 2137 timecode reader
- IRIG-B output
- Time-Tag input
- Two configurable pulse rate outputs
- 1 MHz TTL output
- Freewheel capability
- Continuous parallel time output

The TSAT-VME package includes a GPS receiver/antenna (housed in a common enclosure), a 100-foot antenna cable, and a VME circuit card assembly. The board performs timing and synchronization functions referenced to an input timecode signal, synchronizing its on-board clock to the incoming timecode and providing it as an IRIG-B output. Other features include a time-tag TTL input, a 1 MHz TTL output, and two user-configurable TTL pulse rate outputs.

If automatic GPS position and satellite tracking is lost, the board continues to increment time (“freewheel”), until the reference is reestablished. A propagation delay offset can be specified to compensate for cable delays. The GPS satellites provide worldwide coverage in all weather. The received time is accurate to within 1 μS of UTC.

The front panel includes status indicators.

VME Interface

The board supports A32, A24, and A16 addressing modes using the standard address modifiers. Custom modifications for additional modifiers are also available.

All board functions can be generated when time is available or when a time-tag event has occurred. The interrupt level (IRQ1–IRQ7) is selected by jumpers. Interrupts may be disabled and the status registered polled. Customized periodic interrupts are also available.

Per VME specifications, users may define rows A and C of the P2 backplane connector. The on-board clock time is output as 54 TTL signals, providing continuous time with zero latency. To prevent conflict with other user-specific boards, order Option “—32P2” to eliminate these outputs.
Specifications

Timecode Input

- **Code Format (Autodetect)**
  - IRIG-A (A132), IRIG-B (B122), NASA36, 2137, XR3

- **Amplitude**
  - 2.6 Vp-p (0 Vp-p–6 Vp-p)

- **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

- **Common Mode Voltage**
  - Differential input, ±200 V max

Timecode Output

- **Code Format**
  - IRIG-B (B122)

- **Amplitude (Adjustable)**
  - 2.6 Vp-p typical (0-6 Vp-p adjustable)

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

- **Output Impedance**
  - 600 Ohms

On-Board Clock

- **Resolution**
  - 1 μS

- **Range**

- **Date Format**
  - Integer (001–366)

- **Propagation Delay Correction**
  - –1000 μS through +8999 μS (1 μS resolution)

- **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
  - +2.0 V min, +3.5 V max for logic 1

  **Tags rising edge**

  - **Input Current**
    - <–1.2 mA for logic 0
    - <0.5 mA for logic 1

  - **Rise/Fall Time**
    - 500 nS max

  - **Repetition Rate**
    - 1000 events per second maximum

  - **Timing Resolution**
    - 1 μS

Access Needed

- **1** (read time, 32-bit mode)
- **14** (read time, 8-bit mode)
- **12** (read time-tag, set time)

Interrupts

- **IRQ1–IRQ7** (jumped selected)
  - (all functions can be used without interrupts, if desired)

Interrupt Controller

- **MC68153**

General

- **Size**
  - H 261.8 mm, L 172.2 mm, D 22.6 mm

- **Power (from bus)**
  - +5 Vdc @ 1.5 A max
  - +12 Vdc @ 150 mA max
  - –12 Vdc @ 200 mA max

- **GPS Receiver/Antenna**
  - Number of Satellites: 12

  - **Acquisition Time**
    - <50 seconds

  - **Reacquisition Time**
    - <2 seconds

  - **Frequency**
    - 1575 MHz (receive only)
    - (L1 band, C/A code [SPS])

  - **Sync to UTC**
    - Within ± 1.0 μS max

  - **Position**
    - Horizontal: <9 m
    - Altitude: <18 m

  - **Size**
    - 95 mm Dia., 72.5 mm H
    - (3.74” Dia., 2.85” H)

  - **Pole Mount**
    - 1.00” I.D., 14 turns/inch straight
    - (not tapered)

  - **Operating Temperature**
    - –40º to +85º C (–67º to +185º F)

  - **Storage Temperature**
    - –55º to +105º C (–67º to +221º F)

  - **Antenna Cable**
    - Length: 92 m (300’)

Drivers

- **Major operating systems are supported.**

Ordering Information

- **Model TSAT-VME (+option #)**

Options

- **–32P2:**
  - Connector option eliminates 54-bit output on VME P2 connector

- **TRIM-CAB-D-D-100**
  - 100’ extension cable for GPS antenna

- **GPS Optic Isolator**
  - **–APL1:**
    - Timecode input and time tag input to back plane
  - **–MX5:**
    - 2 PPS reference input
  - **–MJ5:**
    - 2 PPS input on J5 connector
  - **–50L:**
    - 50Hz output