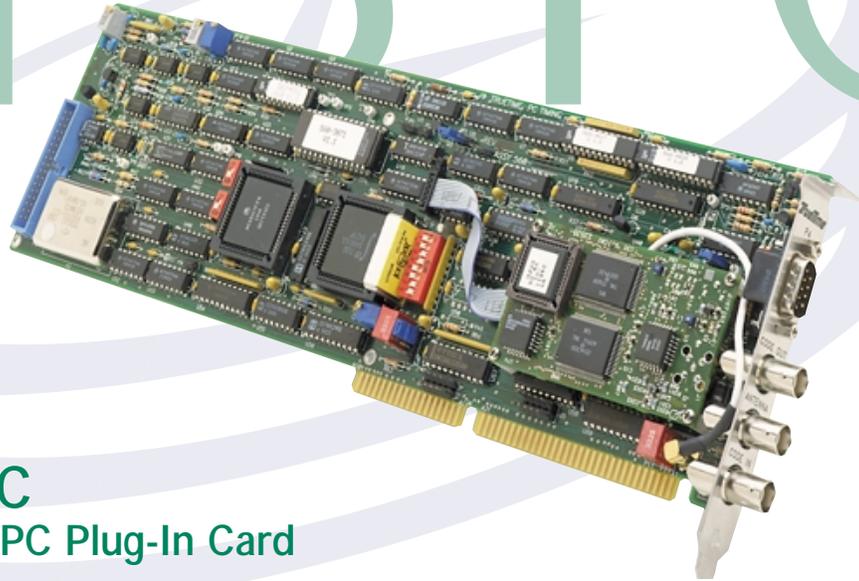# GPS-PC

Model GPS-PC
GPS Synchronized PC Plug-In Card

- Precise GPS time
- Better than 2 microsecond accuracy to UTC
- Microseconds through years, position, and status information provided
- Synchronize to GPS, external IRIG-A or B, or use as stand-alone generator
- IRIG-B time code and 1 PPS outputs
- Programmable pulse rate output
- Time compare output
- External event input
- PC ISA bus compatible

The Model GPS-PC consists of an external antenna and a PC plug-in card. GPS time, position and status information are available to the PC computer ISA bus in 16-bit packed BCD. User programmable DIP switches provide board address selection.

The GPS-PC internal timing is synchronized to UTC time via the GPS satellite system to an accuracy better than two microseconds. When the GPS-PC uses amplitude-modulated IRIG-A or B as the time reference, synchronization is better than one microsecond. When GPS-PC uses the RS-422 IRIG-A or B code input, accuracy is approximately 500 nanoseconds. The synchronization process also meas- ures the frequency difference between the on-board crystal oscillator and the external reference. This information is used to discipline the oscillator and maintain accurate time during periods of reference loss.

To read time from the GPS-PC, you initiate a freeze command and the time is saved in time registers. Because the time register remains static until the next freeze command, no restrictions limit when the time must be read. Zero latency exists between the freeze command and the time read.

You can program the rate generator to output various pulse rates. A time compare output generates a pulse output at a user-defined time. Both outputs can be configured to generate an interrupt.

The IRIG-B code generator allows the GPS-PC to generate and output amplitude-modulated and DC shift IRIG-B. This feature enables the GPS-PC to provide time codes for remote displays, tape recorders, and other time code equipment where IRIG-B is not available.

The TimeServer32 application is provided to assist in set-up and operation.

TRUETIME

Specifications: GPS-PC

GPS Synchronized Mode

Timing Accuracy: Less than 2 microseconds to UTC

Position Accuracy: 25 meters (without SA)

Receiver Input: 1575 MHz L1 C/A code

Tracking: 6 parallel channels

Acquisition Time:

Warm start: Less than 3 minutes
Cold start: Up to 30 minutes

Antenna: L1 GPS, 40 dB gain. RG-59/U cable, 50' (15 m) supplied; maximum cable length 200' (61 m). For longer cable runs, see Options.

UTC to Local Time Offset: User-selectable in hours and minutes

Daylight Savings: Programmed by user to select month and day when DST begins and ends

Stand-Alone Generator Mode

Time Preset: Allows the GPS-PC to be used as a stand-alone generator. The time can be preset by the user over the PC bus.

External Start Input: Starts on rising edge; HCMOS levels.

Impedance: 4.7k ohms to 5 Vdc
Connector: DB9

Synchronized Generator Mode

Analog Input Code: IRIG-A or IRIG-B amplitude modulated

Ratio: 2:1 to 5:1
Input Amplitude: 0.1–10 Vpp
Input Impedance: >10k ohms single-ended or balanced, or 600 ohms balance
Connector: BNC
Sync Accuracy: Typically within 1 microsecond of the input with TTL code

DC Shift Input Code: IRIG-A or IRIG-B single-ended RS-422 input levels
Sync Accuracy: Approximately 500 ns
Connector: DB9

Error Bypass: Factory set to three frames

General Specifications

IRIG-B Analog Code Output:

Amplitude: Adjustable from 0–10 Vpp into 600 ohms
Ratio: Adjustable, 2:1 to 5:1
Connector: DB9

IRIG-B DC Shift Code Output:

Level: TTL or RS-422 levels
Connector: DB9

Internal Oscillator:

Type: TCXO
Accuracy: Typically 5×10^{-8} when synchronized
Stability: 1×10^{-6} 0°C to 50°C when unsynchronized

Programmable Rate Generator Output:

Timing: Positive on time
Rate: 1 PPS, 10 PPS, 100 PPS, 1 kPPS, 10 kPPS
Level: 5 Vdc @ ±6 mA, rising edge on time
Connector: DB9

1 PPS: Less than 2 microseconds to UTC. 50% duty cycle; positive going on time.

Amplitude: 0–5 Vdc @ ±6 mA, rising edge on time
Connector: DB9

Interrupts: Interrupts are jumper selected to IRQ3-IRQ7 or IRQ10-IRQ14.

Coincidence Compare Output Interrupt:

A 2-millisecond-wide pulse that occurs at the user-programmed time. The programming range is microseconds through day of year.

Level: 5 V @ ±6 mA, rising edge on time
Connector: DB9

External Event Input: Used to time tag events, accurate to within two microseconds. Rising edge is active.

Levels: 0 V, 3.5–5 Vdc
Impedance: 10k ohms to 5 Vdc
Connector: DB9

Nonvolatile Memory: The following are stored in nonvolatile memory: local offset, rate generator, current year, operating mode, sync generator reference code.

Mechanical/Environmental

Receiver:

Power: <5 watts
Size: Mechanically compatible with a PC ISA bus; one full-size slot
Operating Temperature: 0°C to +50°C
Storage Temperature: -17°C to +85°C
Humidity: To 95%, noncondensing

Antenna:

Size: 3" Dia. x 3" H (7.62 cm x 7.62 cm)
Weight: 0.55 lbs. (0.25 kg)
Operating Temperature: -40°C to +70°C
Storage Temperature: -55°C to +85°C
Humidity: 100%, condensing

Certification: CE

Software

The GPS-PC includes the TrueTime TimeServer32 application program for Windows 95/98/NT, which provides control over general time related settings and runs as a background task keeping the computer clock synchronized to the GPS–PC card. TimeServer 32 is a 32-bit Windows application that can provide a Dynamic Data Exchange (DDE) linkage between your installed TrueTime hardware product and DDE-aware Windows applications, such as Microsoft® Excel.

Options

- *GPS Antenna Down/Up Converter for long cable runs up to 1500 feet (457 m).*

TrueTime