



Model GPS-PCI 2

Multi-Functional GPS Synchronized, Time and Frequency PCI Plug-in Card

KEY FEATURES

- 1 microsecond accuracy to UTC
- GPS, IRIG-A or B or 1 PPS input
- PCI local bus operation
- IRIG-B and 1 PPS outputs
- 1 PPS to 1 MPPS rate synthesizer output
- 1, 5, 10 MPPS rate generator output
- External event input/interrupt
- Time compare input/interrupt
- Real time clock backup
- Windows control panel interface software

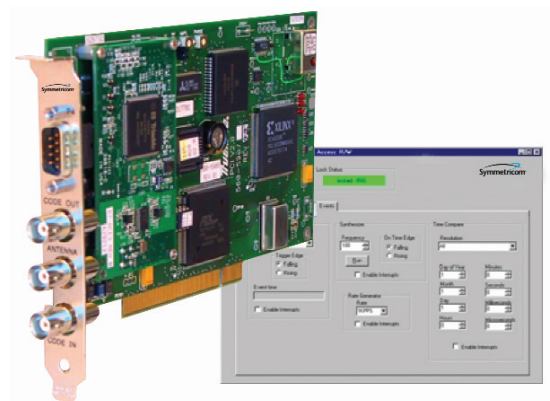
The GPS-PCI 2 provides very precise time to the bus of a PCI-compatible host computer. Time is derived from the GPS satellite system with an accuracy of 1 microsecond to UTC. The GPS-PCI 2 is an ideal master clock solution for synchronizing one or more computers to the UTC time reference. Applications include time tagging processed data, test data reduction, and range instrument synchronization.

Time can also be derived from an IRIG-A or B time code input or the internal oscillator in the stand-alone generator mode. Synchronization to an external 1 PPS is also possible. The frequency of the internal oscillator is precisely disciplined to that of the external synchronization input.

Time, microseconds through years, and status information and position are supplied on demand over the 32-bit PCI bus. In addition to time and status, the GPS-PCI 2 provides a 1 PPS pulse rate, a programmable time compare register, a programmable frequency pulse rate, an external event time capture, and an IRIG-B serial time code output.

Rear panel BNC connectors are used for the IRIG code input/output and the antenna input for the GPS. A rear panel mounted multipin connector contains the 1 PPS pulse rate output, the programmable pulse rate output, the external event input signal and the input/output connections for the RS-422 versions of the input/output IRIG time code. You can also configure the analog input code with various input impedance choices.

Information provided over the PCI bus includes time, status, antenna position and the time of occurrence of the external event. Interrupts generated by the programmable rate generator, the rate synthesizer, the occurrence of an external event input, and the time compare occurrence are also provided. Depending upon the operating mode, you can program the hours offset from UTC, leap second, year and daylight savings time. Year and leap second insertion are automatically provided when GPS mode is specified. An on-board, capacitor-powered clock maintains time during a power failure condition for up to 48 hours.



GPS-PCI 2 Specifications

GPS SYNCHRONIZATION MODE

- Timing Accuracy: 1 microsecond to UTC (with SA)
- Position Accuracy: 25 meters SEP (without SA)
- Receiver Input: 1575 MHz L1 C/A code
- Tracking: 8 parallel channels
- Acquisition Time: Warm start (has ephemeris data and position) <3 minutes. Cold start <20 minutes.
- UTC to Local Offset: User selectable in hours and minutes
- Daylight Saving: User selectable, U.S. DST only.
- Leap Second: User programmable for day of occurrence, automatic in GPS mode.
- 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.

SYNCHRONIZED GENERATOR MODE

- Analog Input Code: IRIG-A or B
 - Ratio: 2:1 to 5:1
 - Amplitude: 0.5 to 10 Vpp
 - Impedance: 50-600-10k ohms, selectable
 - Connector: BNC
 - Timing Accuracy: 3 microseconds
- RS-422 Input Code: IRIG-A or B
 - Timing Accuracy: 1 microsecond
 - Connector: 9 pin D subminiature, selectable to BNC
- Error Bypass: Factory set to three frames
- External 1 PPS¹: 1 microsecond timing accuracy (uses external event input port)

STAND-ALONE GENERATOR MODE

- Allows the user to preset, start and stop the GPS-PCI 2 over the PCI bus.

GENERAL SPECIFICATIONS

- IRIG-B Serial Code Output (Analog):
 - Amplitude: 3 Vpp into 600 ohms
 - Ratio: 3:1
 - Connector: BNC
- IRIG-B Serial Code Output (RS-422):
 - Amplitude: RS-422 levels
 - Input Termination: Selectable, 120 ohms or none
 - Connector: 9 pin D subminiature, selectable to BNC
- Oscillator:
 - Accuracy: 5x10⁻⁸ (when disciplined to IRIG code or GPS)
 - Stability: 2.5 PPM, 0°C to +50°C, unlocked
- 1 PPS Pulse Rate Output:
 - Amplitude: 0-5 Vdc²
 - Timing: Positive edge on time
 - Duty Cycle: 50%
 - Connector: 9 pin D subminiature, selectable to BNC
- Programmable Pulse Rate Generator Output:
 - Rates: 1 PPS, 10 PPS, 100 PPS, 1 kPPS, 10 kPPS, 100 kPPS, 1 MPPS, 5MPPS, 10 MPPS
 - Outputs: Interrupt and pulse
 - Amplitude: 0-5 Vdc²
 - Connector: 9 pin D subminiature, selectable to BNC

- Pulse Rate Synthesizer Output
 - Rates: 1 PPS to 1 MPPS, step size 1 PPS
 - Outputs: Interrupt and pulse
 - Amplitude: 0-5 Vdc²
 - Connector: 9 pin D subminiature, selectable to BNC
- External Event Time Capture
 - Resolution: 100's ns-years
 - Output: Interrupt and time/event capture
 - Event Input: Selectable positive or negative edge of 2-5 Vdc pulse
 - Impedance: Approximately 2k ohms
 - Connector: 9 pin D subminiature
- Time Compare Output:
 - Resolution: 100's ns-years
 - Outputs: Interrupt and pulse at compare time
 - Amplitude: 5 Vdc² on compare
 - Connector: 9 pin D subminiature

MECHANICAL/ENVIRONMENTAL

- Receiver:
 - Power: <5 W
 - Size: PCI 5 V short card
 - 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 lb. (0.25 kg)
 - Operating Temperature: -40°C to +70°C
 - Storage Temperature: -55°C to +85°C
 - Humidity: 100%, condensing
- Certification: FCC, CE, UR
- Real Time Clock: On-board, capacitor-powered clock maintains time during a power fail condition for up to 48 hours.

Options

- GPS Antenna Down/Up Converter for long cable runs up to 1500' (457 m)
- Transformer Coupled Input Code (single-ended or balanced)
- Transformer Coupled Output Code (balanced)

¹ When external 1 PPS is used as sync input, the external event is not available.

² 5 Vdc outputs have AC MOS levels.



SYMMETRICOM, INC.
2300 Orchard Parkway
San Jose, California
95131-1017
tel: 408.433.0910
fax: 408.428.7896
info@symmetricom.com
www.symmetricom.com