GPS 8 PLUS

GPS SYNCHRONIZED TIME AND FREQUENCY STANDARD

- Frequency Accuracy of $1 \times 10^{-12}$
- Choice of Disciplined Oscillator
- Very Stable Time & Frequency outputs
- Front Panel Display & Keypad
- 1U 19” rack mount

The GPS is an economical and reliable Time and Frequency instrument offering a wide range of standard features in a compact, 1U rack-mount chassis. Precision time and frequency outputs, accurate to 40 nanoseconds to UTC/USNO and $1 \times 10^{-12}$ respectively, are provided in a variety of signal formats.

Applications for the popular GPS8 include central time and frequency systems, timing for power utility systems, and frequency standards for a wide variety of communications installations. The IRIG B output is perfect for use in range timing installations, as inputs to SER and SCADA systems and for driving remote time displays. 1PPM and 1PPD or IRIG B DC shift may be selected for output.

A variety of internal oscillators, including the standard TCXO, provide price/performance trade-off possibilities for the user. The GPS 8 can be specified to include an oscillator that is appropriate for almost any application. An advanced oscillator control algorithm precisely disciplines the internal oscillator to the GPS input ensuring superior holdover performance. In addition to the standard TCXO, a variety of oven controlled (OCXO) and Rubidium oscillators are optionally available.

- Timing Accuracy 40ns, rms to UTC
- 1PPS and IRIG B Time Code outputs
- Two Serial Ports
- 1 MHz, 5 MHz or 10 MHz sine waves
- 1.544, 2.048 or 19.6608 MHz outputs

Two serial data ports, RS-422 and RS-232 are provided. Time, date, position, GPS satellite health and signal strength are reported.

A precision 1PPS time mark output may be used for synchronizing or calibrating other equipment.

The serial time code output (IRIG B is standard) allows time synchronization to be distributed to computers, displays, and other equipment requiring precise time.

Two square waves, 1.544, 2.048 or 19.6608 MHz, and an 8 kPPS frame rate enable the GPS 8 to be used as a telecommunications primary reference clock (PRC).

Sine waves of 1, 5 or 10 MHz are also available. The sine wave outputs are configured as two pairs of two of the above frequencies. Signal level integrity monitoring is provided for the sine wave outputs.

Status information is provided over the serial interface, by a summary alarm, and by four front panel LED indicators. The status reported by the summary alarm and the serial interface includes loss of GPS signal, PLL unlock, loss of output, and Rubidium oscillator unlock. (The rubidium oscillator is an optional feature)
GPS 8 Plus Specifications

1 PPS Output
Connector: BNC
Amplitude & Impedance: 0, +5Vdc from 50 Ohms
On Time: Rising edge
Duty Cycle: 50%

Serial Interface
Number of Ports: 2
Connector: DB9
Type: RS-232 and/or RS-422
Baud Rate: 50-19,200

GPS Specification
Satellite Signal: GPS L1: 1575.42 MHz
Satellite Code: C/A 1.023 MHz
Receiver Type: Parallel 8 Channel, 8 Satellites tracked continuously and simultaneously
Position Accuracy: 2.4 m horizontal, 5 m altitude with respect to WGS-84 after 24 hours of position averaging
Warm start: <20 seconds
Autonomous Start: <120 seconds
Cold Start, Automatic: No input of time or position is required
Antenna & 100' cable: Included at no extra cost.
Dynamic Mode: Specify Dynamic Mode at time of order

Timing Accuracy
Frequency (MHz): 1, 5, 10 (select when ordering)
Timing Accuracy: ±150 nS. absolute to UTC
Level: 1 Vrms into 50 Ohms
STD Deviation: 34 nS (Osc.-03)
Isolation: Transformer
Hourly mean: 25 nS (Osc.-03)
Holdover Mode: <8 µsec/day (Osc.-03), 1 µsec/day (Osc.-04)
Number of Outputs: 1

Sine Wave Outputs
Number of outputs: Two pairs of 2
Connector: BNC
Frequency (MHz): 1, 5, 10 (select when ordering)
Level: 1 Vrms into 50 Ohms
Isolation: Transformer

Time Code Output, Modulated Carrier
Number of Outputs: 1
Code Format: IRIG B, 2137, NASA 36
Level: 3Vpp into 600 Ohms

Digital Time Code & Pulse Rates
Outputs: IRIG B, 1PPM, 1PPD, Programmable Rate
Levels: DC level shift (HCMOS Logic Level)

Telecom Outputs
Frequency: 2.048, 1.544 or 19.6608 MHz, 2 ea
Output: G703 Section 6  2.37V pulse into 75 Ohms
or 3V pulse into 120 Ohms
Frame Rate: 8 kPPS, 0v and +5v from 75 Ohms

Frequency Stabilty
While Tracking satellites: See table below

Summary Alarm
Voltage free relay changeover contacts & TTL level, positive or negative

Environmental-Physical-Power
Temperature
Instrument: 0 to + 50°C
Antenna: -40 to +85°C
Humidity: To 95% non-condensing
Power: 95-260 Vac, 19 W warm, 30 W cold
Optional Power: 18-36 Vdc, 36-72 Vdc, -48Vdc
Dimensions: 19 inch Rack Mount, 1.73 inches high (1U)
15.80 inches depth
Weight: 11lb typical
EMC Emission: To EN50081-1 as EN55022
EMC Immunity: To EN50082-1 as EN1000-4-2 ESD, IEC 801-3 HF Field, IEC 801-4 Burst
MTBF: 159,769 Hours per Mil 217F, Notice 2, 25 degrees C, ground benign

Note 1: User Selectable, Telecom outputs may be used to provide 1, 5 or 10 MHz TTL outputs. Consult sales office
Note 2: Factory Set
Note 3: With HSOCXO option

ORDERING INFORMATION

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* 100ns without selective availability implemented

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