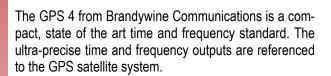
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GPS 4 GPS SYNCHRONIZED TIME AND FREQUENCY STANDARD

- 8 Channel GPS Receiver
- Frequency Synthesizer
- High Stability Time & Frequency Outputs
- Compact Chassis
- 1PPS and 10MHz Outputs
- Two Serial Ports
- IRIG B Time Code Output
- Sophisticated Oscillator Control



Applications for the GPS 4 include precision frequency reference in the telecommunications industry, accurate time standard for power utilities and a time reference for precisely synchronizing computer clocks.

The GPS 4 utilizes a high performance 8 channel GPS receiver to discipline an on board, ultra-stable oven controlled crystal oscillator (OCXO). An advanced oscillator control algorithm assures the highest frequency accuracy is obtained. The automatic position-averaging feature makes the best use of GPS when operating in a fixed location. The highly accurate on board oscillator assures excellent holdover performance ensuring accurate time and frequency even during periods when no GPS satellites are being tracked.

Two serial data ports are included with the GPS 4. Time and status is provided over one port while status and system control is available over the second port.



Four LED status indicators are supplied on the GPS 4 front panel. The status indicators allow a quick visual check of the operating status of the GPS 4.

The 1PPS time mark output may be used for synchronizing or calibrating other equipment. The 1PPS pulse is supplied through a standard BNC connector. The rising edge of the 1PPS pulse is on time.

A 10MHz sine wave with exceptional purity and superior holdover performance is a standard output.

Distribution of precise time to computers, displays and other equipment is made easy by the standard IRIG B time code output.

An on-board frequency synthesizer outputs three optional frequencies, (19.6608MHz, 2.048MHz and 1.544MHz) which simplifies system integration by eliminating the need for external frequency synthesizers.

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Specifications

1 PPS Output

Connector BNC

Type TTL into 50 Ohms
On Time Edge Rising edge

Serial Interface

Number of Ports 2 Connector DB9

Type RS-232 or RS-422 (option)

Baud Rate 50-19,200

Time Port

Data Time and Date
Message Rate 1PPS Continuous

Control Port System set up and control

IRIG B Time

Carrier Frequency 1kHz

Data Seconds through Days
Amplitude 3Vpp into 600 Ohms

Modulation Ratio 3.3 to 1 Connector BNC

Environmental

Temperature

Instrument -10°C to +60°C (Δ T 15°C per hour)

Antenna -40 to +85°C

Humidity To 95% non-condensing

 Power
 15 Vdc

 Optional
 24 Vdc, -48 Vdc

 Dimensions
 5.8" x 5.5" x 1.5"

 Weight
 3lb 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

10MHz Sine Wave

Connector BNC

Level 1 Vrms into 50 Ohms

Accuracy $5x10^{-12}/24$ hours when locked

Holdover $1x10^{-10}/24$ hours average

Phase Noise

100Hz -140dBc/Hz 1000Hz -150dBc/Hz 10000Hz -155dBc/Hz

Stability

1Sec 1x10⁻¹¹ 10Sec 1x10⁻¹¹ 100Sec 8x10⁻¹² 1000Sec 1x10⁻¹¹ GPS Specifications

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 2.4m horizontal, 5m altitude with

respect to WGS-84 after 24 hours of

position averaging

Warm start <20 seconds
Autonomous Start <120 seconds

Cold Start Requirement Automatic. No input of time or position

required

Timing Accuracy

Tracking satellites ±100 ns. Absolute UTC Std Deviation

34 ns. Hourly mean 25 ns

Holdover Mode <8 µsec/8 hours

Synthesizer Output Options

Frequencies 19.9608MHz, 1.544MHz, 2.048MHz

Accuracy Same as 10MHz
Amplitude TTL into 50 Ohms

Connector BNC

Status Indicators

Power Good Flashes when out of tolerance
Locked Illuminated to system locked to GPS
Holdover Mode GPS input lost, making corrections to

osc, based on learned information

Alarm Illuminated when:

a. Internal GPS receiver faultb. System Power Failurec. PLL out of lock

Hardware Status/Control Lines

Connector DB-9

Levels Open Collector
Max Pull up Voltage +5Vdc

Sink Current 30ma
Status bit 1 /Time Lock
Status bit 2 /System good
Reset Input /System Reset Input

Options

IRIG B DC Shift

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