

GPS-2000

10 MHz OCXO-based GPS Disciplined Oscillator



Key Features

- High-performance GPS Receiver
- Small footprint and low profile: only 1.5" x 3" x 0.65"
- Built-in 10 MHz Distribution Amplifier with 3 outputs (>80 dB isolation)
- Low phase noise
- 1 PPS output accuracy of ± 50 ns to UTC RMS (1-sigma), GPS-locked

Applications

- Unmanned Aerial Vehicles (UAV's)
- IED jammers – fixed, mounted, dismounted
- Radar systems
- Aircraft guidance systems
- Tactical radios
- Underwater systems using GPS for initialization

The Symmetricom® GPS-2000 is a 10 MHz Single-Oven OCXO-based GPS Disciplined Oscillator (GPSDO), covering a temperature range of 0°C to +75°C. The unit features a high-performance GPS receiver that can track up to 50 GPS signals, down to levels as low as -160 dBm. The receiver is compatible with GPS, WAAS, EGNOS, and MSAS signals, and is Galileo-ready.

Special software functionality supports airborne applications by providing avionics systems with a 3D velocity vector, Attitude/Tilt information, Speed, Heading, Height (both MSL and GPS height), Position, Time, Date, Frequency, Time-stamping, and Health information. For mission-critical applications, the GPS-2000 also provides a direct redundancy feature, allowing multiple units to be daisy-chained to each other for increased reliability.

The GPS-2000 provides three high-isolation 10 MHz sine-wave outputs (>90 dB at 10 MHz, >80 dB at 3 GHz), each at +13 dBm, as well as two LVDS 10 MHz outputs. It also provides a single 1 PPS LVDS output with ± 50 ns accuracy to UTC RMS (1-sigma), once GPS lock has been achieved.

Holdover stability is ± 60 μ s over a 24-hour period at +25°C. Phase noise is < -92 dBc/Hz at a 1 Hz offset, and the unit consumes <3.2W of power at +25°C.

The unit can be monitored and controlled through an RS-232 port via standard SCPI commands, and it can also generate NMEA-0183 output sentences for easy integration into existing system architectures.

The GPS-2000 offers all of this performance in a package that is less than one-half the size of the smallest competitive products.

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Specifications

ELECTRICAL SPECIFICATIONS

MODULE

1 PPS Accuracy	±50ns to UTC RMS (1-sigma) GPS locked
Frequency Accuracy	Better than ±3E-10 after 3 hours operation with GPS locked at 25°C
Holdover Stability	<±60µs over 24 hour period at 25°C (no motion, after 5 days with GPS)
ADEV	0.1s to 1000s: <6E-11 with GPS lock
1 PPS Output (OCXO Flywheel Generated)	LVDS output
10MHz Output	Two LVDS and three isolated sine wave at +13dBm ±3dB
Distribution Amplifier Port Isolation	2MHz: >98dB, 10MHz: >92dB, 1GHz: >92dB
Avionics Support	3D velocity vector (velocity output for the X, Y, and Z planes)
RS-232 Control	Full control via SCPI-99 control commands, NMEA-0183
GPS Frequency	L1, C/A 1574MHz
GPS Antenna	Passive or active, 5V
GPS Receiver	50 channels, mobile, GPS, WAAS, EGNOS, MSAS supported, Galileo ready
Sensitivity	Acquisition -144 dBm Tracking -160 dBm
TTF	Cold start - <45 sec Warm start - 1 sec Hot start - 1 sec
TTL Alarm Output	GPS unlock and hardware failure indicator
Warm Up Time / Stabilization Time	<45 min to 1.0E-9 accuracy at +25°C (typical)
Supply Voltage (Vdd)	12 VDC nominal ±5%
Power Consumption	<3.2W at +25°C
Operating Temperature	0°C to +75°C
Storage Temperature	-45°C to +85°C

OSCILLATOR

10MHz Retrace	±2E-08 after (24 hr on, 24 hr off, 1 hr on at +25°C)
Frequency Stability Over Temperature	±1.5E-08
Oscillator Heater Warm Up Time	<15 min
Phase Noise	1Hz -92dBc/Hz 10Hz -120dBc/Hz 100Hz -140dBc/Hz 1kHz -145dBc/Hz 10kHz -150dBc/Hz
Designed Lifetime	>10 years