

brandywine communications

GPS Disciplined Oscillator Module (GPSDO)

Key Features:

- 3 isolated low phase noise 10MHz outputs
- Internal GPS Tracking Receiver
- External 1 PPS input
- Small footprint designed for easy integration
- Disciplined high stability OCXO



Description

The GPS Disciplined Oscillator Module is a small Commercial –Off-the-Shelf (COTS) GPSDO that has been designed to meet military requirements such as **MIL-STD-188-164A**. At only 4.1” x 2.75” x 1” (104.0 x 70.0 x 26.0 mm) in size, the unit provides Stratum 1 performance. The GPSDO supplies three isolated, low noise precision 10 MHz frequency reference signal outputs. These outputs are accurate to 1×10^{-12} when slaved to a timing supply from an internal GPS tracking receiver.

The frequency standard is also able to slave to an external 1PPS signal to steer and hold the internal oscillator and clock system precisely in time. Time and frequency information maintains its high accuracy with the internal oscillator even when no satellites can be tracked. A serial data port is provided to report time, date, position, and GPS satellite health and signal strength. The GPSDO module also has dual power supply inputs and can operate off either supply input. Optional capabilities include automatic interface to an external military GPS receiver such as the Defense Advanced GPS Receiver (DAGR), Ethernet Interface for NTP time service and SNMP status monitoring. Standard frequency output is 10 MHz, but other frequencies are possible.

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Specifications

Inputs

Reference Source:

GPS
Connector MCX
Signal Type C/A Code
No of Channels 12
Receiver sensitivity -155dBm
1PPS 0-5V
Have Quick (opt) per ICD-GPS-060

Power: 12 Vdc \pm 5%
Warm up 15W nominal
Steady State 5W nominal
No of inputs: 2 diode OR'd

System Specifications

Accuracy

Time accuracy: GPS < 30 ns
1PPS < 30 ns
Holdover <20 μ s in 24 hrs

Warm-up / Stabilization Time

Cold start: 20 minutes

Physical

Size: 104 x 70 x 26mm

Phase Noise/Short Term Stability (10MHz)

SSB Phase Noise	dBc/Hz
1Hz	-90
10Hz	-120
100Hz	-145
1kHz	-151
10kHz	-153
100kHz	-155
STS (Allan Variance)*	
1sec	<8x10 ⁻¹²
10 sec	<1x10 ⁻¹¹
100sec	<1.5x10 ⁻¹¹
1000 sec	<1.5x10 ⁻¹¹

+ After 24 hr operation

Outputs

A) 1PPS No of outputs: 1
0 to +5 Vdc 50Ohm load/source
Complies with ICD-GPS-060
Connector: MCX
B) 10 MHz No of outputs: 3
J2: min. 15dBm, max 17dBm
J3, J4: min. 11dBm, max 12dBm
Connector: MCX
D) I/O Connector
Power A (12/15VDC)
Power B (12/15VDC)
Alarm Out
1PPS input
Reset
Force Holdover/HQ input (option)
RS232
Locked

Environmental Conditions

Temperature

Operating -20 to +70C
Storage -40 to +85C

Humidity Up to 95% RH (non-condensing)

Altitude: 50,000 ft Non-operating
10,000 ft operating

Compliances and Interface Standards

EMC: FCC Part 15
EN55022
EN55024