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 precision10 MHZ frequency reference signal outputs. These outputs are accurate to $1 \times 10^{-12}$ 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.
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 ±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 <20μs in 24 hrs

Physical
- Size: 104 x 70 x 26mm

Phase Noise/Short Term Stability (10MHz)

<table>
<thead>
<tr>
<th>SSB Phase Noise</th>
<th>dBc/Hz</th>
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<tbody>
<tr>
<td>1Hz</td>
<td>-90</td>
</tr>
<tr>
<td>10Hz</td>
<td>-120</td>
</tr>
<tr>
<td>100Hz</td>
<td>-145</td>
</tr>
<tr>
<td>1kHz</td>
<td>-151</td>
</tr>
<tr>
<td>10kHz</td>
<td>-153</td>
</tr>
<tr>
<td>100kHz</td>
<td>-155</td>
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</tbody>
</table>

STS (Allan Variance)*

<table>
<thead>
<tr>
<th>Time</th>
<th>dBc/Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>1sec</td>
<td>&lt;8x10^{-12}</td>
</tr>
<tr>
<td>10 sec</td>
<td>&lt;1x10^{-11}</td>
</tr>
<tr>
<td>100 sec</td>
<td>&lt;1.5x10^{-11}</td>
</tr>
<tr>
<td>1000 sec</td>
<td>&lt;1.5x10^{-11}</td>
</tr>
</tbody>
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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
- 7dBm +/- 2dBm (2 outputs)
- 15dBm +0/-2 dbm (requires +15V supply)
- 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

* After 24 hr operation