

## Miniature GPS Disciplined Oscillator



### Key Features:

- **Uncompromising performance**
- **Low phase noise 10MHz output**
- **Internal GPS Tracking Receiver**
- **Very small footprint designed for component-level integration**
- **Disciplined high-stability OCXO**

Brandywine's miniature GPS Disciplined Oscillator combines the power of our existing disciplined oscillators in a footprint the size of an OCXO. Designed with interoperability in mind, the Miniature GPS Disciplined Oscillator meets military requirements such as MIL-STD-188-164A. The GPSDO supplies a low noise, precision 10 MHz frequency reference signal output. This output is accurate to  $1 \times 10^{-12}$  when slaved to a GPS source.

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.

Optional capabilities include automatic interface to an external military GPS receiver such as the Defense Advanced GPS Receiver (DAGR), Standard frequency output is 10 MHZ, but other frequencies are possible.

## Specifications

### Inputs

Reference Source:

GPS  
 Connector MMCX  
 Signal Type C/A Code  
 No of Channels 12  
 Receiver sensitivity -155dBm

Alternative 1PPS input: TTL levels

**Power:** +3.3, +12

Warm up 10W nominal  
 Steady State 5W nominal

### System Specifications

#### Accuracy

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

#### Physical

Size: 2.0" x 2.0" x 1.0"

### Outputs

A) 1PPS  
 TTL levels into 50 ohms  
 B) 10 MHz  
 7dBm Min, 10dBm Max  
 C) GPS lock indicator

### Serial Communications

RS232

### Environmental Conditions

#### Temperature

Operating -20 to 60C  
 Storage -40 to 85C

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

### Compliances and Interface Standards

### Phase Noise/Short Term Stability (10MHz)

SSB Phase Noise	dBc/Hz
1Hz	-90
10Hz	-120
100Hz	-140
1kHz	-150
10kHz	-153
100kHz	-155
STS (Allan Variance)*	
1sec	<8x10 <sup>-12</sup>
10 sec	<1x10 <sup>-11</sup>
100sec	<1.5x10 <sup>-11</sup>
1000 sec	<1.5x10 <sup>-11</sup>

\* After 24 hr operation

