



## Military & Space > Custom Designs >

## 500 MHz Phase Locked Oscillator

### Features

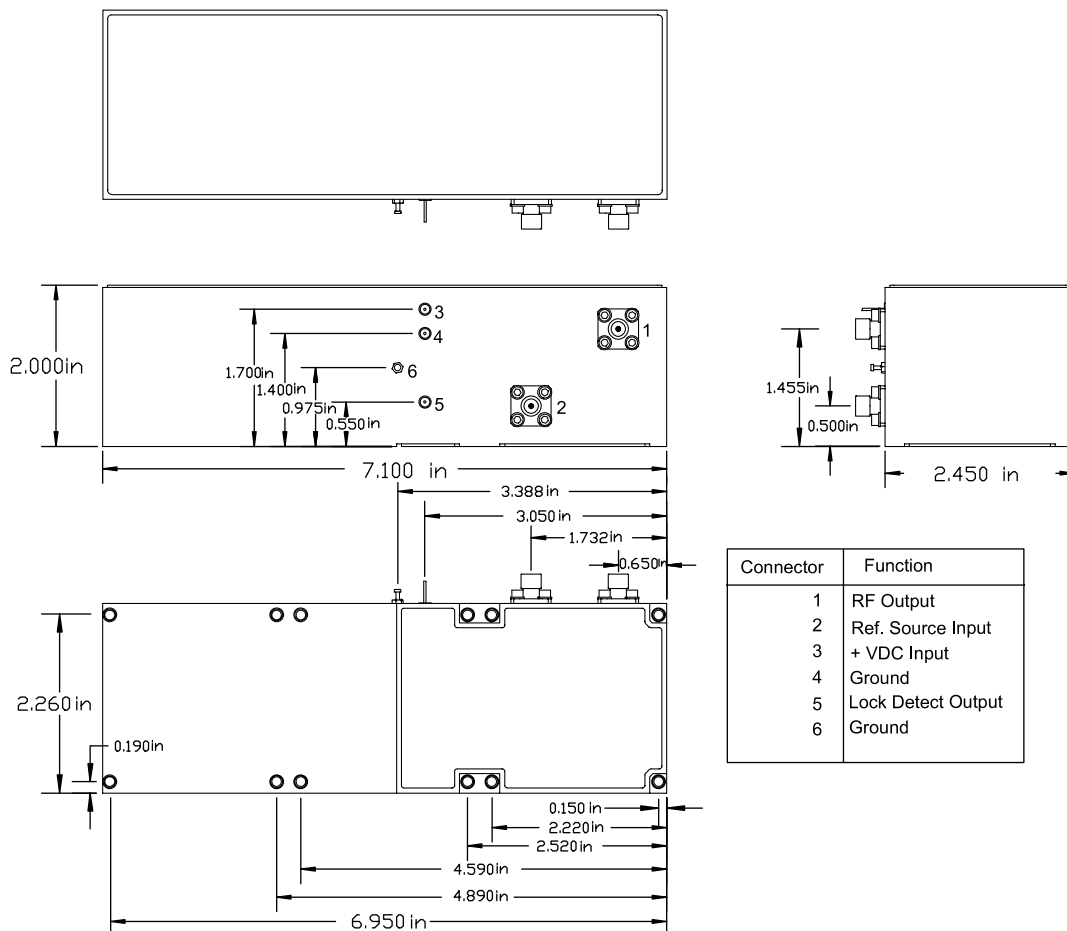
- Low Phase Noise
- Modular Design
- Excellent Spectral Purity
- Power Level Detectors
- Custom Specifications Readily Available
- Liquid Cooling Option

### Applications

- Airborne Integration
- Frequency Distribution
- Low Noise Reference Source



This low phase noise frequency source generates and distributes 25, 100 MHz, 1, 1.2, and 2 GHz signals. The RF outputs are organized in a single row on the front of the unit along with power and ground interfaces. Included with this system are power level detector BITS for each output for monitoring purposes. The phase noise performance of this system is derived from an Ultra Low Noise Crystal Oscillator and integrated Low Noise Multipliers and Dividers.





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### REFERENCE INPUT

#### Frequency

10 MHz,  $\pm 5 \times 10^{-7}$

#### Level

+7 dBm  $\pm 5$  dB into 50 ohms

### OUTPUT

#### Frequency

500 MHz

#### Level

+3 dBm  $\pm 2$  dB

#### Aging

$\pm 1 \times 10^{-6}$  per year after 30 days  
operating, typical

### Output Phase Noise L(f), (dBc/Hz) (Free-Running)

	Static	Dynamic, goal*
10 Hz	-80	-60
15 Hz		-63
80 Hz		-79
100 Hz	-110	-83
110 Hz		-85
160 Hz		-92
490 Hz		-113
1 kHz	-135	-127
2 kHz		-143
10 kHz	-158	-158
100 kHz	-158	-158
1 MHz	-158	-158

\* Calculated using profile provided. Internal vibration isolation system included.

### Temperature Stability

$\pm 5 \times 10^{-7}$  free-running from -20 to +55°C, (Ref. +25°C)

### Harmonics and Sub-Harmonics

<-50 dBc

### Spurious

<-80 dBc

### Phase Lock Alarm

TTL

Locked: +3.5 VDC to +5.2 VDC (Hi)

Out-of-Lock: +0.8 VDC max (Lo)

### MECHANICAL

#### Dimensions

7.10 x 2.00 x 2.45"

#### Connectors

SMA(f), ground lug, and feedthru capacitor

#### Packaging

Machined aluminum case

### POWER REQUIREMENTS

#### Supply Voltage

+12 VDC  $\pm 5\%$

#### Warm-Up Power

<16 Watts (Est.) at start-up for 5 minutes at +25° C

#### Total Power

<14 Watts (Est.) at steady state +25°C

### ADJUSTMENT

#### Loop BW

Target Bandwidth: < 10 Hz

Type 2 Loop

#### CRYSTAL

100 MHz, SC-cut, 5<sup>th</sup> overtone

#### OTHER

#### Acceleration Sensitivity

$5 \times 10^{-10}$ /g per axis, typical

#### Vibration Profile

15 to 80 Hz, 0.0025 g<sup>2</sup>/Hz

80 to 110 Hz, 0.0035 g<sup>2</sup>/Hz

110 to 160 Hz, 0.0025 g<sup>2</sup>/Hz

160 to 490 Hz, 0.0035 g<sup>2</sup>/Hz

490 to 1000 Hz, 0.0025 g<sup>2</sup>/Hz

2000 Hz, 0.001 g<sup>2</sup>/Hz