



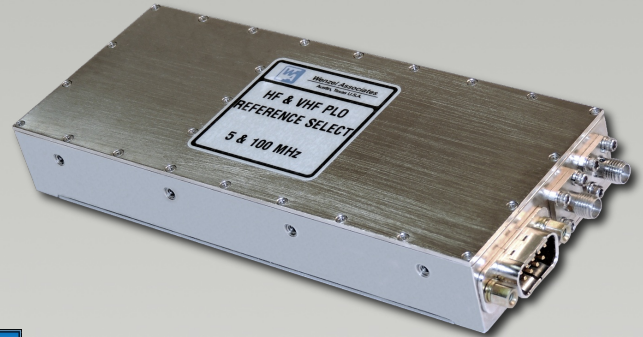
Low Noise Crystal Oscillators > HF & VHF PLO

Features:

- HF Frequencies: 5 MHz or 10 MHz
- VHF Frequencies: 50 MHz to 130 MHz
- Low Phase Noise to -165 dBc/Hz
- Excellent Temperature Stability
- Low Aging rate
- Low G-Sensitivity: 5E-10/g per axis, typ

Applications:

- Reference Frequency Source
- System Synchronization
- Instruments



Electrical Specifications	
Output Frequency	5 MHz and 100 MHz
Output Level (5 MHz)	+10 dBm ±2 dB into 50 ohms
Output Level (100 MHz)	+12 dBm ±2 dB into 50 ohms
External Reference Input Frequency	5 MHz
External Reference Input Level	-2 dBm to +17 dBm into 50 ohms
Aging	<i>(when locked to internal reference)</i>
Per day after 30 days operating, typical	5×10^{-10}
Second year, typical	5×10^{-8}
Per year thereafter, typical	3×10^{-8}
Temperature Stability <i>(consult factory for other ranges)</i>	<i>(when locked to internal reference)</i>
Range E: 0 to +50°C (Ref: +25°C)	$\leq \pm 5 \times 10^{-9}$
Range F: -20 to +70°C (Ref: +25°C)	$\leq \pm 1 \times 10^{-8}$
Range G: -55 to +85°C (Ref: +25°C)	$\leq \pm 2 \times 10^{-7}$
Phase Noise	<i>(Frequency Dependent: See Standard Specifications and Part Numbers table below for details)</i>
Harmonics	≤ -25 dBc
Sub-Harmonics	≤ -85 dBc
PLL & Divider Products	≤ -50 dBc
Spurious	≤ -85 dBc
PLL Loop Bandwidth	≤ 40 Hz
Supply Voltage	+12 VDC (±5%)
Warm-up	≤ 13 Watts for 5 minutes at +25°C
Total	≤ 7 Watts at +25°C
Crystal Type	SC-cut
Crystal Acceleration Sensitivity	5×10^{-10} /g, typical
Mechanical	
Packaging	Nickel-Plated Machined Aluminum
Dimensions	2.5" x 6" x 0.9"
Connectors / Mounting	SMA(f) and solder pins on side Threaded Inserts, #4-40, 6 places

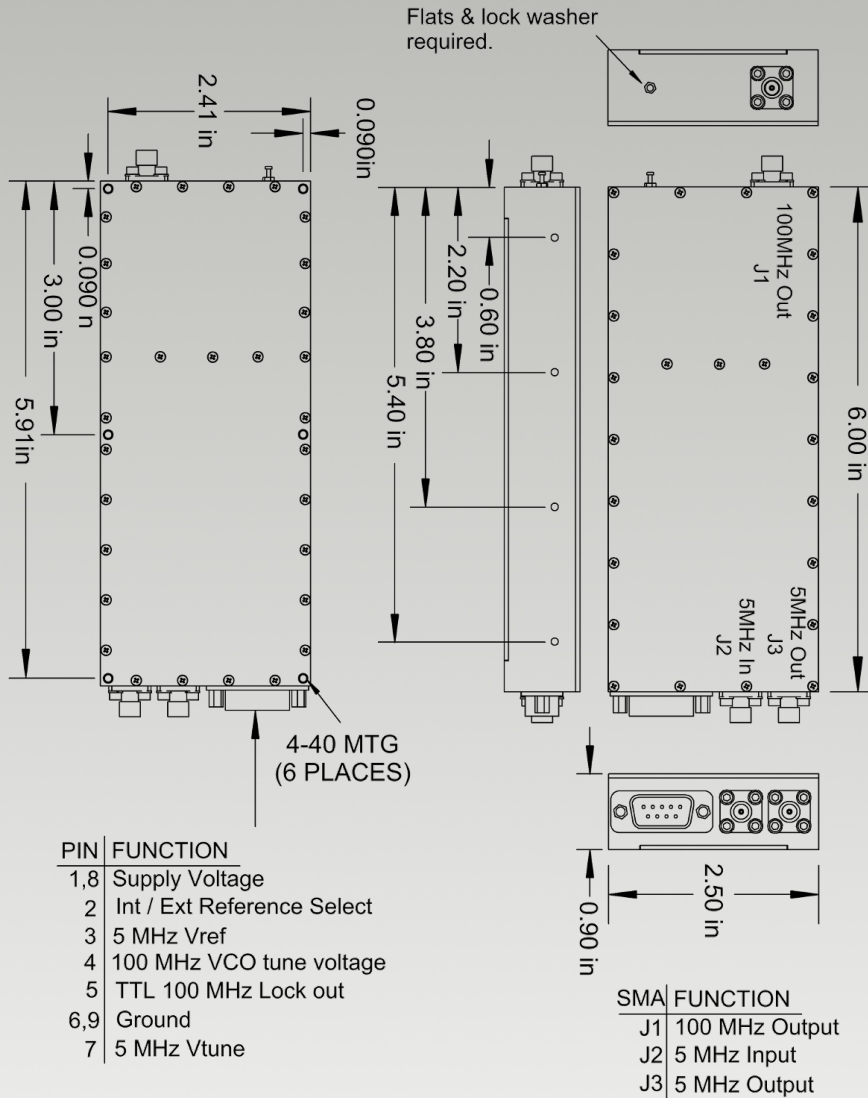
Description:

The HF & VHF PLO is a low noise frequency source which is comprised of two fixed frequency crystal oscillators, one HF and one VHF, and all necessary components required to phase lock these two oscillators together with a PLL loop bandwidth of ~60 Hz. This unit also includes the capability of phase locking with an external 5 MHz or 10 MHz reference signal. When the external reference is present, the internal HF oscillator is bypassed and the internal VHF oscillator will phase lock to this external reference. The integrated assembly is packaged in a nickel plated machined brass housing (6" x 2.5" x 0.9"), suitable for vibration isolating for improved performance in dynamic environments. The typical configuration has both a 5 MHz and a 100 MHz output. An internal voltage regulator is provided for excellent power supply line rejection. Please consult the factory if you need any specifications to be modified to better suit your application.





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Standard Specifications and Part Numbers **

Part Number	Output Frequency * (MHz)	Typical Phase Noise (dBc/Hz), Static *					Output Level (dBm) * into 50 ohms	Temperature Stability (Ref: +25°C) *	Supply Voltage (VDC)	Acceleration Sensitivity (g per axis) *	External Reference Frequency (MHz)	Package / Connectors	Package Size (inches)
		10 Hz	100 Hz	1 kHz	10 kHz	100 kHz							
501-12916	100/5	-103	-118	-140	-160	-160	+12 ±2	±1E-8, -10° to +65°C	+12	5E-10, typ	5, BW=40 Hz	SMA(f)x3 & D-Sub on side	2.5 x 6 x 0.9
501-12936	100/5	-112	-125	-152	-170	-170	+12 ±2	±1E-8, -10° to +65°C	+12	5E-10, typ	5, BW=40 Hz	SMA(f)x3 & D-Sub on side	2.5 x 6 x 0.9

* Consult factory for custom frequency, phase noise performance, output level, temperature stability and acceleration sensitivity options.

** See website for additional Standard Part Numbers and Specifications.



Crystal Oscillators

• **RF Modules**

• **Frequency Sources**

• **IMAs**

• **Military**

• **Space**

