Wenzel Associates, Inc.

"Quietly the Best"

OCXO
VHF Bootstrap

Low Noise Crystal Oscillators > VHF Bootstrap

Features:

- Frequencies from 25 MHz to 256 MHz, fixed
- Ruggedized for Dynamic Environments
- Standard or Premium Phase Noise Options
- Effective G-Sensitivity to ≤ 5E-11/g per axis
- Internally Vibration Isolated Version Available with Effective G-Sensitivity to 5E-12/g (2 kHz)

Applications:

- Military Applications
- Airborne, Ground, Shipboard
- Radar Systems
- Tactical Radio
- Vehicular Communication

Electrical Specifications	
Output Frequency (fixed; specify within range)	**25 MHz to 256 MHz**
Output Level	+13 dBm ±2 dB into 50 ohms
Aging	*(100 MHz model, typical)*
Per day after 30 days operating, typical	5×10^{-9}
Second year, typical	5×10^{-7}
Per year thereafter, typical	3×10^{-7}
Temperature Stability *(consult factory for other ranges)*	*(100 MHz model, typical)*
Range E: 0 to +50°C (Ref: +25°C)	$\leq \pm 2 \times 10^{-7}$
Range F: -20 to +70°C (Ref: +25°C)	$\leq \pm 5 \times 10^{-7}$
Range G: -55 to +85°C (Ref: +25°C)	$\leq \pm 2 \times 10^{-6}$
Phase Noise	*(Frequency Dependent: See Standard Specifications and Part Numbers table below for details)*
Harmonics	≤ -30 dBc
Sub-Harmonics	N/A
PLL Products *(Phase Lock models only)*	≤ -60 dBc
Spurious	≤ -80 dBc
Natural Mount Resonant Frequency	~20 Hz *(Vibe Iso Model Only)*
Tuning	
- Mechanical Tuning	N/A
- Electrical Tuning Tuning A: 0 to +10 VDC	$\geq \pm 5 \times 10^{-6}$, typical
Tuning B: ±5 VDC	$\geq \pm 5 \times 10^{-6}$, typical
Slope: Negative	*(Positive Slope available on some ET only models)*
Supply Voltage	+15 VDC ±5%
Warm-up	≤ 18 Watts for 5 minutes at +25°C
Total	≤ 10 Watts at +25°C
Crystal Type	SC-cut
Acceleration Sensitivity	Effective G-Sensitivity to 5×10^{-11}/g Effective G-Sensitivity to 5×10^{-12}/g, isolated
Mechanical	
Packaging	Aluminum Compact Case Assembly
Dimensions	6.75 x 5 x 3.44"
Connectors / Mounting - Package A	SMA(f) x2 and DB-9 on side Thru Hole Mounting, 0.156" diam., 4 places

Description:

At VHF frequencies, the Bootstrap oscillator provides unprecedented low-g sensitivity to 5e-11/g. The Bootstrapping technique uses two rugged phase-locked crystal oscillators to compensate the effects of vibration. The difference-voltage generated by changes in the phase locking voltage of the phase lock loop due to vibration, is applied to both oscillators to minimize the vibration effects. The VHF oscillators are available at fixed frequencies from 25 MHz to 256 MHz with noise floors to -170 dBc/Hz. No additional phase noise degradation is observed from 5 Hz to 100 Hz, where normal vibration isolation systems will create a noise peak. An internal vibration isolation system may be added internally, which increases the phase noise below 50 Hz, but improves the noise to better than 2e-12 at 200 Hz and beyond. This approach has been used in demanding rotary wing applications. The Bootstrap oscillator assembly is an ideal solution for the airborne and mobile applications, and is especially useful for shipboard applications where the noise excitation levels are very low frequency. An Ultra-Low Noise oscillator may be locked to the VHF Bootstrap output to improve the phase noise under vibration and still provide -175 dBc/Hz noise floors. The Bootstrap assembly is housed in a 6.75" x 5.0" x 3.44" machined aluminum housing. An internal voltage regulator provides excellent power supply line rejection.

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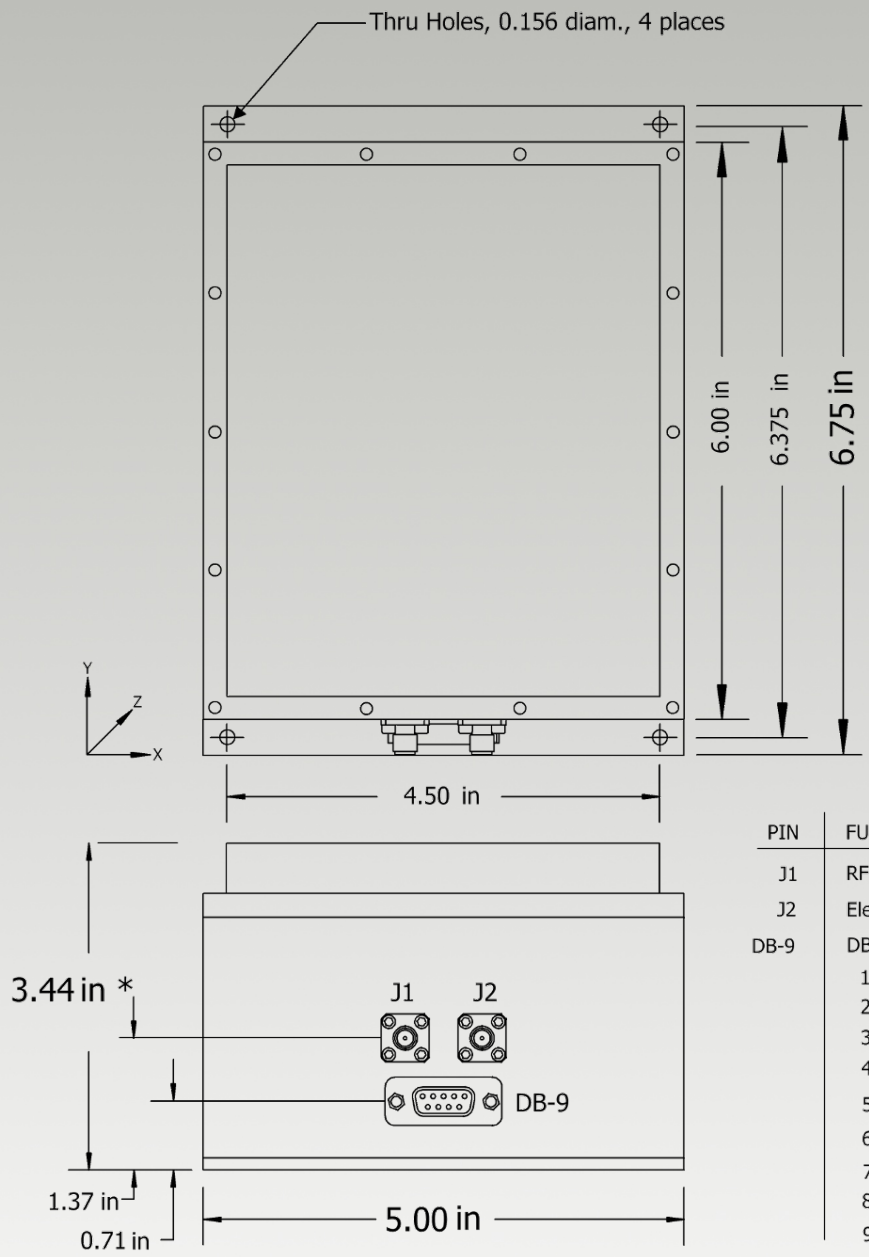

PIN	FUNCTION
J1	RF Output
J2	Electrical Tuning
DB-9	DB Connector Pinout
	1 - Supply Voltage
	2 - NC
	3 - NC
	4 - NC
	5 - NC
	6 - GND
	7 - NC
	8 - NC
	9 - NC

* Internally vibration isolated version shown.
Case height will be 2.5" on non-isolated models.

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