



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 $\geq 5E-11/g$ per axis
- Internally Vibration Isolated Version Available with Effective G-Sensitivity to $5E-12/g$ (2kHz)

APPLICATIONS:

- PN Measurement Reference
- Synthesizers
- High Energy Physics
- Stable Reference Oscillator



Electrical Specifications	
Output Frequency (fixed; specify within range)	25 MHz to 160 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 Std 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 $\pm 5\%$
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 $5 \times 10^{-11}/g$
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 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 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.

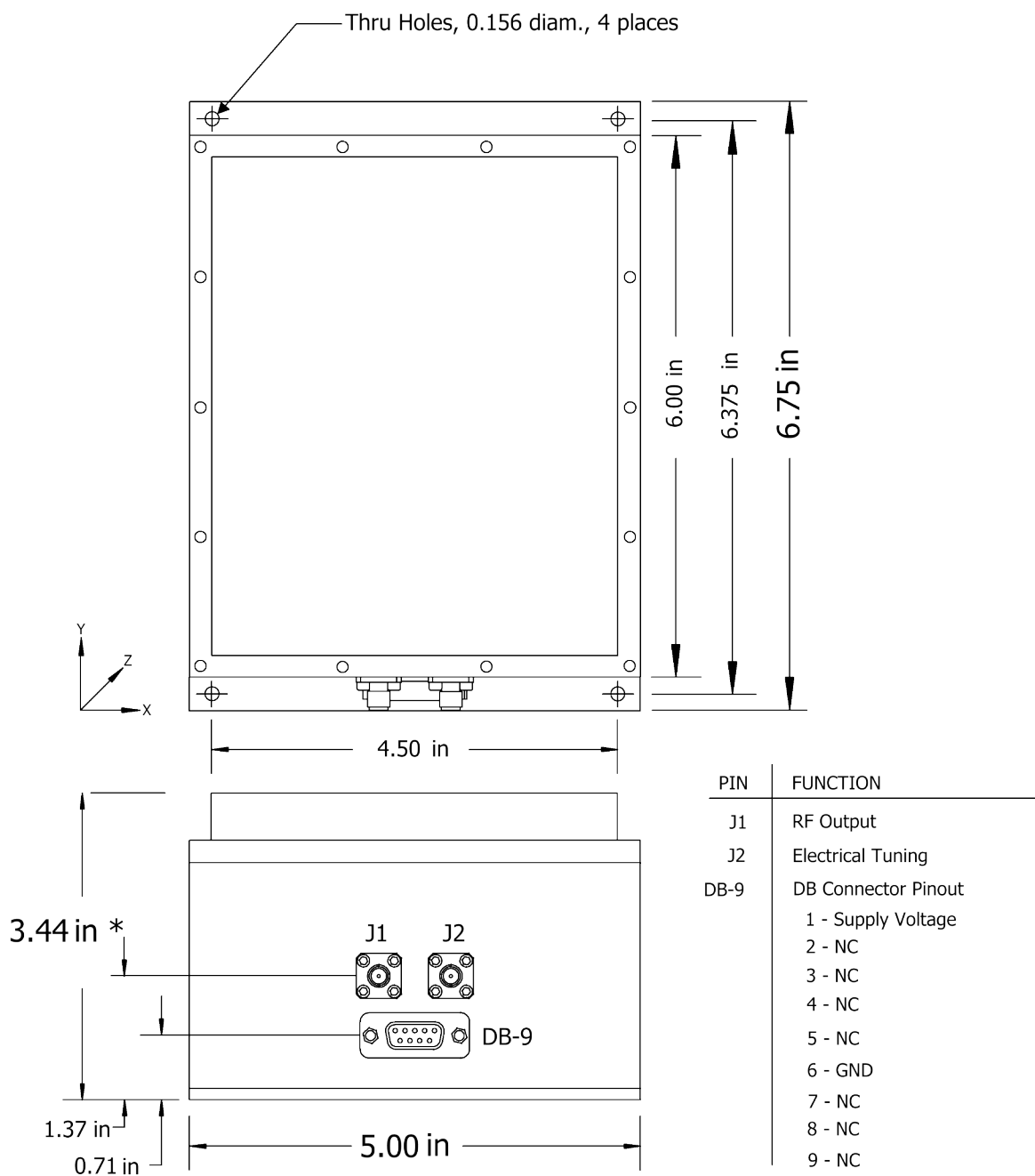


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VHF BOOTSTRAP

"QUIETLY THE BEST"

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



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