

# OCXO

## Fast Warm-Up Oven Controlled Crystal Oscillator

### Model FE-2260A

Traditional ovenized crystal oscillators typically require long warm-up times to stabilize before a useable frequency output is obtained. Frequency Electronics experience in hybrid technology has led to the development of a stable oven controlled oscillator without the normally long waiting time.

### TECHNICAL HIGHLIGHTS

The FE-2260A uses a thick film hybrid substrate for the oscillator electronic components. An SC cut crystal is mounted external to the hybrid but is physically attached to the same assembly. A heater element, which is part of the hybrid substrate, heats the crystal to maintain a constant temperature. Since there is little mass to heat and the heating element is directly beneath the crystal base, a very short warm-up time constant is obtained.

By separately mounting the crystal in its own case, a more stable design is achieved and there is greater latitude in optimizing the crystal design for the intended application. This approach also increases reliability and immunity to vibration and radiation effects.

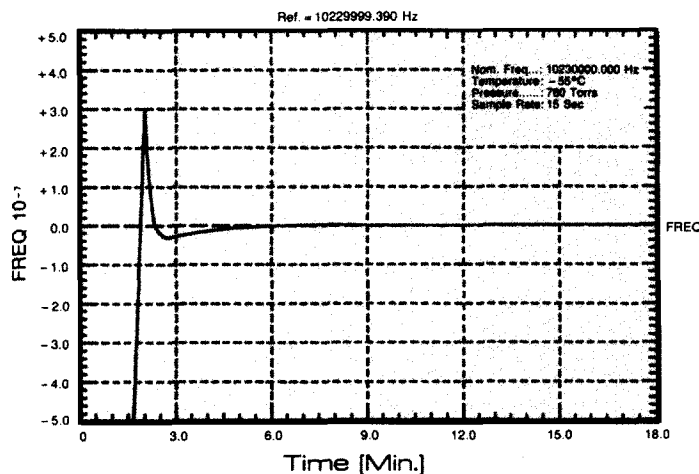
The use of hybrid technology also allows substantial size and weight reduction as compared to conventional designs.



### FEATURES

- Warm-Up to stabilized frequency in less than 2 min
- Temperature Stability:  
 $5 \times 10^{-8}$  ( $-55^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ )
- Low Steady State Power:  
1.8W @  $25^{\circ}\text{C}$   
0.9W (Low Power Option)
- Small Size:  
3" x 1.5" x 1.5"
- Full MIL or "S" Level

Typical Warm-Up



**FEI Communications, Inc.**

A Subsidiary of Frequency Electronics, Inc.  
55 Charles Lindbergh Blvd., Mitchel Field, NY 11553  
TEL: 516-794-4500 • FAX: 516-794-4340  
Visit us at: [www.frequelec.com](http://www.frequelec.com)

FFAEIS00013X

# SPECIFICATIONS

## OUTPUT FREQUENCY

In the range of 4-12 MHz  
1-100 MHz (Optional)

## FREQUENCY STABILITY

Temperature:  $\pm 5 \times 10^{-8}$   
Aging:  $1 \times 10^{-10}$ /day  
Voltage Variation ( $\pm 10\%$ ):  $\pm 5 \times 10^{-9}$

## SHORT TERM STABILITY [10 MHz]

$3 \times 10^{-11}$  (1 sec.)

## PHASE NOISE [at $f = 10$ MHz]

10 Hz: 110 dBc/Hz  
100 Hz: 130 dBc/Hz  
1 kHz: 140 dBc/Hz  
10 kHz: 140 dBc/Hz

## OUTPUT LEVEL

+3 dBm  $\pm 1.5$  dB into 50 ohms

## SPURIOUS SIGNALS

-90 dBc

## HARMONIC DISTORTION

-30 dBc

## G SENSITIVITY

$5 \times 10^{-10}$ /G

## WARM-UP TIME

Temp.	Time
-55°C	5 min.
+25°C	2 min.

## DC POWER

	Standard	Low Power Option
Turn-on:	10W	10W
Steady State: (-55°C)	3W	1.2W
(+25°C)	1.8W	0.9W

## INPUT VOLTAGE

Available from 12 VDC to 32 VDC

## MECHANICAL

Size: 3" x 1.5" x 1.5"

RF connector output

Connector pins for DC input heater and ground

Weight: 6 oz.

## ENVIRONMENTAL

Operating Temperature:  
-55°C to +85°C

Vibration:  
MIL-E-16400

Non-Operating Temperature:  
-55°C to +105°C

Shock:  
30G/11 ms

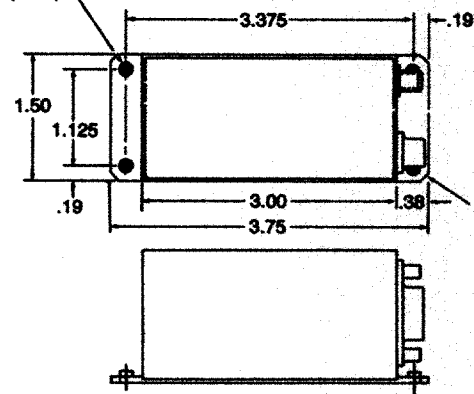
Humidity:  
to 95%

EMI  
MIL-STD-461,462

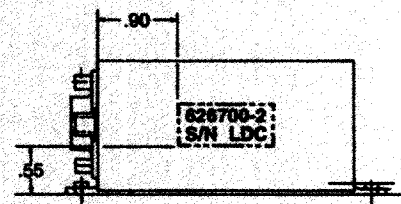
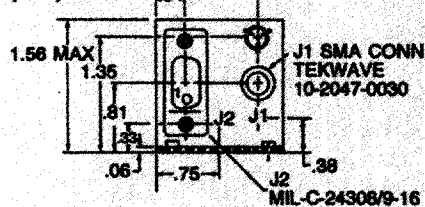
Altitude:  
0 - 50,000 ft.

## OUTLINE DRAWINGS

#4-40 UNC  
LOCKING INSERT  
(4 PL)



.09 x 45°  
CHAMBER  
(4 PL)



**FEI Communications, Inc.**

A Subsidiary of Frequency Electronics, Inc.

55 Charles Lindbergh Blvd., Mitchel Field, NY 11553

TEL: 516-794-4500 • FAX: 516-794-4340

Visit us at: [www.freqelec.com](http://www.freqelec.com)