

## INPUT

### Frequency

10 MHz

### Level

+13 dBm  $\pm 1$  dB into 50 ohms

## OUTPUT

### Frequency

50 MHz

### Level

+13 dBm  $\pm 2$  dB into 50 ohms

## STABILITY

### Aging (free-running)

$1 \times 10^{-6}$  first year

after 30 days operating, typical

$5 \times 10^{-7}$  second year, typical

$3 \times 10^{-7}$  per year thereafter, typical

### Phase Noise L(f), (free-running)

10 Hz -110 dBc/Hz

100 Hz -140 dBc/Hz

1 KHz -162 dBc/Hz

10 KHz -176 dBc/Hz

100 KHz -176 dBc/Hz

### Temperature Stability

$\pm 5 \times 10^{-7}$  free-running from 0 to +50°C  
(Ref. +25°C)

### Harmonics

-25 dBc

### Sub-Harmonics

-80 dBc

### Spurious

-80 dBc, excluding power  
supply line related spurs

### Phase Lock Alarm

TTL

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

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

### Phase Lock Voltage Monitor

Voltage monitor pin supplied

## MECHANICAL

### Dimensions

4.40 x 4.00 x 1"

### Connectors

RF Input/Output: SMA(f)

Power, Monitoring: Feed Thru Terminals

GND: Ground Turret

## Packaging

Nickel-plated machined  
aluminum housing – J1PM

## Mounting

Threaded inserts on base, 6 places

## POWER REQUIREMENTS

### Warm-Up Power

$\leq 9.5$  Watts for 5 minutes

### Total Power

$\leq 6$  Watts at +25°C

### Supply Voltage

+15 VDC  $\pm 5\%$

## ADJUSTMENT

### Loop BW

Target Bandwidth: ~300 Hz

Type 2 Loop

## CRYSTAL

### Type

50 MHz SC-cut

## OTHER

### Design

Includes a x5 multiplier on the front end to multiply the 10 MHz reference input to 50 MHz for phase locking to the internal oscillator. Loop BW will be optimized for best close-in phase noise performance using a ULN reference.

### Label

Use conventional label with the  
following information:

501-28836 (Current Rev.)

50 MHz PL ULN

+15 VDC

Serial # - Date Code

(Mark connectors with function)

### Test Data

- Output Level

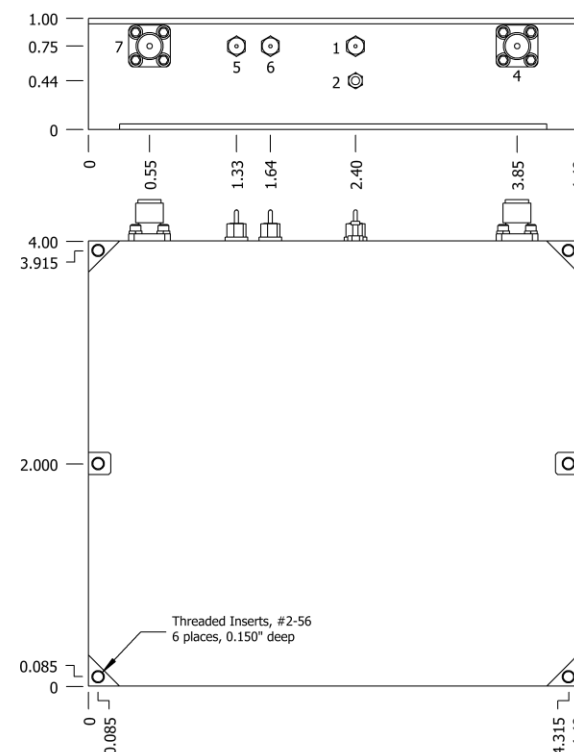
- Phase Noise – free-running

- Harmonics, PLL Products, Spurious

- Power – Warm-up and Total

REV	DATE	REVISION RECORD	DWN	AUTH
-	03-05-15	Initial Release	PAC	

J1PM MXO Connections	
Connector	Function
1	Supply Voltage
2	Ground, Case
4	RF Output
5	Phase Lock Voltage
6	Phase Lock Alarm
7	External Reference Input



**Wenzel Associates, Inc.**

Austin, Texas

Title:

**50 MHz PL Ultra Low Noise Crystal Oscillator**

P/N:

**501-28836**

Rev:

**-**

Date:

**03-05-15**

Drawn:

Ref:

Tolerances:  
(except as noted)  
Dimensions are in inches

0.XX Dec:

**$\pm 0.030$ "**

0.XXX Dec:

**$\pm 0.010$ "**

FSCM:

**62821**

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