INPUT

Frequency
5 MHz

Level
+13 dBm ±1 dB into 50 ohms

OUTPUT

Frequency
100 MHz

Level
+13 dBm ±2 dB into 50 ohms

STABILITY

Aging (free-running)
1×10^{-6} first year
after 30 days operating, typical
5×10^{-7} second year, typical
3×10^{-7} per year thereafter, typical

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

10 Hz	-105 dBc/Hz
100 Hz	-135 dBc/Hz
1 KHz	-160 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
≤ 11 Watts for 5 minutes

Total Power
≤ 7 Watts at +25°C

Supply Voltage
+15 VDC ±5%

ADJUSTMENT

Loop BW
Target Bandwidth: ~300 Hz
Type 2 Loop

CRYSTAL

Type
100 MHz SC-cut

OTHER

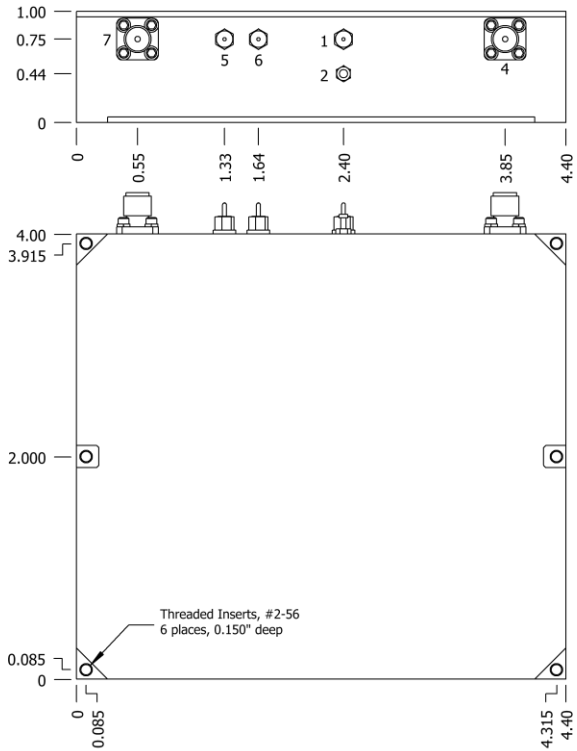
Design
Includes x5 and x4 multipliers on the front end to multiply the 5 MHz reference input to 100 MHz for phase locking to the internal oscillator. Loop BW will be optimized for best close-in phase noise performance using a ULN reference.

Label
Use conventional label with the following information:
501-28793 (Current Rev.)
100 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
-	02-25-15	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:
100 MHz PL Ultra Low Noise Crystal Oscillator

P/N:	Rev:	Date:	Drawn:	Ref:
501-28793	**-**	**02-25-15**		

Tolerances: (except as noted) Dimensions are in inches	0.XX Dec:	0.XXX Dec:	FSCM:	Page 1 of 1
	±0.030”	±0.010”	62821	