INPUT

Frequency
10 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
≤ 10 Watts for 5 minutes

Total Power
≤ 6 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

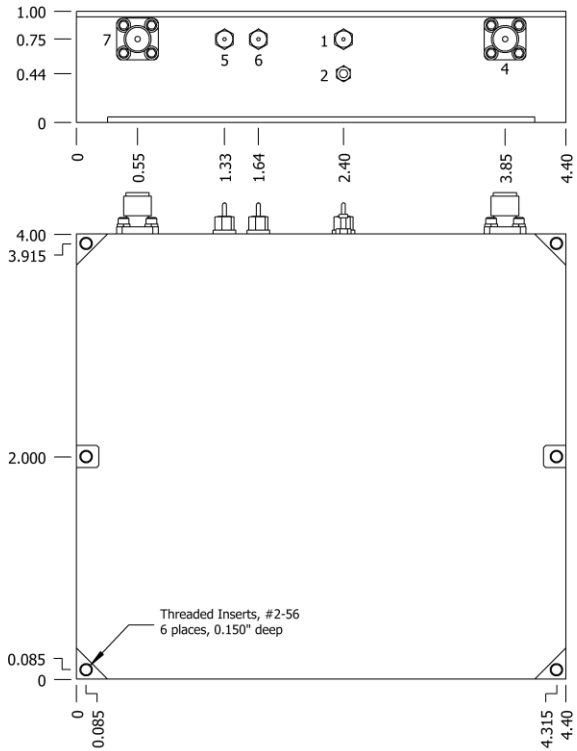
Design
Includes x5 and x2 multipliers on the front end to multiply the 10 MHz reference input to 100 MHz for phase locking to the internal oscillator. Loop BW will be optimized for best close-in phase noise performance using a ULN reference.

Label
Use conventional label with the following information:
501-28794 (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:
501-28794	**-**	**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	