Wenzel Associates, Inc.

"Quietly the Best"

OCXO
HF ULN

Low Noise Crystal Oscillators > HF ULN

Features:

- Frequencies: 5 MHz to 25 MHz, fixed
- Ultra Low Phase Noise
- Excellent Temperature Stability
- Low Aging Rate
- Internal Voltage Regulator

Applications:

- Reference Oscillator
- Synthesizers
- Radar Systems
- Test Equipment

Electrical Specifications		
Output Frequency (fixed; specify within range)		**5 MHz to 25 MHz**
Output Level		+13 dBm ±2 dB into 50 ohms
Aging		*(10 MHz model, typical)*
	Per day after 30 days operating, typical	5×10^{-10}
	Second year, typical	5×10^{-8}
	Per year thereafter, typical	3×10^{-8}
Temperature Stability *(consult factory for other ranges)*		*(10 MHz model, typical)*
	Range E: 0 to +50°C (Ref: +25°C)	$\leq \pm 2 \times 10^{-8}$
	Range F: -20 to +70°C (Ref: +25°C)	$\leq \pm 5 \times 10^{-8}$
Phase Noise		*(Frequency Dependent: See Standard Specifications and Part Numbers table below for details)*
Harmonics		≤ -30 dBc
Spurious		≤ -80 dBc
Tuning		*(MT and ET ranges can be reversed upon request)*
- Mechanical Tuning		$\geq \pm 1 \times 10^{-6}$, typical
- Electrical Tuning	Tuning A: 0 to +10 VDC	$\geq \pm 2 \times 10^{-7}$, typical
	Tuning B: ±5 VDC	$\geq \pm 2 \times 10^{-7}$, typical
	Slope: Negative	*(Positive Slope available on some ET only models)*
Supply Voltage		+15 VDC or +12 VDC (±5%)
Warm-up		≤ 5 Watts for 5 minutes at +25°C
Total		≤ 2.5 Watts at +25°C
Crystal Type		SC-cut
Mechanical		
Packaging		Solder sealed steel can
Dimensions		1.75" x 2.94" x 1"
Connectors / Mounting	- Package A	SMA(f) and solder pins on side Threaded Inserts, #4-40, 4 places

Description:

The HF Ultra Low Noise oscillator provides excellent temperature stability, ultra-low phase noise performance and good overall short term stability. The HF ULN phase noise performance has been verified by NIST with noise floors to -180 dBc/Hz, although typical performance is specified as low as -176 dBc/Hz. The 5 MHz model is available with temperature stability to ±1E-8 over the 0 to +50°C temperature range and an aging rate as low as 1E-10 per day. A low noise internal voltage regulator is included, which provides excellent power supply line rejection. Please consult the factory to discuss any custom specification modifications which may better suit your application.

Wenzel Associates, Inc. • 2215 Kramer Lane, Austin, Texas 78758-4002 • www.wenzel.com
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10 MHz ULN

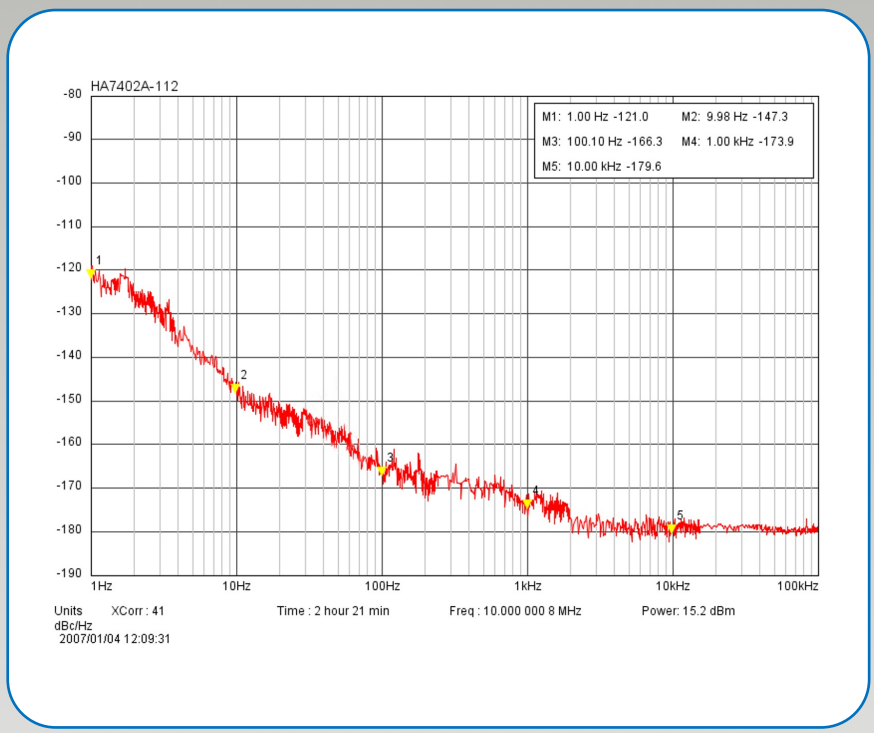

Figure 1: Typical Phase Noise Performance Plot for the 10 MHz ULN, P/N: 501-27521-11

Standard Specifications and Part Numbers **

Part Number	Output Frequency * (MHz)	Typical Phase Noise (dBc/Hz), Static *					Output Level (dBm) * into 50 ohms	Temperature Stability (Ref: +25°C) *	Supply Voltage (VDC)	Package / Connectors	Package Size (inches)
		10 Hz	100 Hz	1 kHz	10 kHz	100 kHz					
501-27520-01	5	-145	-165	-174	-174	-174	+13 ±2	±2E-8, 0° to +50°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27520-02	5	-145	-165	-174	-174	-174	+13 ±2	±5E-8, -20° to +70°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27520-11	5	-150	-170	-176	-176	-176	+13 ±2	±2E-8, 0° to +50°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27520-12	5	-150	-170	-176	-176	-176	+13 ±2	±5E-8, -20° to +70°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27520-21	5	-145	-165	-174	-174	-174	+13 ±2	±2E-8, 0° to +50°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27520-31	5	-150	-170	-176	-176	-176	+13 ±2	±2E-8, 0° to +50°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27521-01	10	-137	-162	-172	-174	-174	+13 ±2	±2E-8, 0° to +50°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27521-02	10	-137	-162	-172	-174	-174	+13 ±2	±5E-8, -20° to +70°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27521-11	10	-142	-167	-175	-176	-176	+13 ±2	±2E-8, 0° to +50°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27521-12	10	-142	-167	-175	-176	-176	+13 ±2	±5E-8, -20° to +70°C	+15	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27521-21	10	-137	-162	-172	-174	-174	+13 ±2	±2E-8, 0° to +50°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1
501-27521-31	10	-142	-167	-175	-176	-176	+13 ±2	±2E-8, 0° to +50°C	+12	SMA(f) & Pins on Side	1.75 x 2.94 x 1

* Consult factory for custom frequency, phase noise performance, output level, temperature stability and acceleration sensitivity options.
** See website for additional Standard Specifications and Part Numbers.

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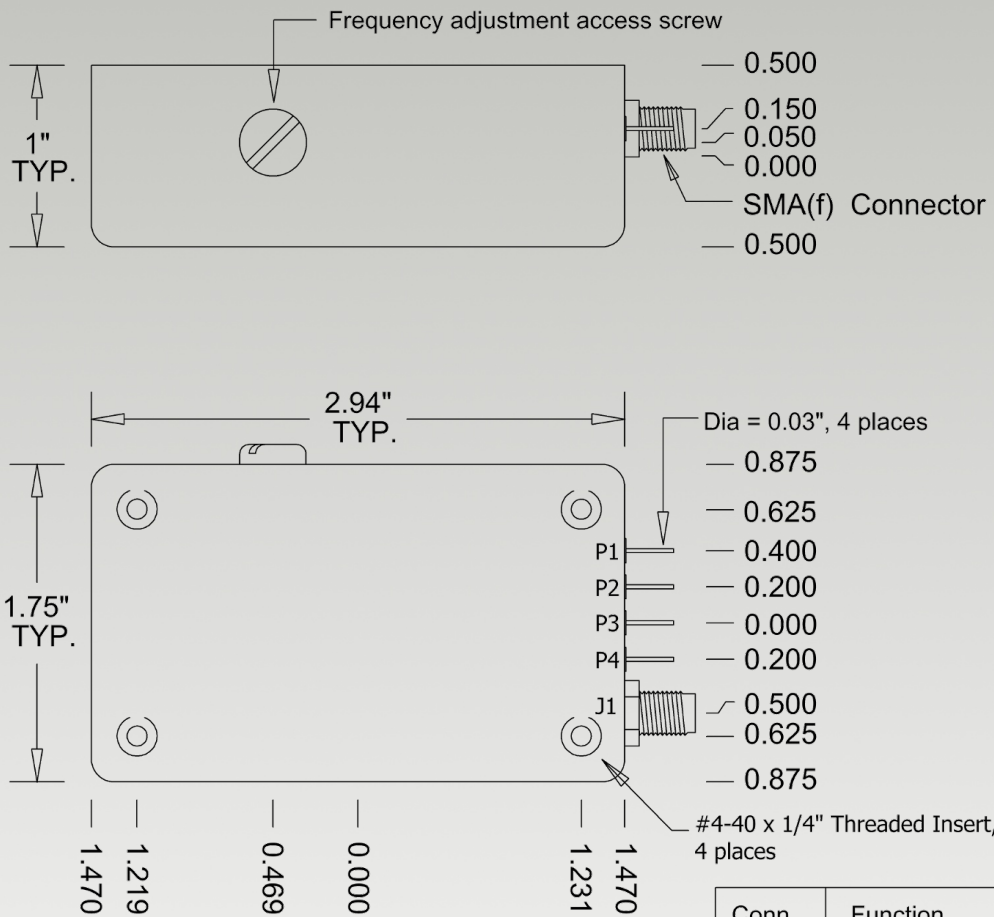

Connector numbers are for reference only, they do not appear on unit.

Conn	Function
J1	RF Output
P1	N/C
P2	Electrical Tuning
P3	Supply Voltage
P4	Case Ground

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