

# Spectral Line Systems Ltd

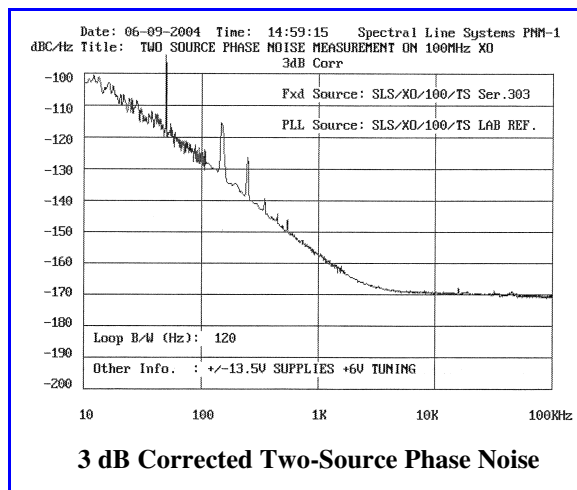
Model No. SLS/XO/100

Ultra-Low Phase Noise  
100 MHz VCXO

## Features

- \* Guaranteed Performance
- \* 2 KHz Voltage Tuning
- \* + 20 dBm Output Power
- \* Rugged Mechanical Design

## Description



Spectral Line Systems Ltd Ultra-Low Phase Noise Voltage-Controlled Crystal Oscillators (VCXOs) are the culmination of many years experience in the design of oscillators, the selection of crystals and the understanding of noise mechanisms. This model, produced at a standard frequency of 100 MHz, is voltage-tunable over a 2 KHz range to facilitate phase noise measurement or locking to a lower frequency reference.

Being aimed at demanding applications in the instrumentation, communications and radar fields, these oscillators are exceptionally well specified and thoroughly tested before delivery. Each unit is supplied with full test data and a Certificate of Conformance to the specification. The mechanical design is very rugged, employing a milled aluminium alloy housing, a circuit board free from mechanically adjustable components and a TO5 packaged three-point mounted crystal.

## Specification

### Operating Conditions

**Ambient Temperature:** -10 to + 60 Deg.C  
**Warm-Up Time:** 30 minutes

**Power Supply Voltages:**  
Dual Supply Version: +/-12 to +/-15V  
Single Supply Version: + 12 to +15 V  
Please specify required voltage(s) when ordering.

**Power Supply Currents:** 90 mA max. (+ve)  
25 mA max. (-ve)

**Tuning Voltage Range:**  
Positive Tuning Version: 0 to + 15 V  
Bipolar Tuning Version: +/- 7.5V  
Please specify version required when ordering.  
Bipolar version only available on dual supply osc.

**RF Output Port Load:** 50 Ohm nominal.

**Absolute Max. Ratings:**  
Positive Supply Line: 0V min., +18V max.  
Negative Supply Line: 0V max., -18V min.  
Tuning Port: +/-20V  
RF Output Port: +/-30V DC

**Output Power** +20 dBm +/- 2.0 dB.

### Tuning Characteristics

**Absolute Freq. Accy.:** (At centre of tuning range)  
+25 Deg. C: +/- 2 ppm  
-10 to +60 Deg. C: +/-12 ppm  
Ageing: +/- 2ppm/year  
(Lower ageing available)

**Tuning Range:** 2 KHz min. for 12V  
change in tuning voltage.

**Tuning Slope:** +150 Hz/V min.

**Tuning Linearity:** Less than 2:1 difference  
in slope over 2 KHz range.

### Spectral Purity

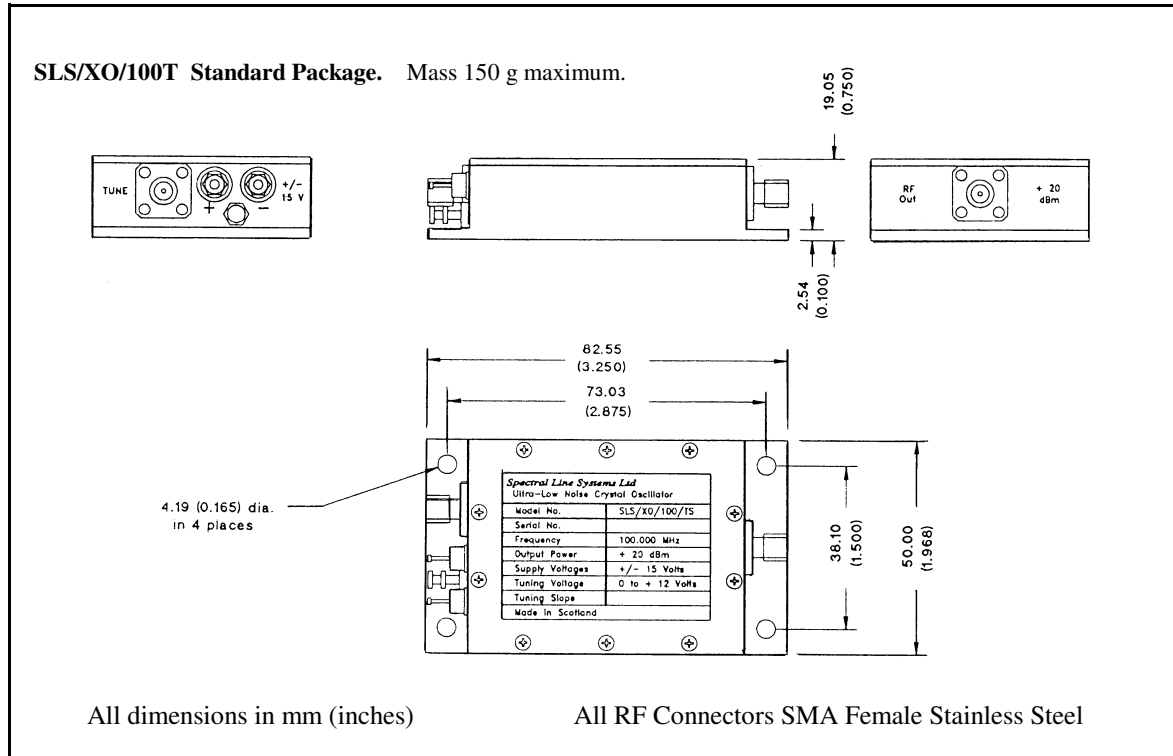
**Harmonics:** -25 dBc max.

**Non-Harmonics:** -90 dBc max.

| Phase Noise:  | Standard    | Enhanced    |
|---------------|-------------|-------------|
| Offset (Hz)   | dBc/Hz max. | dBc/Hz max. |
| 100           | -120        | -123        |
| 1 K           | -150        | -153        |
| 10 K          | -163        | -167        |
| 100 K (Floor) | -165        | -168        |

**Outline Drawing**

Several packaging options are available, ranging from the standard package shown below for general use to miniature anti-vibration mounted versions for airborne applications.



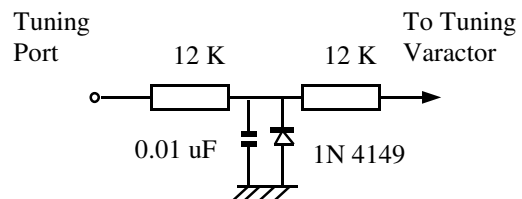
**Operating Notes**

**Power Supplies:**

The ultra-low phase noise performance of this source will only be realised when it is operated from suitably noise-free power supplies. To minimise externally induced modulation, the supply lines should be twisted tightly together and run in close proximity to a ground plane. It is also beneficial to externally decouple at the oscillator terminals with series resistors and as large shunt electrolytic capacitors as possible.

**Tuning Circuit:**

The tuning circuit in the positive tuning version is as shown below:



**Ordering Information**

**Dual Supply Version:**  
**Single Supply Version:**

|  | <b>Standard Performance</b> | <b>Enhanced Performance</b> |
|--|-----------------------------|-----------------------------|
|  | SLS/XO/100/TS – V           | SLS/XO/100/TE – V           |
|  | SLS/XO/100/SS – V           | SLS/XO/100/SE – V           |

Please specify supply voltage (V) between 12 and 15 Volts.

***Spectral Line Systems Ltd***

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