

Indirect Synthesizers

Features

- ◆ Frequencies to 14 GHz standard
- ◆ Bandwidths up to 30%
- ◆ Very low phase noise
- ◆ Low spurious
- ◆ Step sizes from 1 Hz
- ◆ 3-Wire serial frequency control
- ◆ Internal MCU and EEPROM
- ◆ High immunity to phase hits
- ◆ Meets INTELSAT specification for phase noise
- ◆ Compact package
- ◆ Ideal for SatCom, Radar and Instrumentation

Options

- ◆ Built in IFLO
- ◆ Custom digital control interfaces
- ◆ Output frequencies to 45 GHz
- ◆ Extended operating temperatures
- ◆ Ruggedized for military applications

Description

Herley-CTI (HCTI) series XS low noise microwave synthesizers are designed to deliver high performance in a compact package. The XS features very low phase noise, typically -100 dBc/Hz at 1 kHz offset at 6 GHz. In addition, the series XS incorporates proven techniques for phase hit suppression. Other features include extremely small step sizes down to 1 Hz and the capability of covering bandwidths of up to 30% for applications that require wider tuning ranges.

The Series XS contains a low noise VCXO which will phase lock to external references from 5 MHz to 100 MHz. The synthesizer can also be supplied with a built-in fixed frequency local oscillator in the range of 600 MHz to 2500 MHz for dual conversion applications.

Frequency selection is controlled via a simple 3



wire serial TTL interface. Parallel or custom interfaces are also available. The EEPROM internal to the unit can be programmed to save any desired start up frequency, eliminating the need for external frequency control in fixed frequency applications.

The XS provides this combination of performance features in a 12 cubic inch module - a fraction of the size of previous comparable synthesizers.

Herley-CTI can also custom configure the XS for particular system requirements as well as military requirements. Contact the factory to discuss the specific details of your particular application and requirements.

Typical Performance Specifications

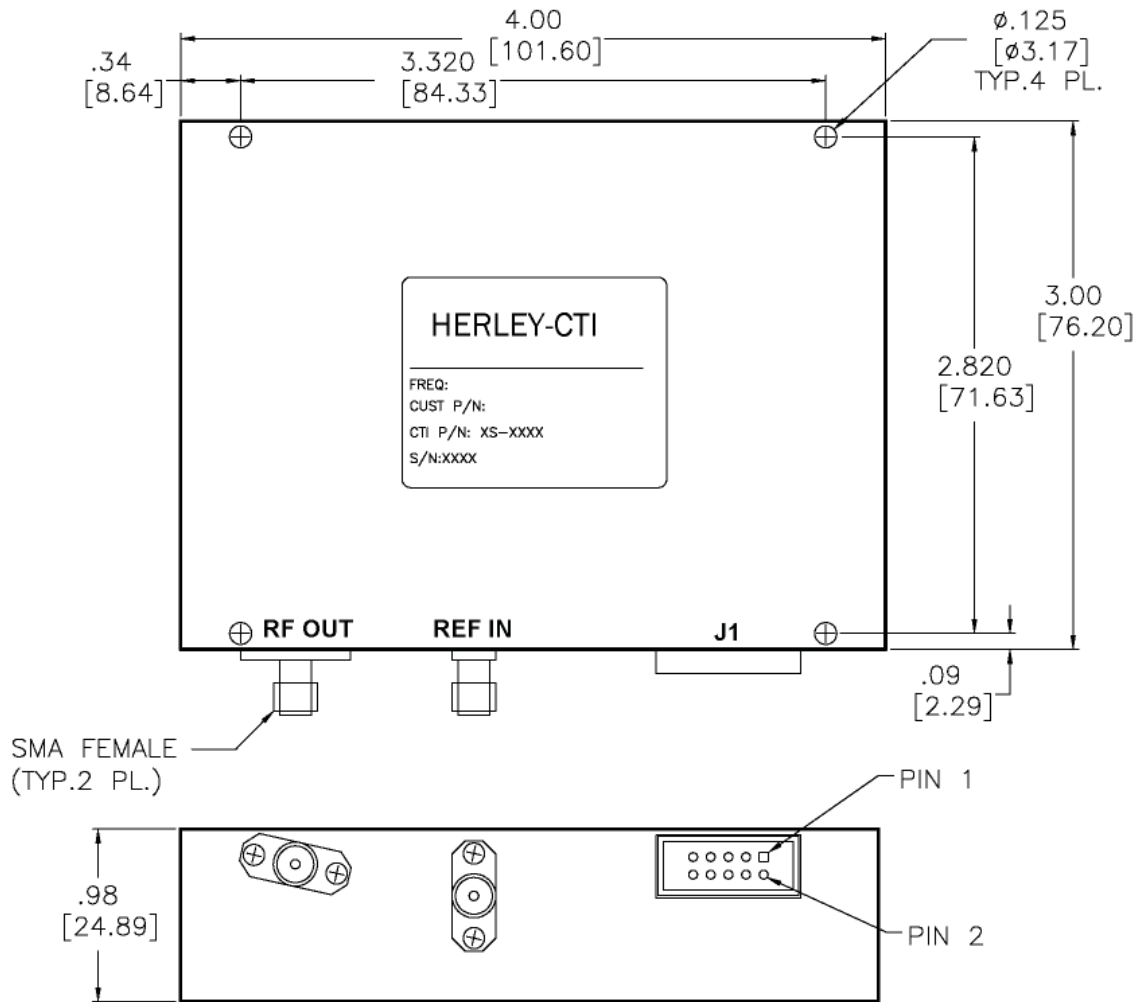
Frequency Range	500 MHz to 14 GHz
Custom Bandwidths	Up to 30%, consult factory
Step Size	from 1 Hz
Switching Speed	<60 milliseconds
Output Power	+13 dBm to +17 dBm
Supply Voltage	+5.25 Vdc +/- 0.2 volts and +15 Vdc +/- 0.5 volts
Spurious	<-70 dBc for offsets >1.5 kHz typical
Harmonics	<-20 dBc
Alarm	TTL Hi - Locked
External Reference	10 MHz @ +3 dBm standard; other references optional
Frequency Accuracy	Same as reference +/- 10 ⁻¹⁰
Frequency Control	3-wire serial TTL binary; Enable/Clock/Data Re-programmable power-up frequency using EEPROM Optional parallel or custom interfaces available. Consult factory
Optional Fixed Frequency IFLO	600 MHz to 2500 MHz @ up to +14 dBm
Operating Temperature	-10° C to +65° C standard, consult factory for extended ranges
Connectors	
RF out / Ref In / IFLO out connectors	SMA-F
Frequency control, Alarm, Supply Voltage	0.1" dual row protected header (3M25XX)

Typical Phase Noise Performance

Frequency Offset from Carrier	Output Frequency 1.5 to 2.0 GHz	Output Frequency 4.4 to 6.0 GHz	Output Frequency 8.6 to 11.6 GHz
100 Hz	-89 dBc/Hz	-79 dBc/Hz	-73 dBc/Hz
1 kHz	-111 dBc/Hz	-101 dBc/Hz	-95 dBc/Hz
10 kHz	-115 dBc/Hz	-105 dBc/Hz	-99 dBc/Hz
100 kHz	-120 dBc/Hz	-110 dBc/Hz	-104 dBc/Hz
1 MHz	-140 dBc/Hz	-130 dBc/Hz	-124 dBc/Hz

Note: All specifications subject to change without notice.

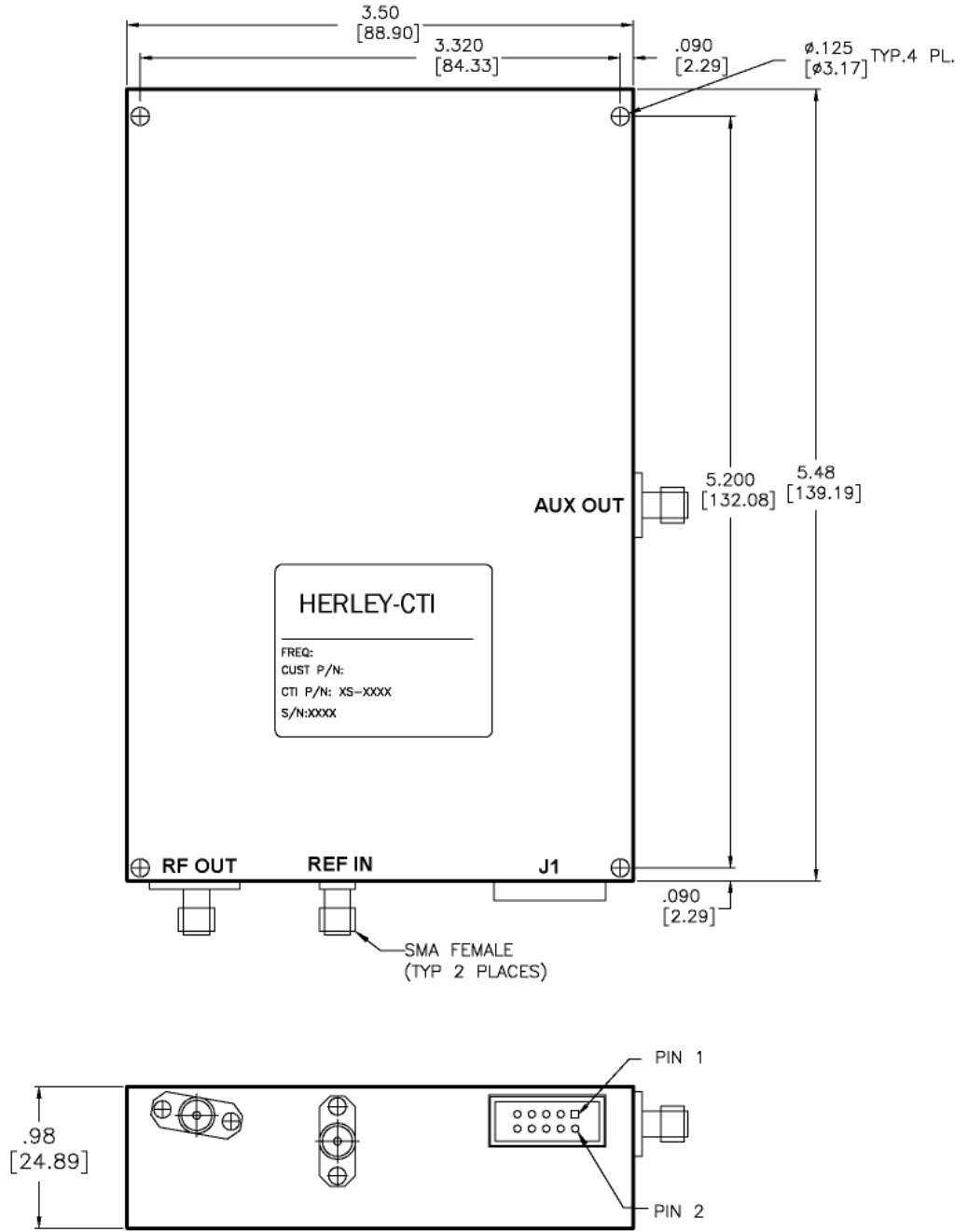
Outline Drawing - Narrow Band



Dimensions are in Inches/mm, Tol. .xx=+/-0.02, .xxx=+/-0.005

Indirect Synthesizers

Outline Drawing - Wide Band



Dimensions are in Inches/mm, Tol. .xx=+/- .02, .xxx=+/- .005