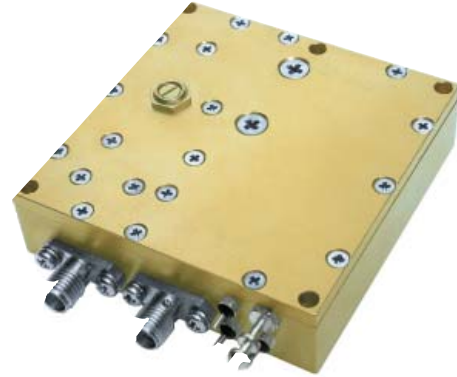


## Dielectric Resonator Oscillators

### Features

- ◆ Frequencies from 3 GHz to 45 GHz
- ◆ Wide operating temperature
- ◆ Ultra low phase noise
- ◆ Low power consumption
- ◆ Phase lockable to references from 1 to 300 MHz
- ◆ Fractional reference multiplication in a single loop
- ◆ Internal reference and dual loop models in low profile housing
- ◆ Low spurious
- ◆ Compact packages



### Options

- ◆ High stability internal references
- ◆ Hermetic seal
- ◆ Dual loop models
- ◆ Field replaceable connectors
- ◆ Flush profile tuner
- ◆ -55°C to +85°C operating temperature
- ◆ +8 Vdc operation on some models
- ◆ Pulsed output
- ◆ Dual output models

### Description

The Herley-CTI series of phase locked dielectric resonator oscillators have been designed for use in commercial and military systems where demanding performance, high reliability and cost are critical. This family of products take advantage of the small size, low phase noise and high efficiency offered by fundamental GaAs MESFET and BJT DROs when they are phase locked to an external crystal in the 1 MHz to 300 MHz range.

The single loop model when phase locked to an external 100 MHz crystal provides exceptionally low phase noise, typically -120 dBc/Hz at 10kHz offset at 10 GHz.



In addition, two reference options are available. The first option offers an integrated, high stability internal crystal oscillator in the 100 MHz range in a slim line package.

The second option offers a dual loop design, also in a slim line package. This internal crystal source is phase locked to an external frequency standard between 1 and 300 MHz using digital synthesis techniques and allows the output frequency to be phase locked to an integer or fractional multiple of the reference frequency used. Features such as ultra low phase noise, high power, small size and low cost make Herley-CTI's PDRO product line the best value on the market today.

**Typical Performance Specifications**

Frequency Range	3 GHz to 45 GHz
Output Power	+15 dBm standard, up to 1 watt optional
Power Variation	+/-2 dBm
Output Impedance	50 ohms
Load VSWR	2:1
Supply Voltage	+8 Vdc, +12 Vdc or +15 Vdc Note: +8 Vdc available only on certain models, consult factory for details
Current:	
External Reference Models	280 mA [Note: 160 mA models available, consult factory]
Internal Reference Models	350 mA steady state, 800 mA surge
Dual Loop Models	450 mA
Spurious	-80 dBc (Consult factory)
Harmonics	-20 dBc
Phase Noise	See tables for specific models
Alarm	TTL Hi - Locked
Input Frequency Range:	
External Reference Models	10 MHz to 300 MHz
Internal Reference Models	Not Applicable
Dual Loop Models	1 MHz to 100 MHz
Frequency Stability:	
External Reference & Dual Loop Models	Same as reference
Internal Reference Models	+/- 2.5 ppm standard, +/- 1 ppm optional
Operating Temperature	-40° C to +75° C -55° C to +85° C optional
Dimensions	See outline drawings
Connections:	
RF Output	SMA-F for frequencies to 26 GHz 2.99 mm for frequencies above 26 GHz
Reference Input	SMA-F
Reference Monitor	SMA-F Note: Internal reference models only
Alarm, Supply Voltage	Feed-thru
Ground	Solder Lug

Note: All specifications subject to change without notice.

## Typical Phase Noise Performance - External Reference Models

Note: Phase noise measured using 100 MHz low noise crystal reference

Frequency Offset from Carrier (Hz)	Phase Noise (dBc/Hz) 5 GHz	Phase Noise (dBc/Hz) 10 GHz	Phase Noise (dBc/Hz) 14 GHz	Phase Noise (dBc/Hz) 26 GHz	Phase Noise (dBc/Hz) 45 GHz
100	-91	-85	-82	-76	-72
1 k	-116	-110	-107	-101	-97
10 k	-126	-120	-113	-107	-103
100 k	-126	-120	-116	-110	-106
1M	-141	-135	-131	-125	-121
10 M	-165	-160	-156	-150	-145

## Typical Phase Noise Performance - Internal Reference Models

Frequency Offset from Carrier (Hz)	Phase Noise (dBc/Hz) 5 GHz	Phase Noise (dBc/Hz) 10 GHz	Phase Noise (dBc/Hz) 14 GHz	Phase Noise (dBc/Hz) 26 GHz	Phase Noise (dBc/Hz) 45 GHz
100	-80	-75	-72	-66	-61
1 k	-111	-105	-102	-96	-92
10 k	-126	-120	-113	-107	-103
100 k	-126	-120	-116	-110	-106
1M	-141	-135	-131	-125	-121
10 M	-165	-160	-156	-150	-145

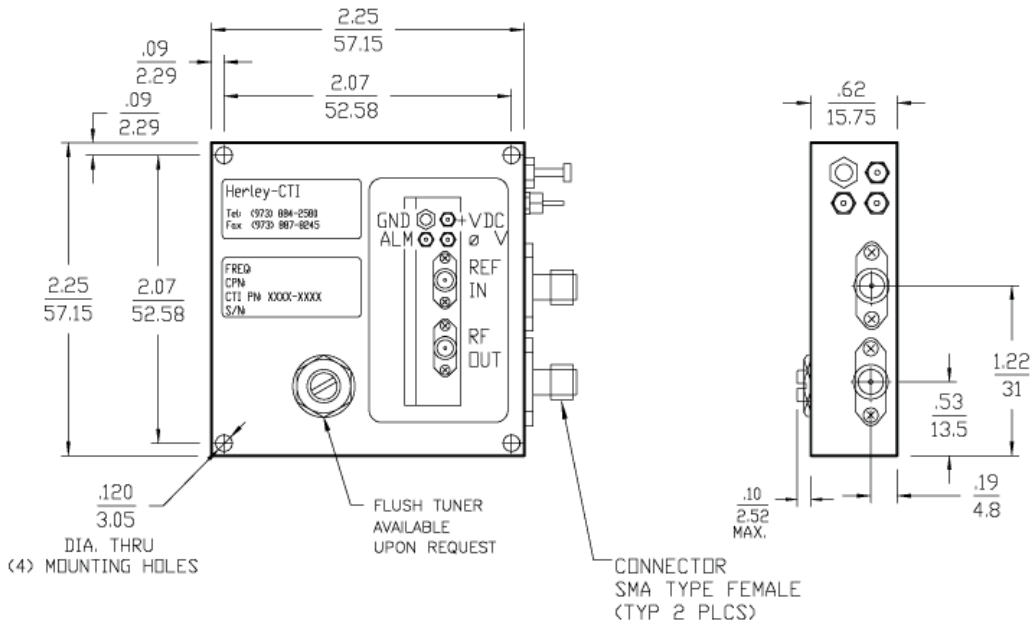
## Typical Phase Noise Performance - Dual Loop Models

Frequency Offset from Carrier (Hz)	Phase Noise (dBc/Hz) 5 GHz	Phase Noise (dBc/Hz) 10 GHz	Phase Noise (dBc/Hz) 14 GHz	Phase Noise (dBc/Hz) 26 GHz	Phase Noise (dBc/Hz) 45 GHz
100	-76	-70	-67	-61	-57
1 k	-106	-100	-97	-91	-87
10 k	-126	-120	-113	-107	-103
100 k	-126	-120	-116	-110	-106
1M	-141	-135	-131	-125	-121
10 M	-165	-160	-156	-150	-145

Note: All specifications subject to change without notice.

### Standard Outline Drawing - External Reference

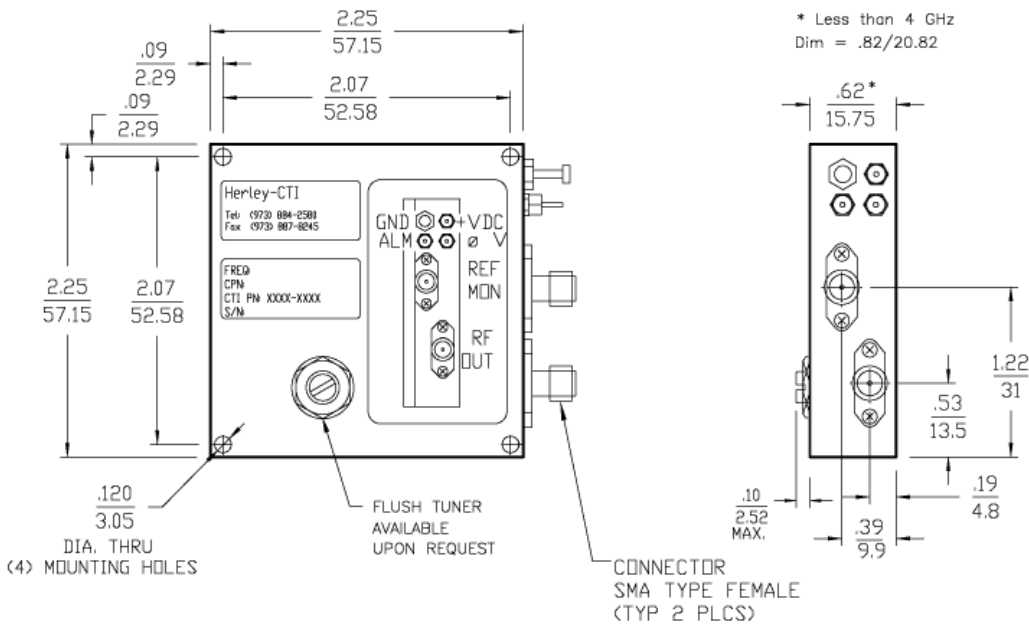
- Note: 1. Available for frequencies from 3 GHz to 18 GHz  
 2. For frequencies below 4 GHz height will be 0.82 inches / 20.82 mm



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

### Standard Outline Drawing - Internal Reference

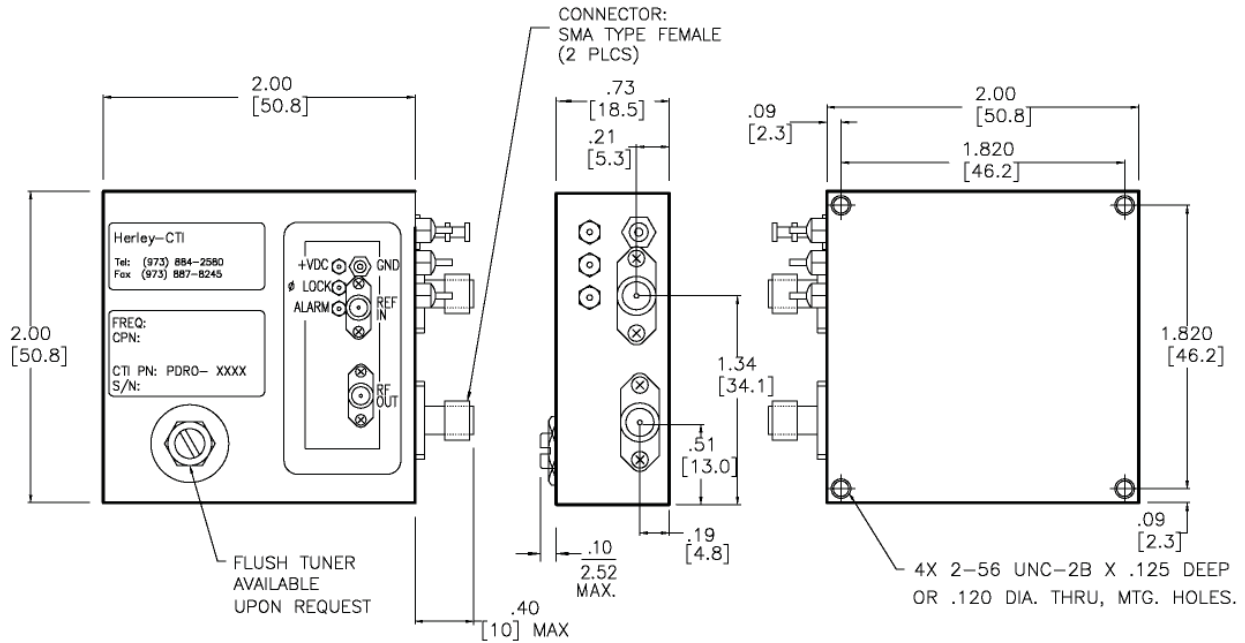
- Note: 1. Available for frequencies from 3 GHz to 18 GHz



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

## Small Outline Drawing - External Reference

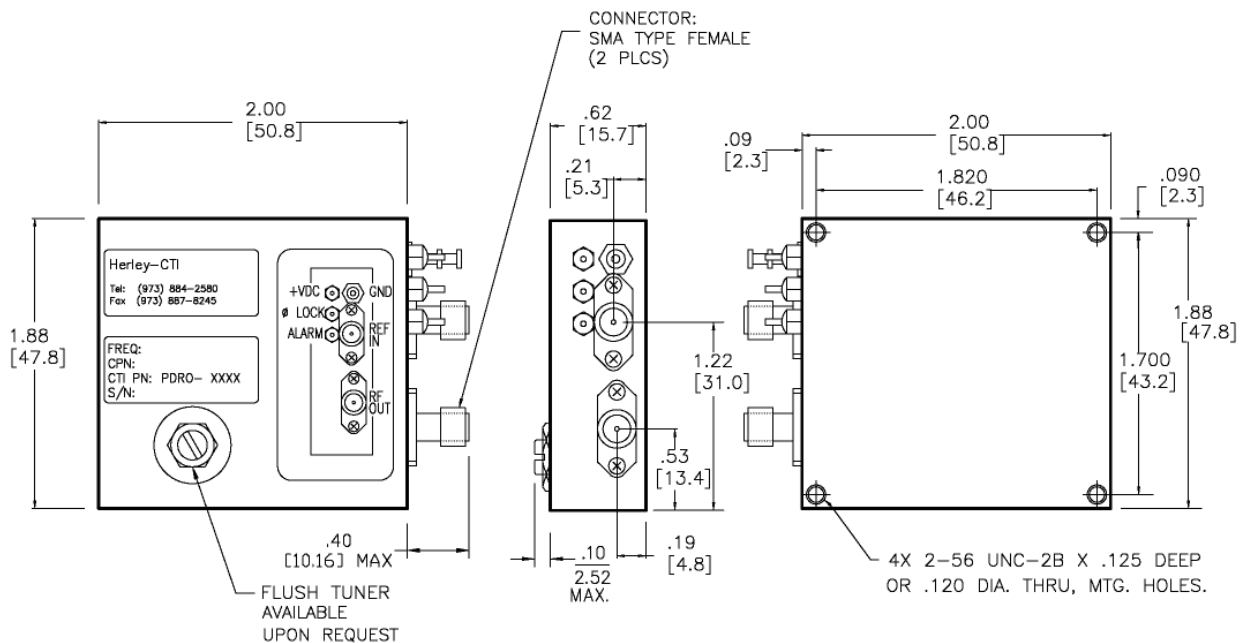
Note: Available for frequencies from 3 GHz to 8 GHz



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

## Miniature Outline Drawing - External Reference

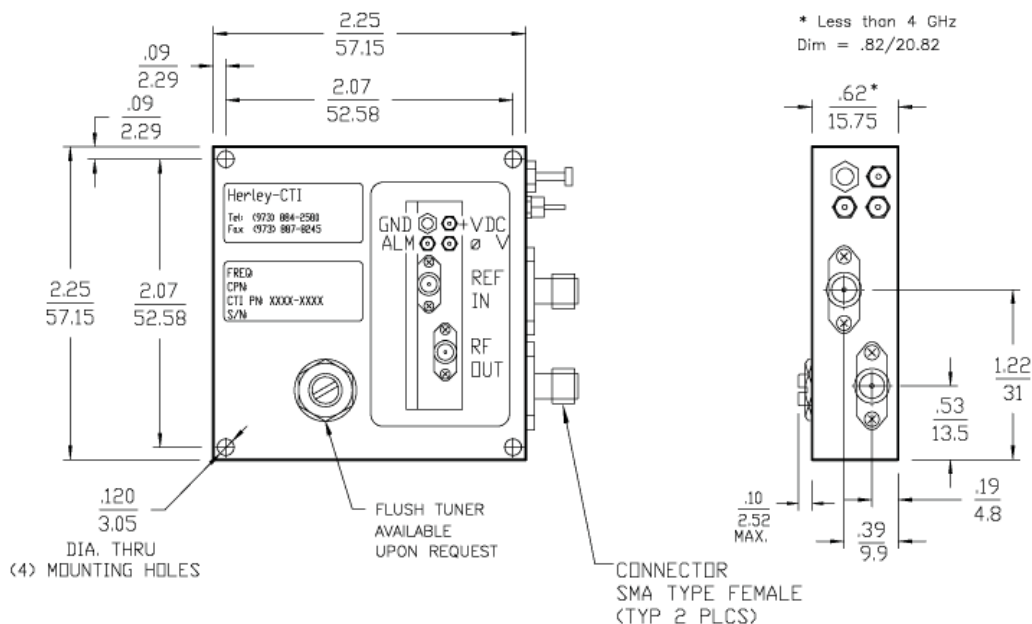
Note: Available for frequencies from 8 GHz to 18 GHz



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

### Dual Loop Outline Drawing - External Reference

- Note: 1. Available for frequencies from 3 GHz to 18 GHz  
 2. For frequencies below 4 GHz height will be 0.82 inches / 20.82 mm



### Outline Drawing for frequencies above 18 GHz to 45 GHz

- Note: Output connector will be 2.92 mm female for frequencies above 26 GHz  
 For internal reference models Ref In connector becomes Ref Mon.

