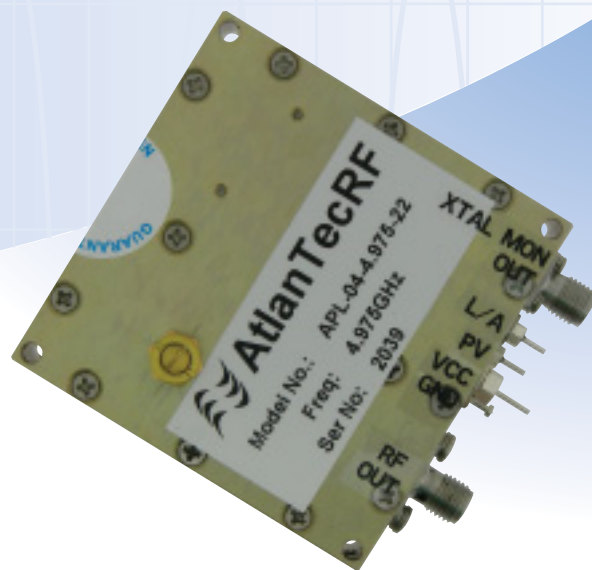


# Phase Locked Oscillators

## Internal TCXO Reference APL - 04 Series

- 300MHz to 14GHz
- +/-1ppm Stability -20 +70C
- Fundamental Frequency (CRO or DRO)
- Small Size
- Low Phase Noise
- Low Microphonics
- Low Current
- Internal Voltage Regulator



The APL - 04 series of fundamental frequency phase locked oscillators utilise coaxial resonators (CRO) to 3GHz and dielectric resonators (DRO) to 14GHz in a phase locked loop with an internal TCXO reference. Circuit design uses SMT devices including Si bipolar active devices up to 3GHz and GaAs FET active devices above 3GHz. The output contains a buffer amplifier for improved ruggedness, higher output power and a wider range of load VSWR. The PLOs also have a reference monitor output. DRO types have an external tuning screw for factory set up only.

### General Specifications (also see options)

|                               |                                |
|-------------------------------|--------------------------------|
| Output Frequency              | 300MHz to 14.0GHz              |
| Frequency Stability           | +/-1ppm max. over -20 +70C     |
| Output Power                  | +13dBm min. (see options)      |
| Output Power Stability        | +/-2dB max                     |
| Harmonics                     | -20dBc max.                    |
| Ref. Related Spurious         | -70dBc max.                    |
| Divided Ref. Related Spurious | -50dBc (300MHz to 3.0GHz)      |
| Other Spurious                | -80dBc max.                    |
| Load VSWR                     | 2.5:1 max.                     |
| Input Voltage                 | +11 to +16V d.c. (see options) |
| Input Current                 | 300mA max. (for +13dBm)        |
| Operating Temperature         | -20+70C standard               |
| Storage Temperature           | -40+85C                        |
| Lock Alarm                    | TTL high for locked            |
| RF Output Connector           | SMA Female                     |
| Ref. Monitor Connector        | SMA Female                     |

### Phase Noise (dBc/Hz) typical See Note 1

| Offset Frequency (Hz) | Output Frequency (GHz) |      |      |      |      |      |
|-----------------------|------------------------|------|------|------|------|------|
|                       | 0.6                    | 1.5  | 3.0  | 4.0  | 10.0 | 14.0 |
| 100                   | -76                    | -75  | -66  | -64  | -56  | -53  |
| 1K                    | -80                    | -78  | -76  | -95  | -90  | -85  |
| 10K                   | -115                   | -110 | -100 | -110 | -100 | -95  |
| 100K                  | -122                   | -120 | -118 | -115 | -110 | -105 |
| 1M                    | -132                   | -130 | -128 | -135 | -120 | -115 |

#### Note 1

Phase noise specifications are dependent upon the frequency and type of the internal reference. For a more detailed specification at your desired output frequency and stability, please contact the factory.

#### Options:

00 - Standard, based on 50MHz internal TCXO.  
01 - Non Standard TCXO Frequency

#### Output Power

11 - +15dBm min. up to 10GHz  
12 - +20dBm min. up to 1.5GHz

#### D.C. Supply

21 - Input Voltage +12V d.c.  
22 - Regulated +11 to +16V d.c.  
23 - +28V d.c.

#### Custom Options:

- Higher Output Frequency to 40 GHz (multiplied)
- Higher Output Power to +30dBm (amplified)
- Lower Harmonics (filtered)
- Lock Alarm - Open Collector
- Custom Sizes
- Instrument or Rack Mount Housing with Power Supply

#### Model Numbers:

Examples:

APL-04-13.050-22  
13.05GHz PLO with standard specifications

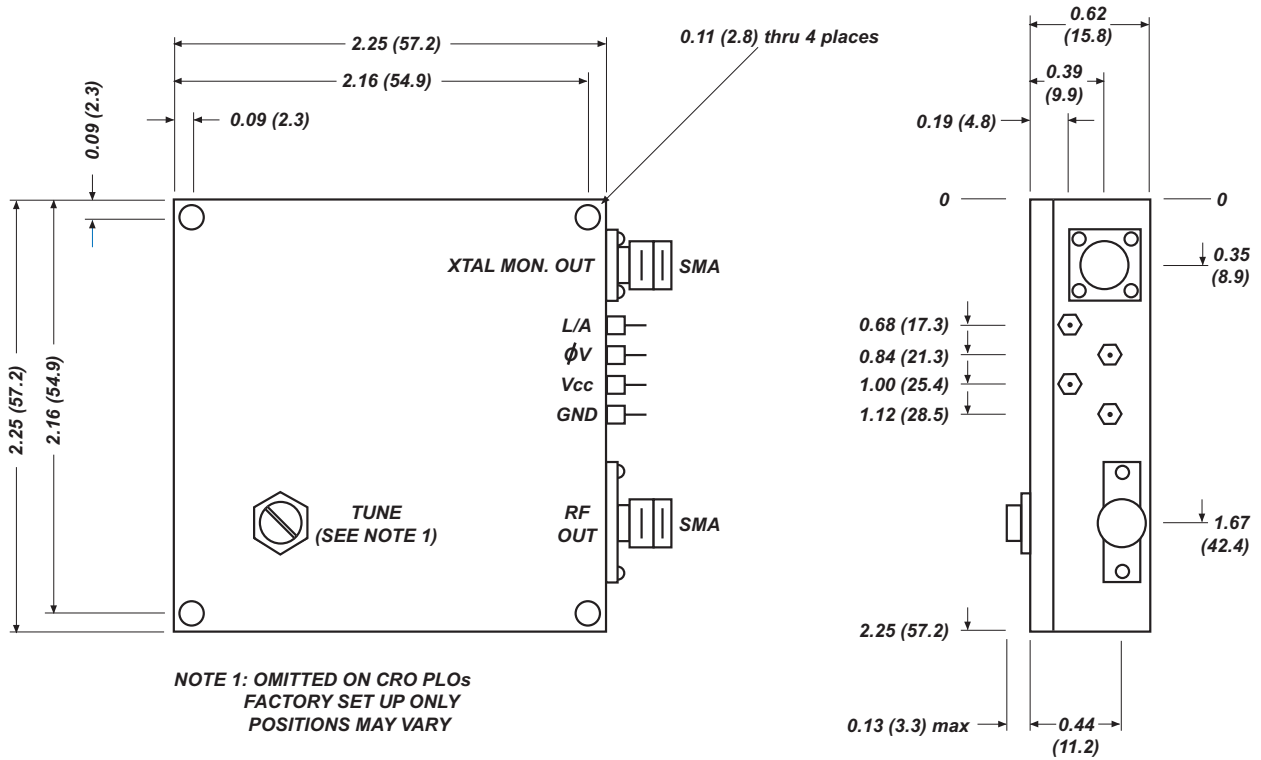
APL-04-9.750-11-23  
9.75GHz PLO +15dBm and +28V.

Outlines (Opposite)

| Frequency     | Outline |
|---------------|---------|
| 0.3 - 3.0GHz  | A       |
| 3.0 - 6.0GHz  | B       |
| 6.0 - 14.0GHz | A       |

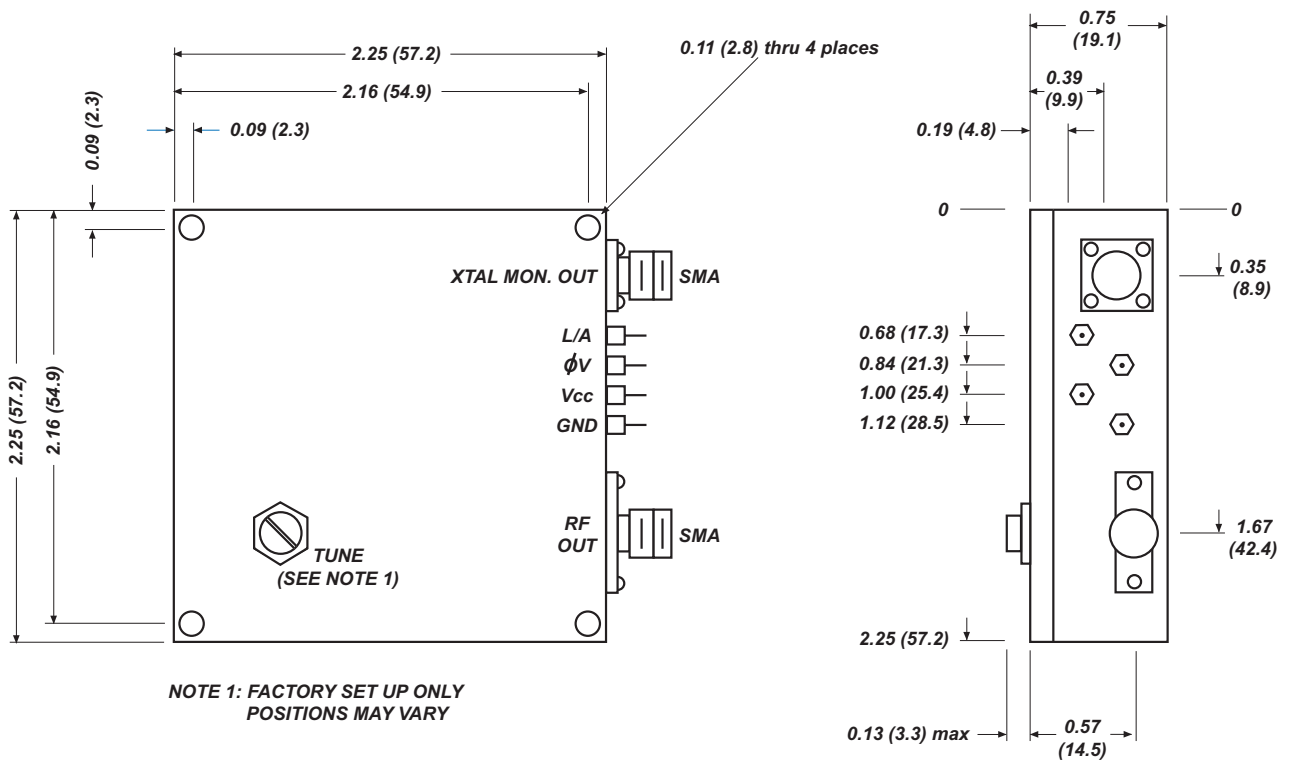
# OUTLINE A

USED ON: CRO - PLOs: 0.3 TO 3.0 GHz  
DRO - PLOs: 6.0 TO 14.0 GHz



# OUTLINE B

USED ON: DRO - PLOs: 3.0 TO 6.0 GHz



All dimensions are inches (mm)

We reserve the right to change standard product specifications without notice but will be pleased to consider control drawings for quotation.