



# Internal Reference PLDRO (PLO-3000)



**PLO-3000**

## FEATURES

- \* DIELECTRIC RESONATOR
- \* INTERNAL CRYSTAL OSCILLATOR REFERENCE
- \* PHASE LOCK INDICATOR ALARM
- \* LOW PHASE NOISE
- \* MIC AND SMT FABRICATION
- \* LOW MICROPHONICS
- \* LOW POWER CONSUMPTION
- \* UP TO +25 dBm OUTPUT POWER
- \* AVAILABLE FROM 1-50 GHz
- \* OPERATING RANGE: -55°C TO +105°C

## APPLICATION

- \* SATELLITE COMMUNICATIONS
- \* CABLE TV LINKS (CATV)
- \* LOCAL AREA NETWORKS (LAN)
- \* GLOBAL POSITIONING SYSTEMS (GPS)
- \* TEST EQUIPMENT
- \* POINT TO POINT
- \* UP/DOWN CONVERTERS
- \* TRANSMITTER & RECEIVERS
- \* DIGITAL RADIOS
- \* MISSILE GUIDANCE
- \* SPACE, MILITARY, COMMERCIAL

## DESCRIPTION

**PLO-3000 Series** Phase Locked Dielectric Resonator Oscillator (PLDRO) utilizes state of the art MIC to provide highly stable, reliable and efficient signal source at microwave frequencies up to 50 GHz. The low profile and rugged construction provide excellent durability against harsh environmental conditions.

**PLO-3000** oscillator is designed using FET or BJT amplifier with series feed back at source and Dielectric Resonator at the gate. High gain, low-noise FETs/BJTs are biased positively or negatively at the gate to ensure minimum phase-noise. The device is carefully matched for maximum power, minimum phase-noise and Voltage Standing Wave Ratio (VSWR). The oscillator is matched for maximum temperature stability and optimum negative resistance.

**PLO-3000** oscillator is buffered by cascaded low-noise driver and power amplifiers for minimum load pulling, maximum isolation and power. FET/BJT devices are directly attached to gold plated Kovar carriers to minimize shear effect and maximize heat sinking. Kovar carriers are mounted to the chassis to provide an efficient thermal junction and a stable structure for reduction of microphonics. To ensure oscillator stability over the full temperature range, the tuning elements are precisely designed and positioned to compensate for temperature drift by a factor of three.

**PLO-3000** series proprietary phase lock loop and crystal reference circuitry uses Surface Mount Technology. The reference frequency is multiplied and sampled to output frequency. Produced error voltage due to frequency drift is sensed by a Wein-Bridge Oscillator to provide the necessary sweep voltage to an ultra H-Q tuning varactor diode for the purpose of compensation and phase locking. The unique construction of phase lock loop sub-assembly provides excellent temperature stability and minimum solder joints for maximum reliability.

**PLO-3000** series is internally voltage regulated to avoid reverse bias, frequency pushing, bias modulation and voltage transients. A phase lock indicator alarm of TTL type is provided as a feature. The PLO-3000 series internally referenced locked and factory tuned to specified frequency. Mechanical frequency adjustment is provided for optimum phase voltage setting. Buffered Reference Monitor and adjustment are standard features of this Hi-Tech oscillator. The unit may be externally locked to a reference.

# SPECIFICATIONS

Model Number	PLO-3000-XX.XX (Where XX.XX is freq in GHz)
Single Frequency	1.00 to 50.00 GHz
Mechanical Tuning Range	100 MHz
Power Output	+13 dBm, up to + 25 dBm Optional
Load VSWR, Maximum	2.0: 1.0
Power Requirements	+12, +15 VDC, 300 mA
Reference Frequency	50 to 150 MHz
Frequency Stability	+/- 5 PPM @ 0°C to 50 °C, +/- .5ppm
Phase Noise	Optional See Phase Noise Envelope (Fig. A)
Spurious	-80 dBc
Harmonics	-25 dBc
Alarm	TTL
Operating Temperature	0°C to 50°C Standard; -55°C to 105°C Optional
Storage Temperature	-55°C to 125°C
Connectors	SMA-Female or 2.92 mm-Female
Size	2.25" x 2.25" 1.25"
Finish	Nickel

## PHASE NOISE ENVELOPE

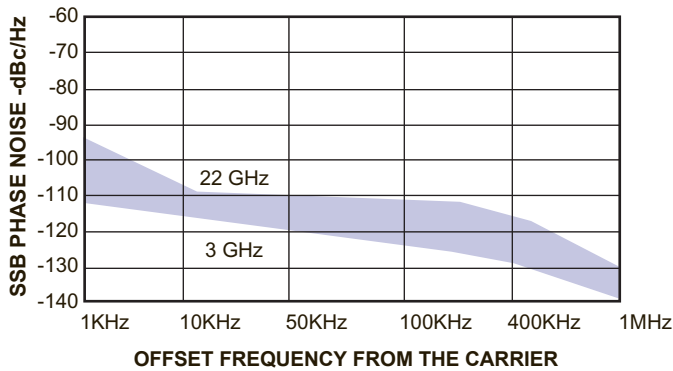
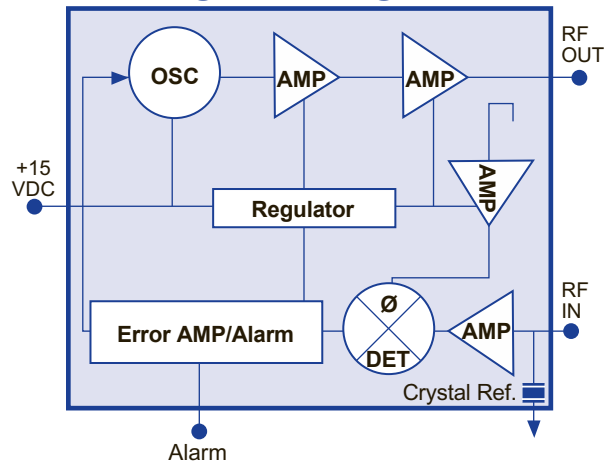
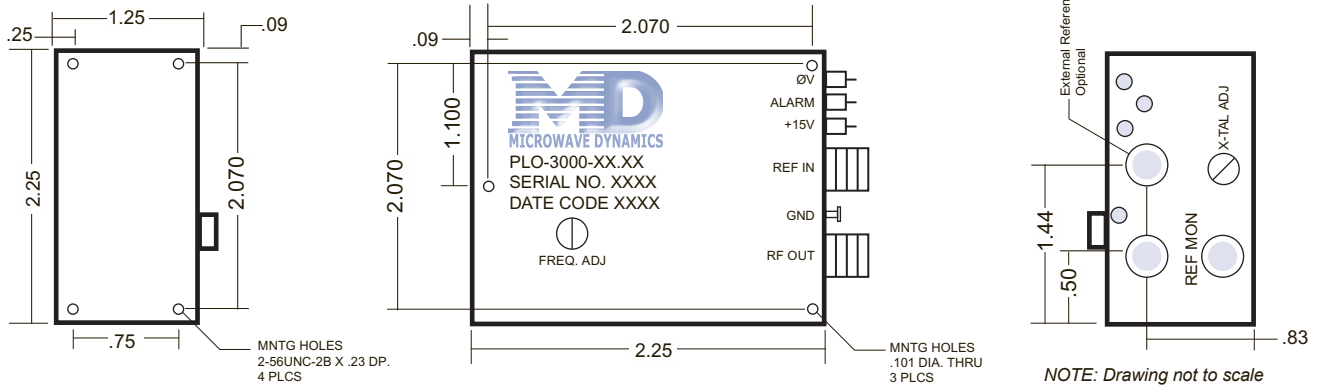


FIGURE A

## BLOCK DIAGRAM



## OUTLINE DRAWING



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