



ADVANCED NOISE TECHNOLOGY

LAD900 SERIES

Ultra Low Noise Multiplier

The LAD900 Series of multipliers are designed to provide Ultra Low Noise, low spurious, multiplication of extremely low noise carrier signals. A carrier having a noise floor of -184 dBc can be multiplied X16 with 20 Log (N) + 0.4 dB of additive noise. The input to output conversion gain is 0 to +2 dB. Additionally, a X2 and X4 are also achievable multiplication factors with the same 20 Log (N) + 0.4 dB. TTL compatible switching and fault monitoring are also available. Multiplication Bandwidths up to 12% can be achieved.

SPECIFICATIONS:

Input

Input Frequency Range: 50 MHz to 450 MHz
Maximum Bandwidth: 10% (Absolute)
Input Power Range: +19 to +24 dBm
Input Return Loss: -14 dB min

Output

Output Frequency: X16 (X2, X4 or X8 opt)
Output Power: +23 dBm
Input Return Loss: 14 dB min

Operating Temperature Range

-40° C to +75° C

Spurious Outputs

Harmonics: -40 dBc
-100 dBc, 10 MHz to 800 MHz Offset
-80 dBc, 800 MHz to 1500 MHz Offset

AM to PM Conversion

-60 dBc AM modulation = -60 dBc + 20 log (N)

Fault Monitor (Option)

(nominal output power level)
350 mV ±100 mV
< 200 mV= low output power

Output Enable (Option)

Logic 1: 2.5 to 5.0 VDC = Disabled
Logic 0: 0 to 0.8 VDC= Enabled
Switching Speed: 2 µs max

Residual Noise Performance (dBc/Hz)

Operating Power Requirements

+15 VDC @ 650 mA typical (X16)
(TTL switch Option, -14 VDC @ 25 mA)

Offset Frequency (Hz)	X16 Multiplier Output	
	PM	AM
100	-132	-140
400	-139	-146
5 KHz	-152	-156
10 KHz	-154	-158
100 KHz	-156	-161
1 MHz	-157	-161
10 MHz	-157	-161

Standard Unit Size

3.6" Width X 7.3" Length X 1.25" Height

Please contact the factory with your custom requirements.

ULTRA LOW NOISE MULTIPLIER PRODUCTS ARE AVAILABLE THROUGH 26 GHz

See the back of this page for the unit outline drawing and additional information.

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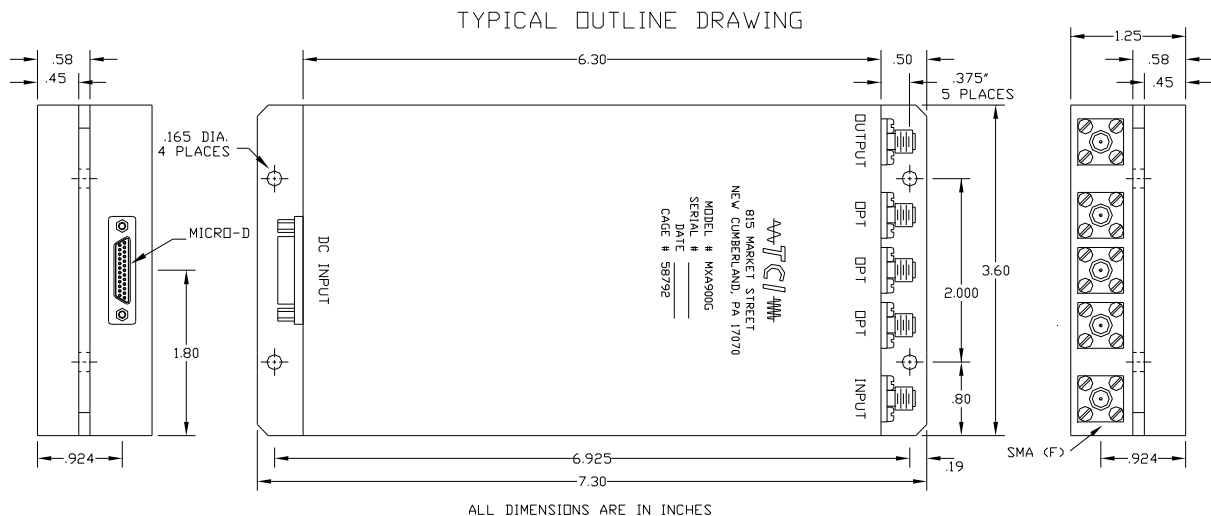
LAD900 SERIES

The LAD900 is one model of the LAD series of units. The complete LAD product Series is capable of tracking a 50 to 120 MHz noise floor of -185 dBc and multiplying it to 26 GHz. In addition, the frequency Bandwidth can be as high as 10% with better than -100 dBc Spurious Rejection. In modeling the component products, AM to PM Noise, AM Turn Down, Modulation Linearity and Power Stability over Temperature are taken into account. Our design and manufacturing process for these units is capable of providing the lowest residual phase noise and AM noise in the industry. We initially started manufacturing these products in 1996 and have produced in excess of one thousand units within the series.

The multiplication elements available, which yield $20 \text{ Log} (N)$ multiplicative noise and less than .4 dB of additive noise, are as follows.

VHF Input	X2, X4, X5, X8
L-Band and above	X2, X3, X4, X5, X6, X7, X8, X9
	AND ANY COMBINATION OF THE ABOVE

LAD900 OUTLINE DRAWING



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