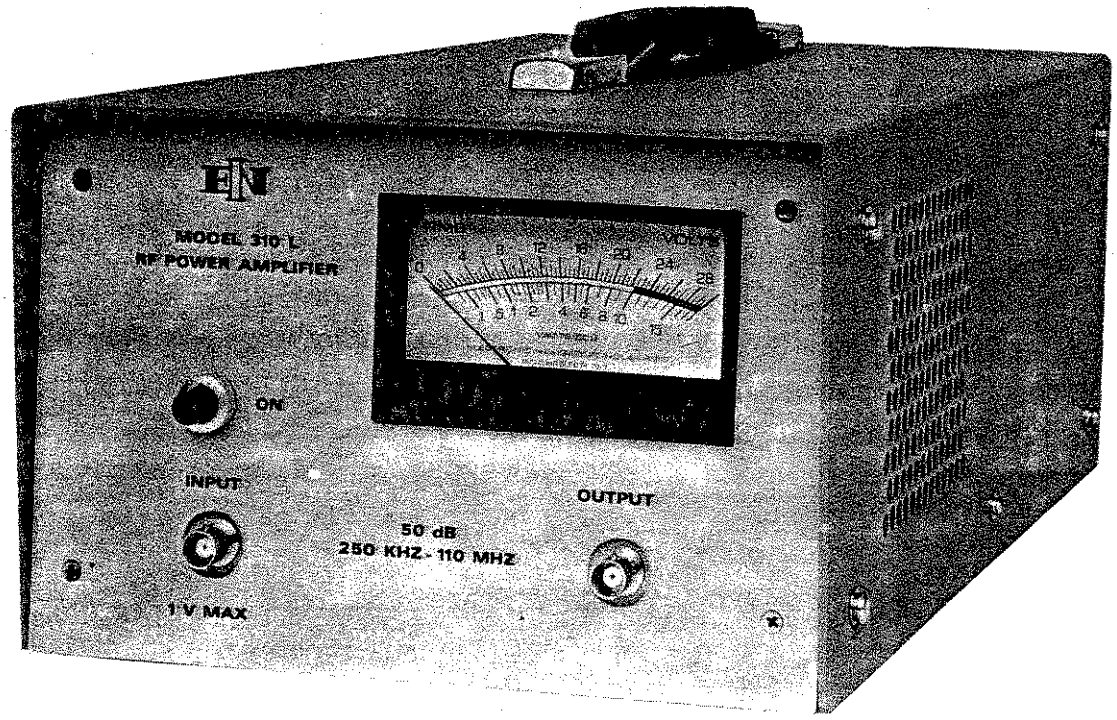
ENI®

310L
BROADBAND
RF POWER AMPLIFIER

PRODUCT
MANUAL



MODEL 310L

BROADBAND RF POWER AMPLIFIER

CHAPTER 1
GENERAL INFOMATION

1.1 INTRODUCTION

The Model 310L is a broadband solid state power amplifier covering the frequency range of 250 KHz to 110 MHz.

Over 10 watts of RF power can be produced at the output, with low harmonic and intermodulation distortion. A highly linear Class A design, the Model 310L will amplify inputs of AM,FM, SSB, pulse and other complex modulations, with minimum distortion. The 50 dB gain of the unit permits it to be driven to its full power output by any signal or sweep generator capable of supplying a minimum -10 dBM (.07 volts RMS) signal level into its 50 ohm input. Virtually all commercial signal and sweep generators are capable of supplying this signal.

The Model 310L operates over its entire bandwidth without tuning or other adjustments. It is capable of supplying useful power output up 150 MHz, at reduced gain.

This unit is unconditionally stable and will not oscillate for any possible combination of source and load impedances. It is protected against failure due to output load mismatch and/or overdrive. The Model 310L will withstand a +25 dB overdrive (input signal of +15 dBM) for all output load conditions including both short and open circuit loads.

Output RF voltage level, as well as power output into 50 ohms, is monitored by a front panel meter. An integral power supply permits operation directly from the AC line.

1.2 SPECIFICATIONS

Physical and electrical specifications are listed in Table 1-1.

1.3 INSTRUMENT IDENTIFICATION

Each amplifier is identified by a serial number tag on the rear panel of the unit. Both the model number and the serial number should be given in any correspondence with the company.

TABLE 1-1. SPECIFICATION

FREQUENCY COVERAGE:	250 KHz to 110 MHz without tuning.
MAXIMUM POWER OUTPUT:	10 watts CW and PEP (Peak Envelope Power) at rated distortion; higher power output at increased distortion.
INPUT SIGNALS:	Unit will accept CW, AM,FM, SSB, Wideband Sweep and other complex modulations, limited only by their bandwidth and peak input level.
GAIN:	50 dB nominal
GAIN VARIATION:	Less than ±1 dB over the entire freque range at power outputs below 2 watts. Less than ±1.5 dB for power outputs between 2 and 10 watts.
TOTAL HARMONIC DISTORTION:	All harmonics more than 25dB down at full power output, lower at reduced power output.
3RD ORDER INTERMODULATION DISTORTION:	More than 30 dB down (typical) from 0.25 - 40 MHz from 40 - 110 MHz at ful power output.
TYPICAL 3RD ORDER INTERMODULATION INTERCEPT POINT:	+49 dBM
INPUT-OUTPUT IMPEDANCE:	50 ohms
INPUT VSWR:	Less than 1.3
OUTPUT VSWR:	Less than 2.0 (typical)
NOISE FIGURE:	Less than 12 dB
STABILITY:	Unconditionally stable; unit will not oscillate for any condition of load and source impedances.
PROTECTION:	Unit will withstand a +25 dB overdrive (input signal of +15dBM) for all outpu load conditions, including short and open circuit loads.
OUTPUT METERING:	Average reading voltmeter, calibrated in RMS volts for a sine wave, with an accuracy of ±3% of full scale (0-30 volts); also calibrated in watts into 50 ohms (0-18 watts)

POWER REQUIREMENTS:	115-230 VAC ± 10% 50-60 HZ, 150 watts
OPERATING TEMPERATURE:	0° to +50° C.
SIZE:	6 x 8½ x 15 inches 15.2 x 21.6 x 38.1 CM
WEIGHT:	20 lbs 9.1 Kg
INPUT AND OUTPUT CONNECTORS:	BNC

CHAPTER 2
OPERATION

2.1 INTRODUCTION

The ENI Model 310L Amplifier will increase the RF output level of signal sources in the 250 KHz to 110 MHz range.

The input and output are connected via the front panel BNC connectors to the signal source and load respectively.

2.2 MAINS VOLTAGE SETTING

The supply voltage selection switch is located at the rear of the unit and is normally set for 115VAC operation. Before connecting the unit to the mains supply, check that the supply voltage switch is correctly set.

EXTENSIVE DAMAGE WILL RESULT IF THE AMPLIFIER IS CONNECTED TO THE WRONG SUPPLY VOLTAGE. UNDER NO CIRCUMSTANCES SHOULD THIS SWITCH BE OPERATED WHILE THE SUPPLY IS CONNECTED.

2.3 MAINS FUSE RATING

The mains fuse F1 is located on the rear panel. The replacement part number is 313004 4ASB.

2.4 RACK INSTALLATION

For standard nineteen inch rack installations, an optional rack mounting kit 310LR is available.

2.5 OPERATION

Connect the signal source to the BNC and the load to the output BNC with 50 ohm coaxial leads.

When the Model 310L is connected to a 50 ohm load, the CW power output of the unit may be read directly from the meter scale.

The input signal should be increased gradually while observing the output voltage on the output RF voltmeter. Input signal voltage should never be allowed to exceed 1 volt RMS (1.4volts peak).

The red portion of the meter indicates that the amplifier is no longer operating in its most linear region and increased distortion may result. This occurs at 10 watts (PEP of CW) of RF output power into 50 ohms (31.4 volts peak).

When the amplifier is connected to an arbitrary or unknown load impedance, the following procedure will insure low distortion power output.

(1) Disconnect the output load cable from the output BNC connector of the Model 310L.

(2) If the CW output voltage is less than the red line value (22.5 volts RMS), the unit is operating at low distortion regardless of the load impedance.

(3) Reconnect the output of the amplifier to the load.

If the output of the amplifier is monitored by a high frequency oscilloscope (or spectrum analyzer), the input signal may be increased until the point of maximum undistorted power output is observed.