

# Keysight Technologies

## 11930A/B Power Limiters

Technical Overview



# Introduction

## dc to 6 GHz, 5 MHz to 6 GHz

- high power protection
- exceptional return loss

### Increased power protection

The Keysight Technologies, Inc. 11930A/B limiters provide input protection for a variety of RF and microwave instrumentation. For example, the input circuits of network analyzers may be protected for inputs up to 6 watts peak or 3 watts average power using the 11930A. The 11930B provides the same protection to spectrum analyzers and sources. At even greater power levels, failure mode for the limiter is either an open circuit or a short circuit to ground, thereby protecting the instrument from damage.

### Excellent accuracy

The 11930A is furnished with an APC-7 connector and the 11930B has a type-N connector. These limiters offer low insertion loss and linear operation at low input levels while providing protection against transients or short duration overloads. In Figure 1, typical data for output power versus input power is shown for the 11930A/B. Figures 2 and 3 illustrate typical insertion loss and return loss.

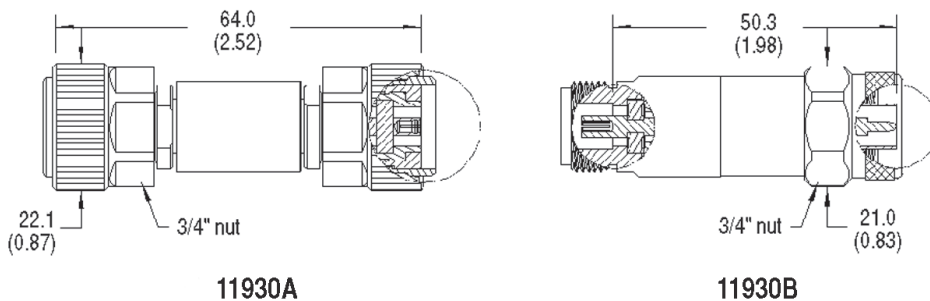
## Specifications

Specifications describe the instrument's warranted performance over the temperature range 0 to 55 °C (except where noted). Supplemental Characteristics are intended to provide information useful in applying the instrument by giving typical but nonwarranted performance parameters. These are denoted as "typical," "nominal," or "approximate."

Power limiters	11930A	11930B
Frequency range	DC to 6 GHz	5 MHz to 6.5 GHz <sup>1</sup>
Frequency response		
Insertion loss	1.0 dB dc to 3 GHz 1.5 dB 3 to 6 GHz	1.0 dB 16 MHz to 3 GHz <sup>2</sup> 1.5 dB 3 to 6.5 GHz
Return loss	22 dB 0.030 MHz to 3 GHz 20 dB 3 to 6 GHz	21 dB 16 MHz to 3 GHz <sup>2</sup> 17 dB 3 to 6.5 GHz
Impedance	50 Ω nominal	50 Ω nominal
Maximum DC current	350 mA	N/A
Maximum input power levels		
Continuous	3 watts	3 watts
Pulse	6 watts	6 watts
Pulse width	30 ms	30 ms
Duty cycle	10%	10%
Limiting threshold	30 dBm typical	30 dBm typical
Maximum DC volt	30 V	30 V

## Mechanical information

	11930A	11930B
Dimensions mm (inches) <sup>3</sup>	64 (2.52)	50.3 (1.98)
Input/output connector	APC-7	Type-N
Net weight kg (lb) 0.40 (0.18)	0.40 (0.18)	0.53 (0.24)



- Note: Dimensions are in millimeters (inches).
- 6–6.5 GHz typical
- 5–16 MHz insertion and return loss limited by internal 1500 pfarads blocking cap
- length between mating surfaces of outer conductors

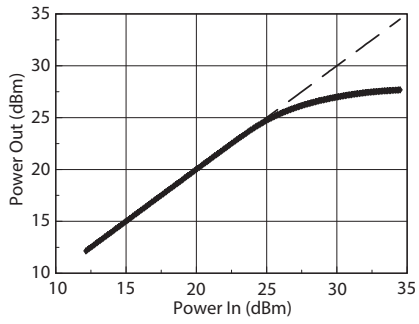


Figure 1. 11930A/B typical output power versus input power

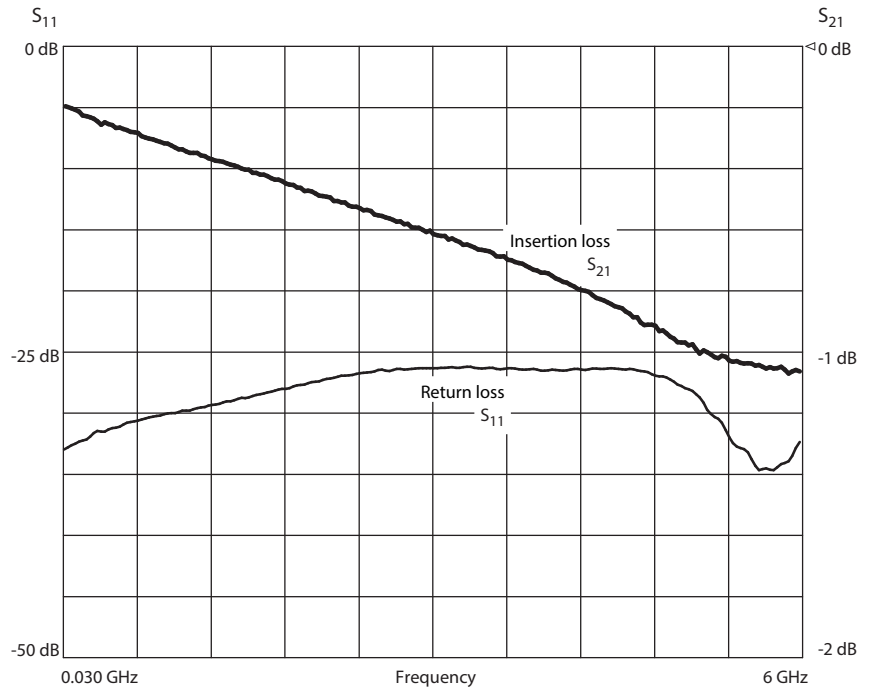


Figure 2. 11930A typical insertion and return loss versus frequency

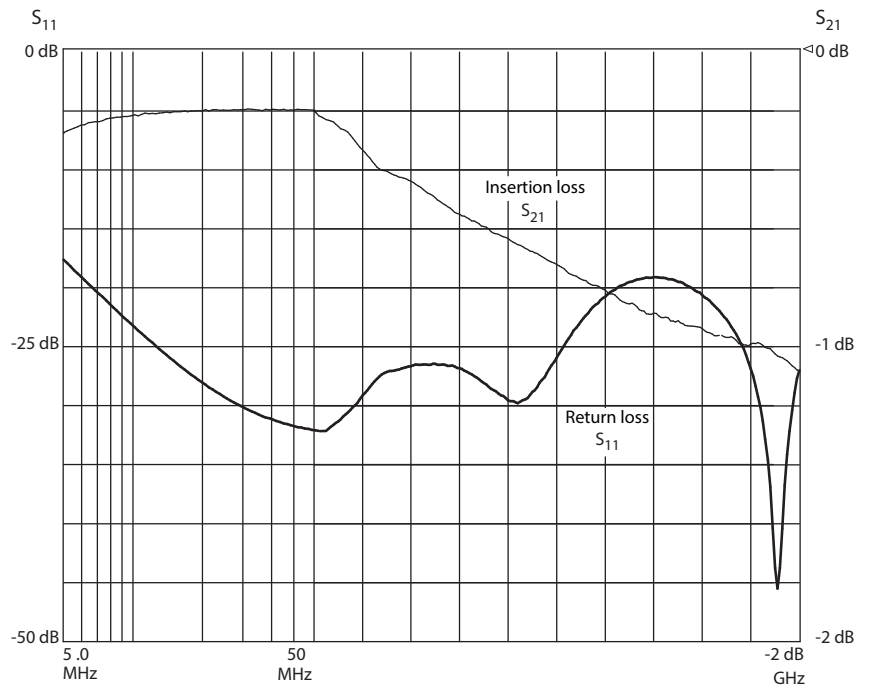
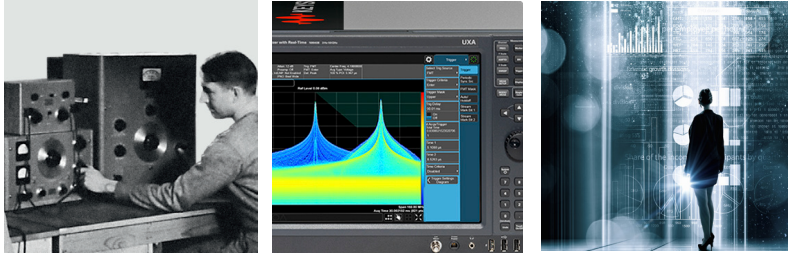


Figure 3. 11930B typical insertion and return loss versus frequency

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