

Technical Information

GENERAL DESCRIPTION

LRS Model 234 contains two high-speed pulse amplifiers with fixed gains of 10X. The amplifiers are designed for use with either linear or logic signals of either polarity and have fast 2 ns rise and fall times for compatibility with high-speed signal sources. Each channel of the 234 is completely independent of the other and does not interact in any way. The input to the amplifier is switch-selectable between a high impedance and 50 Ω . Two paralleled BNC connectors are provided to make the input signal available for further use in a 50 Ω system. The Model 234 circuit is completely direct-coupled to provide freedom from any baseline shift at high rates. Both input and output DC levels are at ground potential for easy interconnection with other direct-coupled circuits. Separate capacitively-coupled outputs are provided on each channel for use where DC blocking is desired. Input protection against spurious transient overloads and damage to the amplifier is afforded by a special built-in diode limiter which provides protection and a constant matched 50 Ω impedance to ± 50 volts. The direct-coupled design, unique in a commercial amplifier of this gain bandwidth (2000 MHz) affords the rapid overload recovery, stable baseline, and general freedom from the rate effects that characterize the performance of this amplifier. Excellent linearity and stability are achieved through heavy feedback. The amplifiers are packaged in a single-width Nuclear Instrument Module (NIM), which conforms to the standards set forth in AEC Report TID-20893.

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SPECIFICATIONS

Input Characteristics:

Impedance:	1 kilohm, or 50 Ω , switch-selected.
Input Protection:	Withstands pulse inputs to ± 50 V without damage; DC limited by 250 mW attenuator resistors.
Reflection Coefficient:	Less than 5% at input amplitudes up to ± 50 V.
Quiescent Voltage:	Ground.

Output Characteristics:

Impedance:	Approximately 6 Ω .
Maximum Amplitude:	± 2 volts.
Overshoot:	Less than 10%; Less than 5% with 1 ns input risetime. Decays in approximately 3 ns.
Quiescent Voltage:	Ground, adjustable with front-panel potentiometer.

General:

Gain:	Fixed gain of 10, non-inverting. Long term stability $\pm 1\%$. Gain tolerance $\pm 5\%$. Temperature dependence approximately 0.1%/°C.
Linearity:	2% integral.

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Risetime:	1.6 to 2.0 ns, 10% to 90%. Variation with amplitude approximately 5%.
Delay:	In linear range, 4.0 ns, const. (3.0 ns circuit delay, 1.0 ns internal cabling delay). Slewing approximately 0.5 ns at 10-fold overload, 1.0 ns at 30-fold overload, and 1.2 ns at 60-fold overload.
Overload Recovery:	Less than 2 ns for 20-fold overload.
Noise:	Less than 50 microvolts rms, referred to input, total.
Bandwidth:	Direct-coupled, 0 to 200 MHz; AC-coupled, 30 KC to 200 MHz.
Power Requirements:	+24 V at 50 mA; +12 V at 200 mA; -24 V at 150 mA; -12 V at 100 mA.
Packaging:	AEC #1 module.
Weight:	Module, approximately 1 lb.