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Electronic Systems Engineering

128L Dual lin oct fan-out

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GENERAL DESCRIPTION

The LRS Model 128L is a high-performance, economical, linear fan-out unit suitable for use with either logic or photomultiplier pulses. It offers two independent widebandwidth channels, each having unity gain and each having one input and eight isolated identical outputs. These two channels may be combined at their inputs with a front-panel switch to provide a single 16-output channel. The Model 128L utilizes a direct-coupled, feedback-stabilized circuit design that provides excellent linearity, long-term stability, and uniformity of gain and pulse shape at all outputs. The speed of the unit is adequate for most common photomultiplier pulses and logic signals, and there are no duty cycle restrictions or rate effects.

Both input and output DC levels are at ground potential for easy interconnection with other direct-coupled circuits. A special built-in diode limiter circuit provides both input protection against fast transients and a constant, matched 50 Ohm input impedance to +/- 100 volts.

The LRS Model 128L is packaged in an AEC/NIM (Report TID-20893), RF-shielded, #1 width module and utilizes Lemo-type connectors.



SPECIFICATIONS

INPUT CHARACTERISTICS

Number of Inputs:	One per channel, direct-coupled.
Impedance:	50 Ohm, constant to +/- 100 volts.
Input Protection:	Inputs protected against 10 μ s transient overloads up to +/- 100 volts. DC overload characteristics are determined by the 500 mW dissipation limit of the 50 Ohm termination resistor.
Polarity:	Negative.
Reflection Coefficient:	Less than 7% for inputs of 2 ns risetime (at input amplitudes to 100 volts).

OUTPUT CHARACTERISTICS

Number of Outputs:	8; direct-coupled.
Maximum Amplitude:	Negative: -1.6 volts into 50 Ohm; -3 volts into open circuit. Positive: + 100 mV into 50 Ohm; + 150 mV into open circuit.
Risetime (10% to 90%):	< 1.9 ns (< 2.4 ns with 8 outputs terminated).
Overshoot:	< 10%.
Falltime (90% to 10%):	< 3.3 ns (< 3.6 ns with 8 outputs terminated).
Duty Cycle Limitations:	None.
Gain:	Input to any output: 1.0 +/- 3% into 50ohm load, 2.0 +/- 3% into high impedance. Maximum gain deviation, 1 load to 8 loads, +/- 4%. On "Single 16" operation, maximum gain deviation between 1 load to 16 loads, 8%. Gain uniformity between outputs on a single channel, +/- 1 %.
Temperature Coefficient:	Better than 0.5 mV/°C.
Voltage Coefficient:	< 1.20%/ % variation in - 12 V supply, and < 0.4%/ % variation in + 12 V supply.
Propagation Delay:	< 3 ns.
Non-Linearity:	< 1 % over linear operating range of 0 to - 1.2 volts.

*All measurements made with four outputs terminated in 50ohm unless otherwise stated.

GENERAL

Crosstalk:	< 0.5% at output of Channel B when a -5 volt, 50 ns signal is applied to the input of Channel A in "Dual 8" operation.
Input Mixing:	A front-panel switch combines the inputs of the two channels to provide a single 16-fold fan-out channel.
Packaging:	RF-shielded AEC/NIM #1 module, Lemo-type connectors; conforming to AEC Report TID-20893.
Current Requirements:	+12 V at 108 mA; -12 V at 66 mA; -24 V at 44 mA.

For assistance, contact [Help Desk, helpdesk@fnal.gov](mailto:helpdesk@fnal.gov)
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