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LNA10 Oscilloscope Pre-Amplifier

A useful pre-amplifier to display sub-microvolt signals on oscilloscopes, which typically go down to 1mV/div on the vertical axis. Most oscilloscopes are designed to display high-frequency (fast) events that may intrinsically have noise of a millivolt or more. However, low-frequency signals have much less intrinsic noise, so a low-noise pre-amplifier and a bandwidth-limiting filter are essential for displaying small signals at low frequency.



Features:

- True differential input and single-pole, analog low-pass filter output, tunable from 1Hz to 1MHz. This feature reduces the bandwidth as needed.
- Selectable DC/AC coupled input.
- Inputs protected to +/- 5KV static and +/-30V unlimited current transients, with respect to case ground.
- Output impedance is 470Ω, and input impedance is 500kΩ, with impedance between the inputs at 1MΩ.
- Selectable gains are 10x, 100x, and 1000x (true differential, with CMRR > 90dB). Positive and Negative single-ended inputs can be selected, as well as reference ground. Gain accuracy is +/-1%.
- A +/-1mV offset adjustment is present at the input.
- A BNC output is intended to be connected to a single oscilloscope channel, or to another voltage-reading device (data logger, voltmeter, etc.)