

Many applications of the photoelastic modulator require computation of the ratio of V_{AC}/V_{DC} : the AC voltage component of the signal (as detected by a lock-in amplifier) compared to the DC or average voltage component. This computation is required for applications such as linear and circular dichroism and the addition of this calculation can be a significant design improvement for linear birefringence measurements, Stokes polarimetry measurements, and many others.

To assist photoelastic modulator users with these measurements, Hinds Instruments offers a Signal Conditioning Unit (SCU-100). The SCU-100 takes a composite input signal, splits the signal into its broadband AC and low-pass DC components, amplifies these elements, then applies the amplified signals to AC and DC outputs. The voltage magnitude of these outputs can be determined using a lock-in amplifier or a digital voltmeter.



The SCU-100 is also designed to power the DET-100 family of photo detector/preamplifiers available from Hinds Instruments.

Two signal outputs are provided from the SCU-100:

1. Broadband amplified or reduced signal (voltage gain from 0.1 to 20), suitable for input to a lock-in amplifier. The AC signal output error is typically +/-2% accuracy across a frequency range of 10 kHz to 200 kHz. The recommended output load is 10K Ohms or greater.
2. Low-pass DC amplified signal (with voltage gain from 1 to 1000). The DC output error signal is typically +/-2% accuracy across a frequency range of 10 kHz to 200 kHz. The recommended output load is 10K Ohms or greater.

The unit measures 4.03 inches tall, 8.37 inches wide and 12.86 inches deep (102 mm x 213 mm x 327 mm) and is suitable for mounting in a standard 19 inch rack with a Hinds Instruments Rack Mount Option.