

TAP 123-3: Showing the equivalence of ac and dc

Apparatus required

dual beam oscilloscope

12V lamp

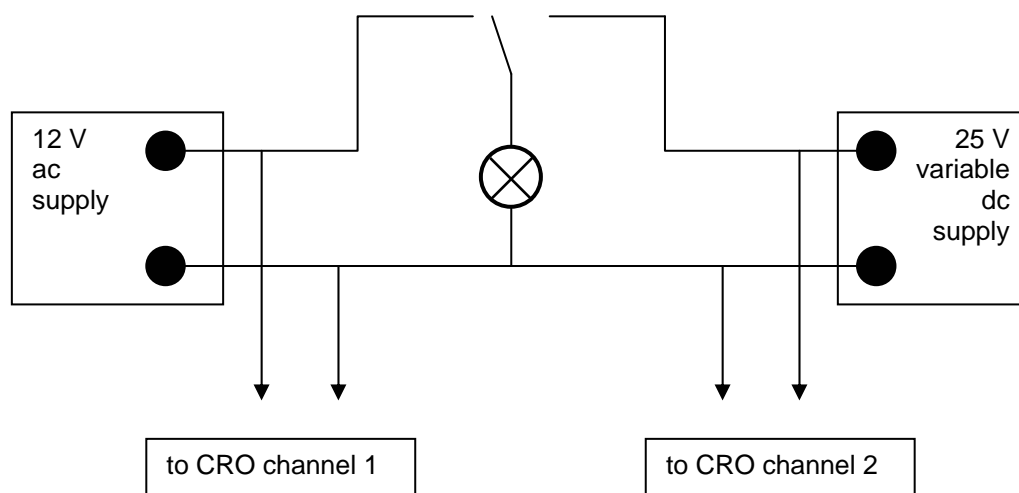
12V ac supply

continuously variable 25 V dc supply (smoothed)

multimeter

leads

Circuit



Procedure

Start with the spdt switch connecting the lamp to the ac supply so the lamp is bright.

The dc supply should be at 0 V.

In a darkened room, switch the spdt switch back and forth between the ac and dc supplies, gradually increasing the dc supply until the students agree that the lamp is equally bright from both power supplies.

Now compare the traces on the oscilloscope.

The ratio of peak ac to steady dc should be about 1.4 (i.e. $2^{0.5}$).