

Construction of a near-ideal Nanometer

R. P. Wijesundara, S. R. D. Kalingamudali and K. D. Jayasuriya

Department of Physics, University of Kelaniya, Kelaniya

A near ideal ac/dc nanometer was constructed using two operational amplifiers (op-amp) and a voltmeter. Small currents were converted into a voltage by the first op-amp and this was amplified into a larger voltage by the second op-amp. The amplified voltage was measured by the voltmeter. The constructed meter has 10 and 100 nA ranges for the dc current measurements and 100 nA range for the ac current measurements. All the ranges calibrated using a digital picoammeter.

As compared to commercially available nanoammeters with similar features this meter has higher advantages such as almost zero internal resistance and negligible operating bias current. The construction cost of the meter is very low compared to a commercial ac/dc nanoammeter.