

CHAPTER 3

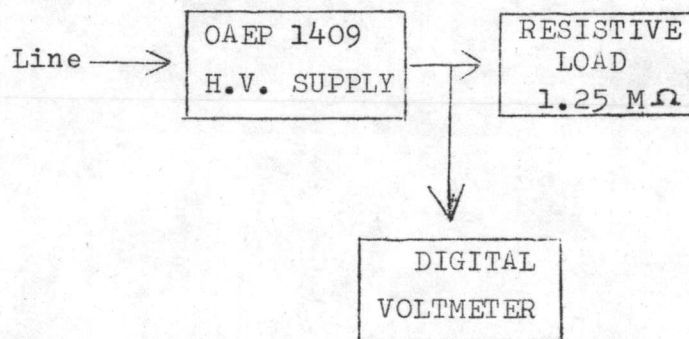
RESULT



In order to carry out the performance of the high voltage power supply, several test setups are required as follows:-

3.1 Linearity and Accuracy

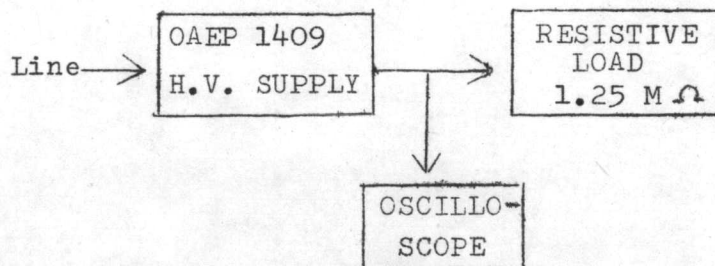
3.1.1 Test Circuit :



3.1.2 Result : From Figure 24 it is shown that the linearity and accuracy are better than $\pm 10\%$ through the output voltage range 50 to 2500 V.

3.2 Output Ripple

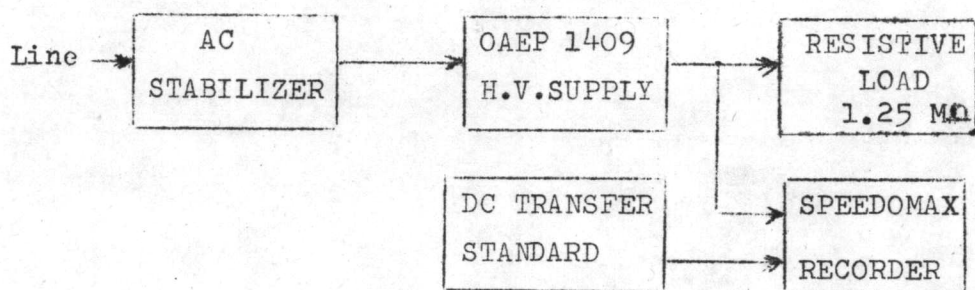
3.2.1 Test Circuit :



3.2.2 Result : From Figure 25, 26 it is shown that the output ripple at full load is better than $20\text{mV}_{\text{p-p}}$ and at no load the ripple is less than $10\text{mV}_{\text{p-p}}$

3.3 Long-Term Drift

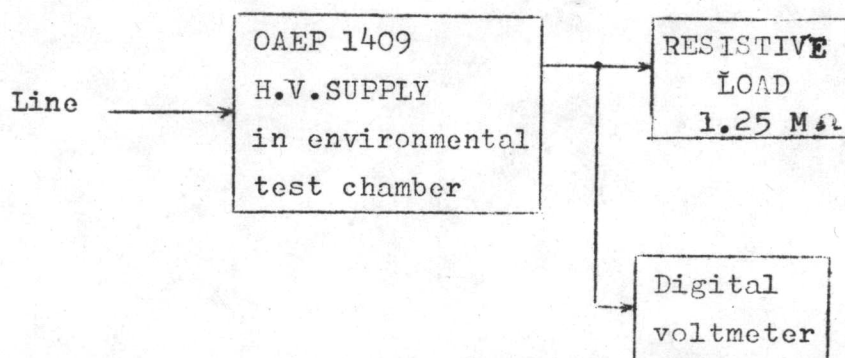
3.3.1 Test Circuit :



3.3.2 Result : From Figure 27 it is shown that Long-Term Drift of the H.V. supply is better than $0.05\%/hr$ variation in output voltage at constant input line voltage, load, and ambient temperature after 30 min warmup.

3.4 Temperature Stability

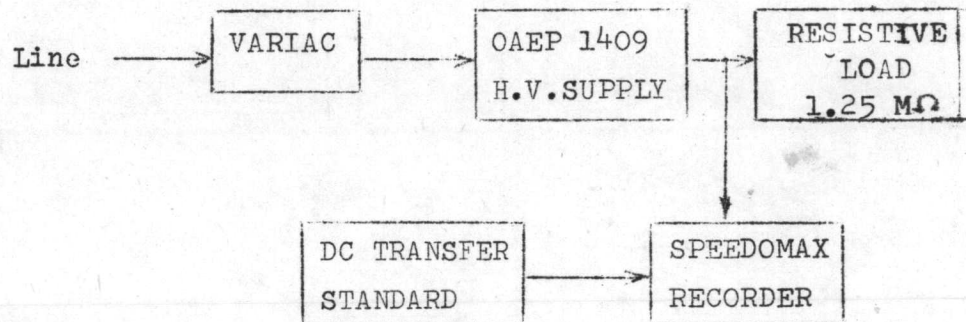
3.4.1 Test Circuit :



3.4.2 Result : From Figure 28 the Temperature stability is better than $0.11\%/^{\circ}\text{C}$ after 30 min warmup, for ambient temperature between 0 to 50°C .

3.5 Regulation

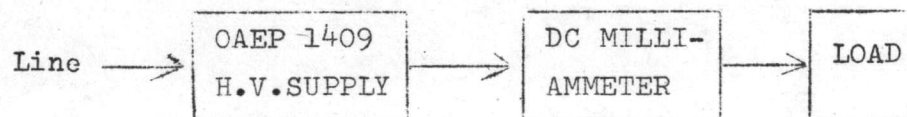
3.5.1 Test Circuit :



3.5.2 Result : From Figure 29, the regulation is better than 0.01 % variation in output voltage for line variation from 200 to 240V at constant load, and ambient temperature (room temperature)

3.6 Overload Protection

3.6.1 Test Circuit :



3.6.2 Result : The function of overload protection is tested with maximum output current limit of $\approx 2\text{mA}$.

3.7 Output Polarity

The output polarity can be positive or negative as desired

3.8 Output Range

The output voltage can be continuously varied from 1 to 2500V with minimum usable voltage of 50V

3.9 Output Load Capacity

The output load current can be varied from 0 up to 2mA.

3.10 Power requirements

18 watts, 220 volts, 50Hz is the maximum power required by the H.V. supply.

3.11 Dimension and Weight

The dimension of the H.V. supply correspond to a standard triple width NIM module and the complete unit weighs 3.7 kg.