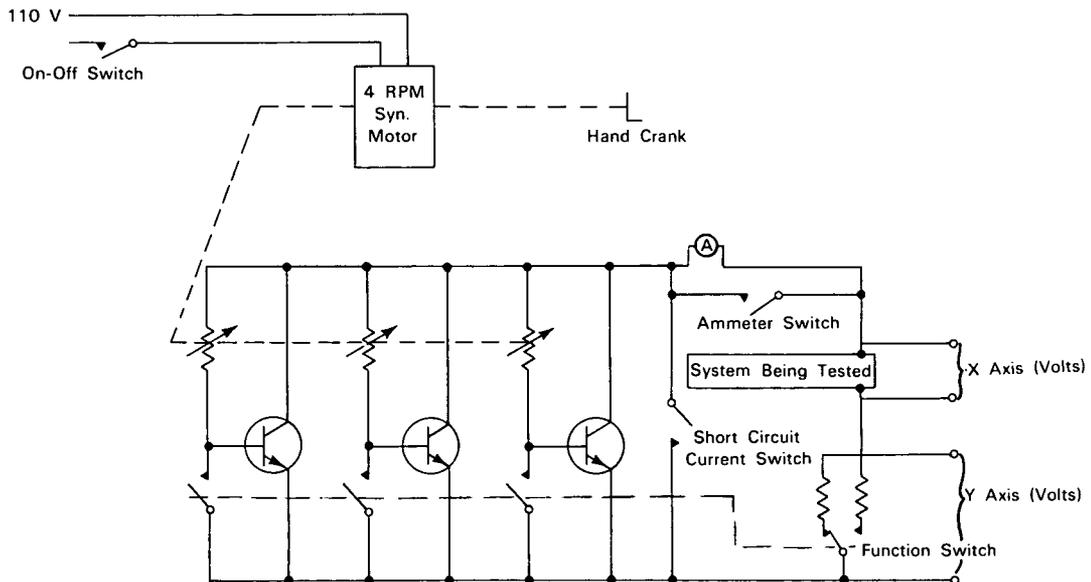


NASA TECH BRIEF



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Variable Load Automatically Tests DC Power Supplies



The problem: To provide a method of measuring current and voltage, and plotting the power characteristics of low-voltage, high-current, DC power supplies over an extended current range.

The solution: A continuously variable automatic load with capabilities up to 10 amperes and 300 watts. External meters are used to monitor current and voltage. Multipliers at the outputs may be used to facilitate plotting the power curve of the unit being tested.

How it's done: The circuit uses three ganged logarithmic resistance potentiometers driven by a self-reversing synchronous motor. When the function

switch is closed, the emitter circuits of the three transistors are shorted, and the load consists of the parallel resistances of the variable potentiometers. The upper limit of the load, with the function switch closed, is 1 ampere and 5 watts. When the function switch is open, the transistors are biased on by the potentiometers, and the upper limit of the load is then 10 amperes and 300 watts. The large current and power handling capability of the circuit is provided by the transistors. The logarithmic resistance potentiometers enable a smoother transition from open circuit to short circuit, and provides a high "off" resistance for a given current.

The hand crank shown in the illustration can be used to vary the potentiometer settings manually whenever automatic operation is not desirable.

(continued overleaf)

Notes:

1. This invention should be of interest to manufacturers of transistor power supplies.
2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Goddard Space Flight Center
Greenbelt, Maryland, 20771
Reference: B65-10105

Patent status: NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA, Code AGP, Washington, D.C., 20546.

Source: Harry C. Burke, Jr., and Ralph M. Sullivan
(GSFC-291)