

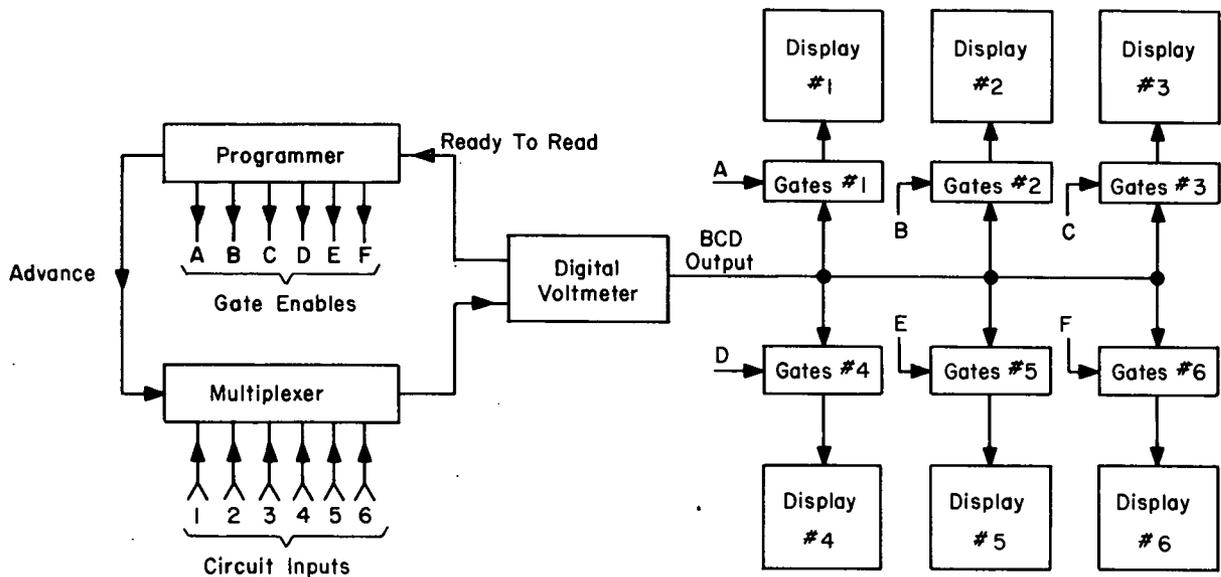
# NASA TECH BRIEF

## *Manned Spacecraft Center*



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### Programmed Multiplexing System Simultaneously Monitors Several Voltages



When designing and testing electronic circuits it is often desirable to measure several voltages and currents simultaneously. Digital voltmeters provide a rapid, accurate method of measuring electrical parameters and, when used with a multiplexer, provide the means of obtaining several simultaneous measurements.

A system concept has been developed using a digital voltmeter to monitor two to six voltages or currents. The major components of the system are a digital voltmeter with binary coded decimal (BCD) output, a

programmer, a multiplexer and two to six gated digital displays. The components are connected as shown in the figure.

The programmer is used to select the appropriate input of the multiplex unit and enable the gates of the corresponding display device which then displays the output of the digital voltmeter. The system begins operation by metering the first input and displaying the voltage on the first display unit, and continues to meter each input in turn and display the voltage on the cor-

(continued overleaf)

responding display. When the last input is metered the cycle will repeat beginning with the first input.

The maximum number of circuits that can be monitored is determined by the speed of the digital voltmeter (readings per second), the rate of change of the parameter being measured, and the complexity of the multiplexer design.

**Note:**

Requests for further information may be directed to:

Technology Utilization Officer  
Manned Spacecraft Center, Code JM7  
Houston, Texas 77058  
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No patent action is contemplated by NASA.

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