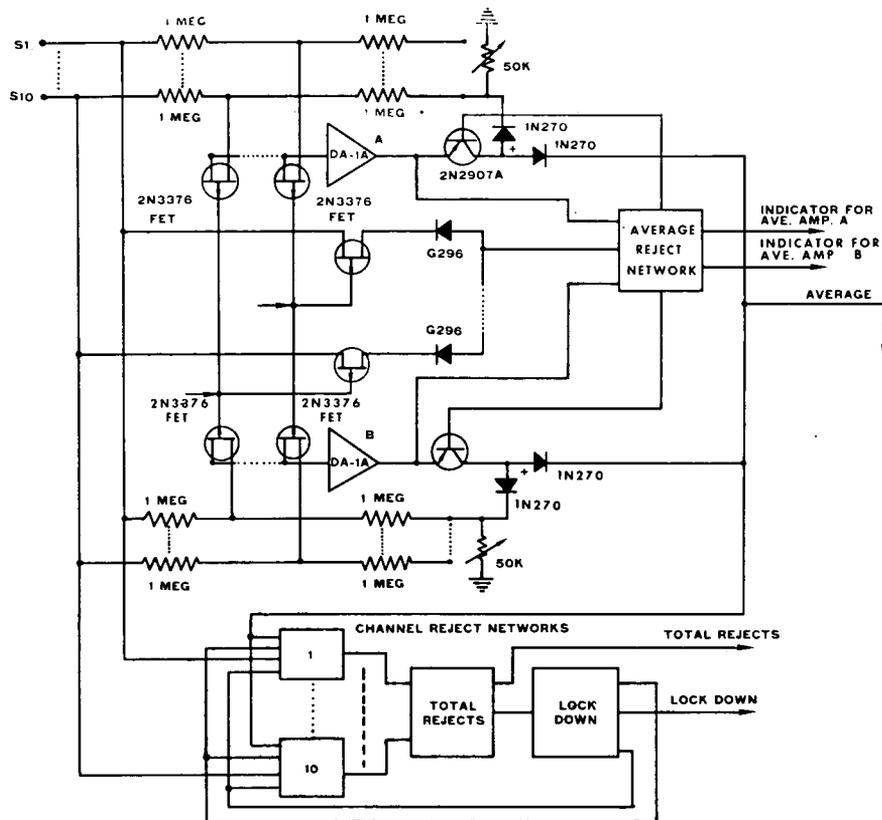


AEC-NASA TECH BRIEF



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Solid State Circuit Averages Multiple Signals and Rejects Those Varying Significantly from the Average



The problem:

To devise an average and reject logic control system that provides an average of the output signals of up to ten transducers measuring critical parameters such as temperature and pressure.

The solution:

A circuit that compares each signal against an average, rejects any signal that departs significantly

from the average, and supplies an average of the acceptable signals.

How it's done:

The system is a 0-10 volt system utilizing ten input channels. Two averaging amplifiers operate redundantly to average the channel inputs and feed the resultant signal into ten channel reject networks. Each channel reject network compares its signal with the

(continued overleaf)

average signal. If the channel output varies by a predetermined amount from the average, the channel reject network generates a reject signal that disconnects this channel from the circuit. In addition, it is possible to manually reject any channel. The selected outputs of the individual reject networks are then fed into a "total reject network" where they are compared against a manually selected limit. When the number of channels rejected is equal to the manually selected limit, a lock-down signal is generated which automatically prevents the rejection of any additional channels. Visual indication can be provided to show the number of channels rejected before lock-down.

The output of each averaging amplifier is fed to an "average reject network" for comparison with the highest signal coming from the ten channels. If the output of either averaging amplifier exceeds the value of the highest signal, then the network disconnects that amplifier from the load by turning off the transistor in series with it. An indicator light is activated to show that the amplifier is disconnected.

Notes:

1. This system is of particular value where high reliability is important.
2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
AEC-NASA Space Nuclear Propulsion
Office
U.S. Atomic Energy Commission
Washington, D.C. 20545
Reference: B67-10262

Patent status:

No patent action is contemplated by AEC or NASA.

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