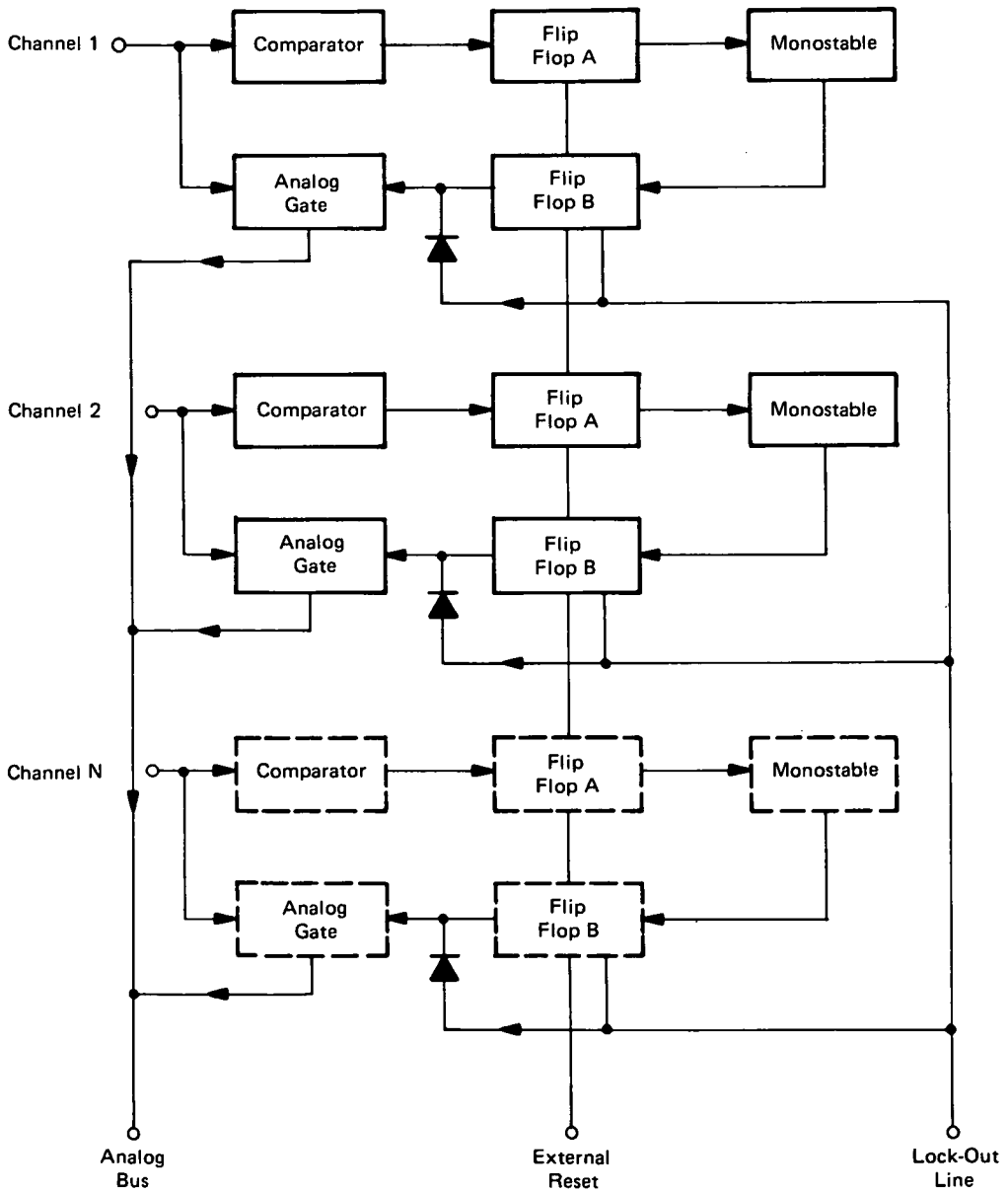
June 1973 B73-10154

NASA TECH BRIEF

Marshall Space Flight Center

Time-Based Priority Selection for Analog Circuits



N-Channel Selection Circuit

(continued overleaf)

The problem:

Priority encoding has been available in digital circuits, but only on a binary basis. Thus, all channels must be recorded to determine the highest priority pulse or signal.

The solution:

An "unlimited channel capacity" multiplexing circuit is hierarchically structured to achieve time-based priority selection for analog signals.

How it's done:

The circuit is shown in the accompanying diagram. A preset analog threshold is detected by the comparator, which changes the state of flip-flop A. Flip-flop A delivers an output for channel encoding and, at the same time, triggers a monostable multivibrator. This pulse changes the state of flip-flop B, which allows the analog gate to conduct to the analog bus. The change in flip-flop B disables all other channels through their inputs to the common lock-out line. When an external reset occurs, all channels return to an available state. Diodes permit the outputs to be connected in a "wired-or" mode.

The illustration shows how the circuit may be expanded. The circuit could be used for any analog multiplexing system that requires time priority detection. These include, for example, automatic patient monitoring systems and diagnostic test systems in the automotive and communications industry.

Notes:

1. This system is being considered for use with digital to analog converters.
2. No additional documentation is available. Specific questions, however, may be directed to:
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   Marshall Space Flight Center
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   Reference: B73-10154

Patent status:

Inquiries concerning rights for the commercial use of this invention should be addressed to:

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(MFS-24242)