I/O
Dataspec.

PRODUCT **Multiplexer & Multiplexer Expansio**

620-860, 861 & 863
MODEL **620-860A, 861A, 86:**

DATE **January 1, 1973**

varian data machines

MULTIPLEXER AND MULTIPLEXER EXPANSION MODULES

INTRODUCTION

The Models 620-860, 861 and 863 Multiplexer Modules (MUX) and Models 620-860A, 861A, and 863A Multiplexer Expansion Modules (MUXE) are options for use with the Varian 620 Series and V73 Computers. The MUX provides a middle or high-level analog multiplexer and channel selection control. The MUXE provides a middle or high-level analog multiplexer expansion to the MUX.

GENERAL DESCRIPTION

The MUX and MUXE transfer external analog signals in differential or single-ended form to an analog-to-digital converter. The MUX is designed to function in either of two operation modes: Sequential and Random. The Sequential Mode allows the MUX and MUXE channels to be automatically scanned and sequentially selected. Each scan starts with the first channel, and a channel advance signal increments the MUX to the next higher channel. At the end of a scan cycle, the MUX is set to the first channel and an end-of-scan interrupt is provided to the computer.

The Random Mode allows the MUX channel address selection to be determined under computer program control. This mode permits the selection of MUX and MUXE channels in any sequence.

The Models 620-860, 861, 863 MUX provide 16 differential or single-ended external analog channels and channel control. This basic configuration can be readily expanded up to 256 channels by use of Models 620-860A, 861A, 863A MUXE. This expansion is accomplished by increments of 16 differential or 16 single-ended channels.

PREREQUISITES

For Models 620-860, 620-861 or 620-863 Multiplexer Modules

- 620 System Computer or V73
- 620 Expansion chassis (requirements determined on individual system basis)

- 620-88 Analog Power Supply (requirements determined on individual system basis)
- 620-85A, C Analog-to-Digital Converter Modules
- 620 Peripheral backplane wiring panel (requirements determined on individual system basis)

For Models 620-860A, 620-861A or 620-863A Multiplexer Expansion Modules:

- 620-850 through 853 Analog Input Module or 620-860, 861, 863 Multiplexer Module (any module that includes the multiplexer module is required)
- 620 Expansion chassis (requirements determined on individual system basis)
- 620-88 Analog power supply (requirements determined on individual system basis)

SOFTWARE

A comprehensive software package is provided comprising a Test Program and an I/O Driver Program. The Test Program is an effective tool in determining the operational status of the MUX and MUXE.

The I/O Driver Program provides convenient access to the MUX and MUXE without detailed knowledge of the hardware. The program can be used by itself or embedded in an operating system. The I/O Driver Program consists of the following two independent routines: Programmed Data Transfers and Direct Memory Access Data Transfers. These routines permit the user to specify the following parameters:

- Channel selection technique (Random or Sequential)
- Last channel specification for Sequential Mode or channel list specification for Random Mode.
- Destination array and quantity of incoming data
- Time between each data point.
- An error address to which control will pass when any one of several error conditions is detected.
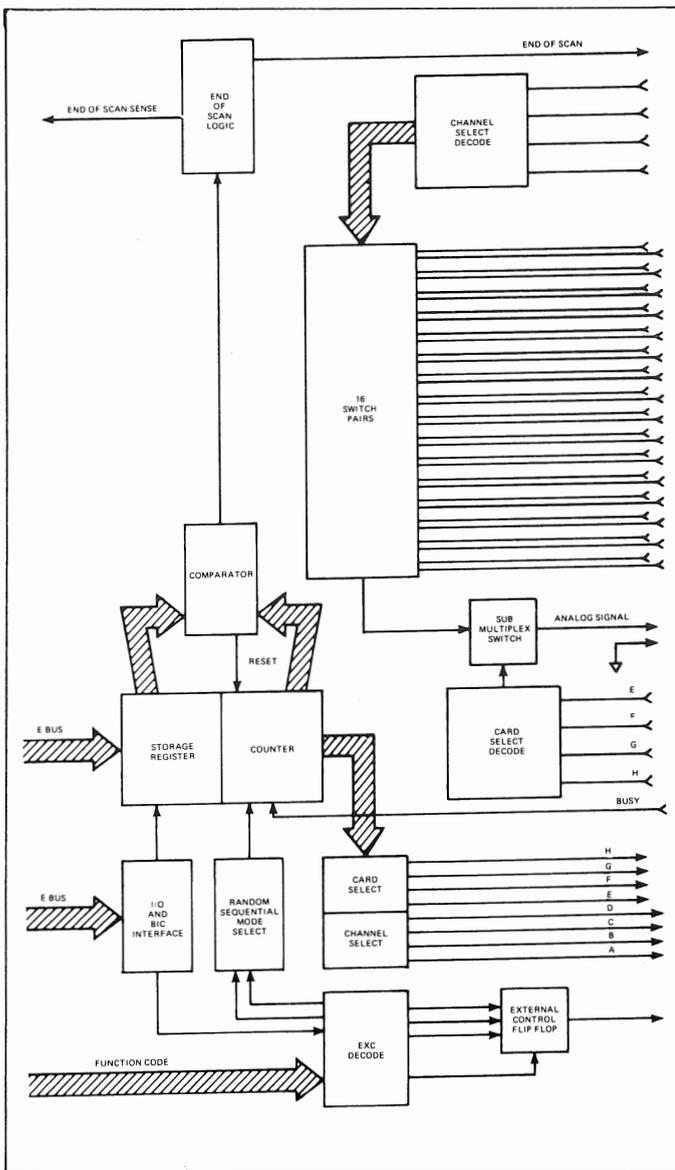
SPECIFICATION

Gain and Accuracy
Voltage Gain . . . . +1 or +10
Accuracy . . . . ±0.01% of F.S.
Gain Temp. Coefficient . . . . ±10 PPM/°C

Input Specifications
Signal Voltage . . . . ±10V or ±1V
Maximum Source Impedance . . . . 1K ohms
Common Mode Voltage plus
    Signal Voltage . . . . ±10 volts
Absolute Maximum . . . . ±15 volts

"ON" Channel Specifications
Switch Impedance . . . . 500 ohms (typical)
Input Impedance . . . . 10^9 ohms, 80 pF
Common Mode Rejection . . . . 80 dB, 0 to 60 Hz

"OFF" Channel Specifications
Impedance . . . . 10^{10} ohms, 4 pF

NOTE: All switches open when power is turned off.

Output Specifications
Output Voltage Range . . . . ±10 volts
Output Current . . . . 100 mA
Output Impedance . . . . 20 ohms
Voltage Drift . . . . ±50 µv/°C

Dynamic Response
Frequency Response . . . . (Tracking error with
    F.S. peak-to-peak sine wave
    applied to a single On Channel.
    1K source impedance).
Accuracy of .01% . . . . 250 Hz
Accuracy of .1% . . . . 2500 Hz

Crosstalk
ON Channel 1K to ground <1 mV. F.S. peak-to-peak 1
kHz sine wave applied to 15 OFF Channels.

Settling Time
Settling Time to .01% of 10 volts: 10 microseconds.

Digital Outputs
End of Scan . . . . Low True Signal
    which begins when the ADC starts
    to convert the data for the
    "Last Channel" of the Multiplexer
    Sequential Mode, and ends when
    the ADC starts to convert the
    next time. Held High when the
    Multiplexer is in the Random Mode.
    Fanout: 10 logic loads. Maximum
    capacitive load: 1000 pF.
Control Flip Flop . . . . R-S flip/flop which is set
    High True by the EXC 3YY, and is
    reset by EXC0YY, EXC1YY, EXC2YY
    or System Clear.
    Also may be wire-ored and reset
    by pulling down the output.

Temperature Range
Specification . . . . 0°C to 50°C
Operating . . . . -25°C to 70°C
Storage . . . . -55°C to +100°C

Power . . . . +5 Vdc ±5%; 725 mA
    ±15 Vdc ±3%; 15 mA
    +20 Vdc ±5%; 10 mA
    -22 Vdc ±5%; 5 mA

Physical Characteristics . . . . Dimensions: One printed
    circuit board 7-3/4 x 12 x 1/2 inches
    Connectors: One 122-terminal
    Card Edge Connector
    Two 44-terminal Card
    Edge Connectors