PRODUCT **Digital Input Module**

MODEL **620-831A & B**

DATE **January 15, 1971**

620 series
Dataspec.

varian data machines

DIGITAL INPUT MODULE
AND EXPANSION MODULE

INTRODUCTION

The Model 620-831A Digital Input Module (DIM) and Model 620-831B Digital Input Expansion Module (DIME) are options for use with the Varian Data 620 Series Computers. A DIM provides four digital input channels and control for sequential or random channel addressing with expansion up to 256 input channels. The DIME provides incremental expansion of four digital input channels.

GENERAL DESCRIPTION

The DIM and DIME provide for the transfer of 16-bits of data per channel from an external source to a 620 computer. Data is transferred from the data source to the DIM at any time with a strobe from the data source. If the data source has no strobe, data is automatically updated every 20 microseconds.

The data transfer can be accomplished under program control or under control of the Optional Buffer Interlace Controller (BIC). When operating under program control, data transfers are initiated externally or by the computer and are executed under Input/Output instruction control. When operating with a BIC, data transfers are initiated externally and are executed without Input/Output instruction control. The BIC permits automatic high or low speed block data transfer between DIM and the 620 computer memory without disturbing the sequence of the main program.

The DIM is designed to function in either of two operation modes: Sequential or Random. The Sequential Mode allows the DIM and DIME channels to be automatically scanned and sequentially selected. Each scan starts with the first channel and a channel advance signal increments the DIM to the next higher channel. At the end of a scan cycle, the DIM is set to the first channel and an end-of-scan sense is provided to the computer. The number scanned is selected by program control.

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

Random channel address selection can also operate under BIC control so that channels are input sequentially from a table of channel addresses stored in the 620 memory.

The Model 620-831A provides four digital input channels and channel control. This basic configuration can be readily expanded up to 256 digital input channels by use of Model 620-831B. This expansion is accomplished by increments of four channels.

For configurations involving both analog and digital input channels Model 620-831B can be used as an incremental expansion to the Analog Input Modules, Models 620-850, 851 without the need of Model 620-831A.

PREREQUISITES

For Model 620-831A Digital Input Module:
- 620 System Computer
- 620 Expansion Chassis (requirements determined on individual system basis).
- 620 Peripheral Back Plane Wiring Panel (requirements determined on individual systems basis).
- 620-20 Buffer Interface Controller (BIC) (optional).
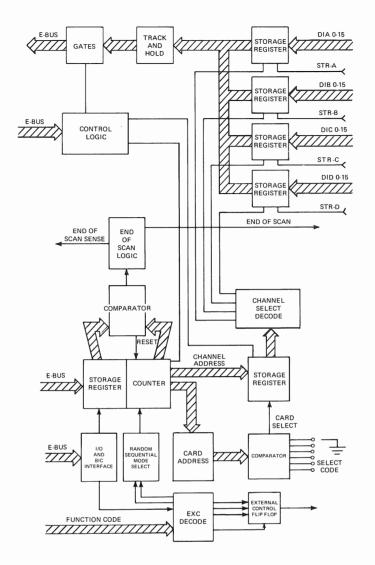
For Model 620-831B Digital Input Expansion Module:
- 620-831A Digital Input Module or 620-850, 851 Analog Input Module.
- 620 Expansion Chassis (requirements determined on individual systems basis).
- 620 Peripheral Back Plane Wiring Panel (requirements determined on individual system basis).

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 DIM and DIME.

The I/O Driver Program provides convenient access to the DIM and DIME 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 anyone of several error conditions is detected.

Block Diagram Labels

E-BUS → GATES → TRACK AND HOLD ← STORAGE REGISTER ← DIA 0-15 · STR-A

STORAGE REGISTER ← DIB 0-15 · STR-B

E-BUS → CONTROL LOGIC

STORAGE REGISTER ← DIC 0-15 · STR-C

STORAGE REGISTER ← DID 0-15 · STR-D

END OF SCAN

END OF SCAN SENSE ← END OF SCAN LOGIC

COMPARATOR · RESET

CHANNEL SELECT DECODE

CHANNEL ADDRESS

E-BUS → STORAGE REGISTER · COUNTER → CHANNEL ADDRESS → STORAGE REGISTER

CARD SELECT

E-BUS → I/O AND BIC INTERFACE · RANDOM SEQUENTIAL MODE SELECT · CARD ADDRESS → COMPARATOR → SELECT CODE

FUNCTION CODE → EXC DECODE → EXTERNAL CONTROL FLIP FLOP

SPECIFICATIONS

Digital Inputs . . . . Number: Four 16-bit registers
Low True: 1 logic load with 5.6K
ohms to +5 VDC

Strobe Inputs . . . . Number: Four
1 logic load with 5.6K ohms to +5VDC
Data is clocked into one input storage
register on the high to low transition
of it's strobe signal. Data remains
fixed as long as the strobe signal is
high. If the strobe remains low for
more than 20 microseconds new data is
automatically clocked into the storage
register at 20 microsecond intervals.

Temperature Range . . . . Specification $0°C$ to $50°C$
Operating $-10°C$ to $70°C$
Storage $-55°C$ to $85°C$

Physical Characteristics
Digital Input Module . . . . Dimensions: Three
printed circuit boards
7-3/4 x 12 inches
Connectors: Three 122-terminal
card edge connectors,
six 44-terminal card edge
connectors. Power
+5 VDC ± 5%, 2A

Digital Input Expansion Module . . . . Dimensions: One
printed circuit board 7-3/4 x 12 inches.
Connectors: One 122-terminal card edge
connector, two 44-terminal card edge
connectors. Power
+5 VDC ± 5%, 1A