Software Product Description

PRODUCT NAME: MicroVAX/DRQ3B Device Driver, Version 1.3 **SPD 29.25.02**

DESCRIPTION

The MicroVAX/DRQ3B Device Driver V1.3 (HXDRIVER) supports the DRQ3B interface, which is a general purpose 16 bit parallel interface between the MicroVAX Q-bus and a user's peripheral. The DRQ3B, under driver control, is capable of performing double buffered direct memory access (DMA) using the block mode capabilities of the Q-bus to provide high bandwidth data transfers. The DRQ3B interface also has 512 word FIFO (First In, First Out) buffers on both the input and output ports to allow data to be transferred while an interrupt service routine is setting up the next buffer.

Driver Features

- Double buffering of I/O requests
- Buffer termination via an external event (EOP)
- External interrupt
- Function bit setting/clearing
- DMA operations directly to Q-bus memory
- Error handling

Double Buffering of I/O Requests

As long as two or more buffers are queued to the driver it will automatically try to double buffer the I/O requests. A function modifier IO$M_HX_HOLD_DMA allows an applications to queue up multiple buffers before starting I/O, so that all of those queued buffers can be double buffered.

Buffer Termination Via an External Event (EOP)

The hardware has a line on the input connector that is handled like a 17th data bit but will cause a DMA operation to terminate and a new one to start when asserted and read out of the FIFO by the DMA controller. The driver supports this condition and returns the number of words transferred including the last one transferred with the external event asserted as well as the success code SS$_WASSET rather than the conventional SS$_NORMAL so that an application can test for the occurrence of this condition.

External Interrupt

A line separate from the external event line allows an interrupt to be generated. The driver allows the detection of this condition in an AST routine.

Function Bit Setting/Clearing

The driver provides SETMODE functions that will set/clear the function bits for a given port, and allows the function bits to be read with a SENSEMODE function.

DMA Operations Directly to Q-bus Memory

The driver supports two forms of I/O, logical and physical.

- Physical I/O transfers allow the transfer of data directly to Q-bus memory and specialized I/O subsystems such as those found in some types of array processors.
- The driver also allows MicroVAX memory to be used for physical I/O transfers to reduce overhead.
- Logical I/O supports the more traditional mechanisms for performing DMA. As a result, it is easier to program but is a little less efficient.

Error Handling

The driver will report nonexistent memory conditions (NXMs), FIFO overruns and FIFO underruns in case the interface logic stops handshaking correctly.

The DRQ3B MicroVAX Device Driver can support up to four DRQ3B Interfaces.

INSTALLATION

Only experienced customers should attempt installation of this product. Digital recommends that all other customers purchase Digital's Installation Services. These services provide for installation of the software product by an experienced Digital Software Specialist.

HARDWARE REQUIREMENTS

MicroVAX, or VAXstation configuration as specified in the System Support Addendum (SSA 29.25.02-x).

SOFTWARE REQUIREMENTS*

VMS Operating System

MicroVMS Operating System

* Refer to the System Support Addendum (SSA 29.25.02-x) for availability and required versions of Prerequisite software.

ORDERING INFORMATION

Software Licenses: QL-0APA*-**
Software Media: QA-0APA*-**
Software Documentation: QA-OAPA*-GZ
Software Product Services: QT-0APA*-**

* Denotes variant fields. For additional information on available licenses, services and media refer to the appropriate price book.

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