Software Product Description

PRODUCT NAME: IEX-VMS-DRIVER, Version 4.2 **SPD 26.30.06**

DESCRIPTION

IEX-VMS-DRIVER allows programs written in MACRO -32 and higher level languages (such as VAX FORTRAN, VAX BASIC and VAX PASCAL) to communicate through the IEU11-A or IEQ11-A with devices containing an IEC 625-1 or IEEE Std. 488 interface. This communication is implemented through a choice of direct QIO calls or a set of subroutines callable from high level languages.

Note: In the following description the term IEX11 stands for the IEU11-A and/or IEQ11-A interface. The IEU11-A supports the VMS UNIBUS machines, and the IEQ11-A supports the MicroVMS Q-bus machines.

The IEX11-A interface is a bit-parallel byte-serial device which can perform transfers in either program interrupt or DMA (direct memory access) mode. Program interrupt is used for transferring commands and addresses, while DMA is used for transferring data. DMA significantly reduces processor loading during the transfer of long data buffers.

The IEX11-A interface contains two independent IEC/IEEE bus controllers, also known as General Purpose Interface Buses (GPIBs). These two controllers may be connected to the same or to different IEC/IEEE buses. Up to 15 devices may be attached to each IEC/IEEE bus.

The IEX11 is most commonly used as Controller-in-Charge, but can also be used when another device is Controller-in-Charge. The Controller-in-Charge directs the sequence of information on the bus.

When the IEX11 acts as Controller-in-Charge, it may request status information from other devices through serial and parallel polling. When the IEX11 is not Controller-in-Charge, it can be polled in either fashion to provide status information.

Features

The IEX-VMS-DRIVER supports the following IEC/IEEE hardware capabilities:

- Controller (C1, C2, C3, C4, C5)
- Talker and Extended Talker (T5, TE5)
- Listener and Extended Listener (L3, LE3)
- Automatic Source Handshake (SH1)
- Automatic Acceptor Handshake (AH1)
- Service Request (SR1)
- Remote/Local (RL1)
- Parallel Poll (PP1, PP2)
- Device Clear (DC1)
- Device Trigger (DT1)

The IEX-VMS-DRIVER supports QIO requests to perform the following software functions:

- Initialize Unit
- Write Data
- Read Data
- Send one IEC/IEEE bus command*
- Send a string of IEC/IEEE bus commands*
- Request Service**
- Issue a Serial Poll*
- Configure devices for Parallel Polls*
- Load Parallel Poll Register**
- Perform a Parallel Poll*
- Go to Controller-Active-State (CACS)*
- Go to Controller-Standby-State (CSBS)*
- Pass Control*
- Sense Mode
- Set Mode
- Enable Event Recognition

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- Recognize Events

The event recognition facility allows the user's process to specify the events on the IEC/IEEE instrument bus which the interface should detect. The interface is capable of detecting the occurrence of the following events:

- Service Request*
- Addressed as Listener**
- Addressed as Talker**
- Deaddressed**
- Addressed as Extended Listener**
- Addressed as Extended Talker**
- Device Clear**
- Device Trigger**
- Remote/Local Change**
- Parallel Poll Configure**
- Parallel Poll Unconfigure**
- Interface Clear

* Functions that can only be used by the Controller-in-Charge

** Functions used only by a device that is not Controller-in-Charge

All IEC/IEEE bus commands are issued through a process request and all data is transferred through the DMA mechanism. When the IEX-VMS-DRIVER is processing a read data request, the three ways to detect the end of the data transfer are:

Byte Count Overflow - Transfer terminates after the specified number of bytes have been read.

EOI Termination - Transfer terminates if, during the reception of a byte, the EOI line is true.

Match Character - Transfer terminates after the Termination specified match character has been consecutively received the specified number of times.

A device exerciser is provided to verify that the IEX-VMS-DRIVER is correctly installed and to aid the user in testing his application. When the two bus controllers are connected with a loop back cable (refer to the *IEU11-A/IEQ11-A User's Guide*), the device exerciser can be run with command files delivered with the exerciser. These command files demonstrate all features of the driver and the IEC/IEEE bus interface functions. The device exerciser can also be used by the user in a dialogue mode to test his devices. The commands to the exerciser are directly converted into QIOs to the driver. Using the exerciser in the dialogue mode, the user can quickly determine the set of QIOs required for his application.

The IEX-VMS-DRIVER may be programmed in the following two ways:

VMS and MicroVMS QIO System Service - The VMS QIO requests allow direct access to the driver. These requests can be issued in higher level languages (such as VAX FORTRAN, VAX BASIC, VAX PASCAL and MACRO-32). This is the most flexible way of programming the IEX11 device, but requires the user to be familiar with the QIO calling procedures.

Simplified User Interface - This is a package of subroutines which can be called from higher level languages (such as VAX FORTRAN and VAX BASIC) to perform the following functions:

IESTRT	-	Initialize an interface
IEPOLL	-	Setup for Serial polling
IESEND	-	Send data
IERECV	-	Receive data
IERQSV	-	Request service
IECMD	-	Perform a bus control function
IEWFE	-	Wait for IEC/IEEE bus event

HARDWARE REQUIREMENTS

VAX, MicroVAX or VAXstation configuration as specified in the System Support Addendum (SSA 26.30.06-x).

SOFTWARE REQUIREMENTS

VMS Operating System

or

MicroVMS Operating System

Refer to the System Support Addendum (SSA 26.30.06-x) for availability and required versions of prerequisite software.

ORDERING INFORMATION

Software Licenses: QL-519A*-**
Software Media: QA-519A*-**
Software Documentation: QA-519AA-GZ

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

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