Software Product Description

PRODUCT NAME: IXV/VAXELN Driver, Version 2.1 **SPD 29.18.02**

DESCRIPTION

The IXV/VAXELN driver enables a user to perform I/O to /from the IXV11/IXV1S-Modules. The driver is supplied as a subroutine library that the user has to include in the application software at compile and link time. The user can build a bootable VAXELN system (using the VAXELN Toolkit), which is booted on a target machine in order to perform its task of a dedicated stand-alone real-time application. This type of design implies that an application calling the driver routines must run in Kernel Mode. The design also prohibits accessing a given device from more than one job; however, gaining access from different processes within the same job is possible, provided the caller ensures there is no simultaneous access to the same device. Furthermore, the job can be used as a server enabling other jobs on the system to access the IXV devices.

The VAXELN Toolkit is a VMS layered product for the development of dedicated, real-time VAXELN systems that run on VAX and MicroVAX processors. The development tools run on a ''host'' VAX processor under the VMS Operating System. A finished VAXELN system using the IXV/VAXELN driver runs directly on a ''target'' MicroVAX processor, without the presence of another operating system.

The IXV11/IXV1S Module Family is a group of industrial digital input/output, analog input/output, and counter interfaces for Digital Equipment Corporation's Q–bus machines.

These interfaces are:

- Digital Input Module supported:

IDV11-A/	16-bit opto-coupler	(M5026)
IDV1S-A	isolated digital input	(M5026-P0)

- Digital Output Modules supported:

IDV11-B/	16-bit opto-coupler	(M6029)
IDV1S-B	isolated digital output	(M6029-P0)
IDV11-C/	16-bit relay output	(M8005)
IDV1S-C	16-bit relay output	(M8005-P0)

- Analog Input Modules supported:

IAV11-A/	isolated multi-channel	(A410)
IAV1S-A	A/D converter	(A410-P0)
IAV11-AA/	16-channel A/D converter	(A410-YA)
IAV1S-AA		(A410-PA)
IAV11-C/	16-channel flying capacity	(A029)
IAV1S-C	multiplexer for IAV11-A/ IAV11-AA	(A029-P0)
IAV11-CA/	16-channel semiconductor	(A029-YA)
IAV1S-CA	multiplexer for IAV11-A/ IAV11-AA	(A029-PA)

- Analog Output Module supported:

IAV11-B/	4-channel group	(A6007)
IAV1S-B	isolated D/A converter	(A6007-P0)

- Counter Module supported:

IDV11-D/	opto-coupler isolated	(M7197)
IDV1S-D	5-channel counter	(M7197-P0)

The IXV/VAXELN driver is functionally compatible with the respective IXV11/VMS Driver (IxV11 always implies IxV1S) (SPD 28.28.xx) featuring:

- Digital Input/Output requests support the following modes of operation:
  - — Read data from one or several IDV1x-A modules.
  - — Write data to one or several IDV1x-B or IDV1x-C modules.
  - — Read or write fractions of a 16-bit value.
  - — Interrupts can be handled in a user process by AST routines.
- Analog Input/Output requests support the following modes of operation:
  - — Read data from one or several (up to 128 different) channels on IAV1x-A, -AA and IAV1x-C, -CA modules.

— Write data to one or several (up to four different) channels on IAV1x-B modules.

— Automatic gain selection can be enabled.

— Multiple reads on one channel can be initiated with one request.

— Conversion can be started internally or externally.

Although the number of different channels is limited to 128, it is possible to read each channel more than once with one request.

- The Counter functions support the following modes of operation:

  — Start or stop one or more (up to five) counter channels simultaneously on one IDV1x-D module.

  — Counting upwards or downwards can be selected per channel.

  — Every channel can be preset with an initial value.

  — A counter overflow and/or underflow can be handled in a user AST routine.

  — Count of external events controlled by internal or external start signal.

  — Count of selectable internal time intervals upon external control signal (time measurements).

  — Concatenating consecutive counter channels.

Note: This product is supported in Europe only.

HARDWARE REQUIREMENTS

VAX, MicroVAX, or VAXstation configuration as specified in the System Support Addendum (SSA 29.18.02-x).

SOFTWARE REQUIREMENTS

- VMS Operating System
- VAXELN Toolkit
- DECnet–VAX (required for downline loading and remote debugging)
- VAX C (required if C is used for VAXELN program development or if VAXELN C Run-Time Library is used)

ORDERING INFORMATION

Software Licenses: QL-VG3A*-**
Software Media: QA-VG3A*-**
Software Documentation: QA-VG3AA-GZ

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

SOFTWARE LICENSING

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LICENSE MANAGEMENT FACILITY SUPPORT

This layered product supports the VMS License Management Facility.

License units for this product are allocated on a per-CPU basis and are not dependent on CPU Capacity or User/Activity.

For more information on the License Management Facility, refer to the VMS Operating System Software Product Description (SPD 25.01.xx) or the *License Management Facility* manual of the VMS Operating System documentation set.

For more information about Digital's licensing terms and policies, contact your local Digital office.

SOFTWARE PRODUCT SERVICES

A variety of service options are available from Digital. For more information, contact your local Digital office.

SOFTWARE WARRANTY

Warranty for this software product is provided by Digital with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

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System Support Addendum

PRODUCT NAME: IXV/VAXELN Driver, Version 2.1 **SSA 29.18.02-A**

HARDWARE REQUIREMENTS

Host Processors Supported:

VAX: VAX 4000 Model 300

VAX 6000 Model 200 Series,
VAX 6000 Model 300 Series,
VAX 6000 Model 400 Series,
VAX 6000 Model 500 Series

VAX 8200, VAX 8250, VAX 8300, VAX 8350, VAX 8500, VAX 8530, VAX 8550, VAX 8600, VAX 8650, VAX 8700, VAX 8800, VAX 8810, VAX 8820, VAX 8830, VAX 8840

VAX 9000 Model 210,
VAX 9000 Model 400 Series

VAXft 3000 Model 310

VAX–11/730, VAX–11/750, VAX–11/780, VAX–11/785

MicroVAX: MicroVAX II,
MicroVAX 2000, MicroVAX 3100,
MicroVAX 3300, MicroVAX 3400,
MicroVAX 3500, MicroVAX 3600,
MicroVAX 3800, MicroVAX 3900

VAXstation: VAXstation II, VAXstation 2000,
VAXstation 3100 Series,
VAXstation 3200, VAXstation 3500,
VAXstation 3520, VAXstation 3540

Host Processors Not Supported:

VAX: VAX 4000 Model 200

VAX–11/725, VAX–11/782

MicroVAX: MicroVAX I

VAXstation: VAXstation I, VAXstation 8000

VAXserver: VAXserver 3100, VAXserver 3300, VAXserver 3400, VAXserver 3500, VAXserver 3600, VAXserver 3602, VAXserver 3800, VAXserver 3900

VAXserver 4000 Model 200,
VAXserver 4000 Model 300

VAXserver 6000-210, VAXserver 6000-220, VAXserver 6000-310, VAXserver 6000-320, VAXserver 6000-410, VAXserver 6000-420, VAXserver 6000-510, VAXserver 6000-520

Disk Space Requirements (Block Cluster Size = 1):

Disk space required for installation:	2,500 blocks (1,250 Kbytes)
Disk space required for use (permanent):	1,100 blocks (550 Kbytes)

These counts refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options.

Target Processors Supported:

VAX: VAX 4000 Model 300

MicroVAX: MicroVAX II,
MicroVAX 2000, MicroVAX 3300,
MicroVAX 3400, MicroVAX 3500,
MicroVAX 3600, MicroVAX 3800,
MicroVAX 3900

rtVAX: rtVAX 1000, rtVAX 3200, rtVAX 3300, rtVAX 3305, rtVAX 3400, rtVAX 3500,

rtVAX 3600, rtVAX 3800, rtVAX 4000-300

IVAX: IVAX 620

Target Processors Not Supported:

VAX: VAX 4000 Model 200

VAX 6000 Model 200 Series,
VAX 6000 Model 300 Series,
VAX 6000 Model 400 Series,
VAX 6000 Model 500 Series

VAX 8200, VAX 8250, VAX 8300, VAX 8350,
VAX 8500, VAX 8530, VAX 8550, VAX 8600,
VAX 8650, VAX 8700, VAX 8800, VAX 8810,
VAX 8820, VAX 8830, VAX 8840

VAX 9000 Model 210,
VAX 9000 Model 400 Series

VAXft 3000 Model 310

VAX–11/725, VAX–11/730, VAX–11/750,
VAX–11/780, VAX–11/782, VAX–11/785

MicroVAX: MicroVAX I, MicroVAX 3100

VAXstation: VAXstation I, VAXstation II,
VAXstation 2000, VAXstation 3100 Series,
VAXstation 3200, VAXstation 3500,
VAXstation 3520, VAXstation 3540,
VAXstation 8000

VAXserver: VAXserver 3100, VAXserver 3300,
VAXserver 3400, VAXserver 3500,
VAXserver 3600, VAXserver 3602,
VAXserver 3800, VAXserver 3900

VAXserver 4000 Model 200,
VAXserver 4000 Model 300

VAXserver 6000-210, VAXserver 6000-220,
VAXserver 6000-310, VAXserver 6000-320,
VAXserver 6000-410, VAXserver 6000-420,
VAXserver 6000-510, VAXserver 6000-520

rtVAX: rtVAX 6000 Model 200, rtVAX 6000 Model 300,
rtVAX 6000 Model 400, rtVAX 8550, rtVAX 8700,
rtVAXstation 3100 Model 30 and 38

Processor Restrictions:

A TK50 Tape Drive is required for standalone MicroVAX 2000 and VAXstation 2000 systems.

At least one IXV interface is necessary to use the IXV /VAXELN driver.

A VAXELN system typically requires at least 256 Kbytes of physical memory on the target computer, depending on the size of the user's programs and on the Toolkit components that are included. The component minimum memory requirements are estimated as follows (Note that the kernel is always present, and at least some of the run-time code is usually present):

Kernel:	24 Kbytes
Language run-time:	0 - 128 Kbytes
File Service:	50 Kbytes
Network Service:	24 Kbytes
Debugger:	12 Kbytes (remote support)
	60 Kbytes (local support)
Device drivers:	2 - 7 Kbytes

These sizes are for code only. The data size depends on the use of the system. Kernel data are typically 7 percent of physical memory, and each active process in the system requires at least 2 Kbytes of space.

The VAXELN system can be booted on a MicroVAX II from a TK50 or it can be downline loaded using the DEQNA (Ethernet adapter) in the target system.

OPTIONAL HARDWARE

IXV interfaces in any combination — Their number is primarily limited by the hardware of the target system.

CLUSTER ENVIRONMENT

This layered product is fully supported when installed on any valid and licensed VAXcluster* configuration without restrictions. The *HARDWARE REQUIREMENTS* sections of this product's Software Product Description and System Support Addendum detail any special hardware required by this product.

* V5.x VAXcluster configurations are fully described in the VAXcluster Software Product Description (29.78.xx) and include CI, Ethernet, and Mixed Interconnect configurations.

SOFTWARE REQUIREMENTS

- VMS Operating System, V5.0 - V5.4
- VAXELN Toolkit, V4.0 - V4.2
- DECnet–VAX, V5.0 - V5.4
- VAX C, V3.0 - V3.1 (required if C is used for VAXELN program development or if VAXELN C Run-Time Library is used)

VMS Tailoring:

The following VMS classes are required for full functionality of this layered product:

- VMS Required Saveset
- Programming Support
- System Programming Support

OPTIONAL SOFTWARE

Any programming language available for the VAXELN Toolkit

For the required versions, please refer to the VAXELN Toolkit SPD/SSA (SPD 28.02.xx and SSA 28.02.xx-x)

GROWTH CONSIDERATIONS

The minimum hardware/software requirements for any future version of this product may be different from the requirements for the current version.

DISTRIBUTION MEDIA

9-track 1600 BPI Magtape (PE), TK50 Tape Cartridge

ORDERING INFORMATION

Software Licenses: QL-VG3A*-**
Software Media: QA-VG3A*-**
Software Documentation: QA-VG3AA-GZ

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

This layered product is supported in Europe only.

The above information is valid at time of release. Please contact your local Digital office for the most up-to-date information.

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