

# Software Product Description

**PRODUCT NAME:** KMV1A MicroVAX Driver and  
Development Tools, Version 2.3

**SPD 28.26.04**

## DESCRIPTION

The KMV1A MicroVAX Driver and Development Tools product consists of two major components: a driver to control communications between a MicroVAX host and a KMV1A Programmable Communications Controller, and development tools to facilitate the programming of the KMV1A Controller for custom telecommunications applications. These major components are described below.

### Driver

The driver provides a mechanism for communications between a MicroVAX host and the KMV1A Programmable Communications Controller. The driver controls this communication by providing an interface between MicroVAX application programs and microcode being executed in the KMV1A Controller's microprocessor. The communication includes data transfer; and the transfer of command, control, and status information to and from the KMV1A Controller. The driver also provides the mechanism to load microcode from the MicroVAX host into the KMV1A Controller, and to initialize the microcode.

**Note:** The driver consists of three major components: the KMV1A driver, the installation verification program, and a demonstration program. The features of each of these components are described below.

### Development Tools

The development tools provide utilities which facilitate the development of telecommunications microcode for a KMV1A Programmable Communications Controller installed on a MicroVAX II host. The microcode developed with the tools utilities is executed in the microprocessor of the KMV1A Controller to provide a layered telecommunications protocol application on the host system. The utilities provided by the tools product include a generation procedure to assemble and link the user-written microcode, a debugger to permit the interactive debugging of the microcode, and a dump analyzer to provide a formatted printout of KMV1A and microcode data structures.

In addition to these utilities, the tools include a tools demonstration program and an installation verification program. The tools demonstration program includes both KMV1A microcode and host-based software. The demonstration microcode provides an example of an effective microcode interface to the KMV1A Controller's communication executive, to the KMV1A communications line hardware, and to the KMV1A driver. The host-based portion of the demonstration program provides an example of application software which communicates with the demonstration microcode in the KMV1A Controller through the KMV1A driver. The installation verification program validates that the tools have been installed properly on the host system.

## Features

### Driver

The driver provides the following features:

- Loading of microcode into the KMV1A Controller
- Initialization of KMV1A microcode
- Capability to upline dump the memory contents of the KMV1A Controller RAM to host memory
- QIO based interface for communications between the MicroVAX host and KMV1A Controller
- Memory mapped control of host area for DMA data transfer to and from the KMV1A Controller
- Full duplex data transmission between the host and the KMV1A Controller at up to 64 kbps

**Note:** The KMV1A microcode may limit throughput to less than 64 kbps in certain applications

- Host error logging of detected KMV1A errors

The installation verification program associated with the driver verifies that the driver has been installed properly. The procedure performs basic driver functions and verifies that files are resident in the correct locations. The installation verification program also verifies that the KMV1A Controller is functioning at a basic level by transmitting data to and from the KMV1A Controller.

The driver host demonstration program is a compilable FORTRAN program which provides an example of basic commands used by MicroVAX application programs to interface to the KMV1A Controller through the KMV1A driver. The demonstration program loads and initializes test KMV1A microcode, and then performs several transmit and receive commands.

The driver demonstration program is included in this software product for instructional purposes only; it is meant to serve as an example of effective use of the KMV1A driver. Digital does not provide the demonstration program for use, as is, by customers in functional host communications applications. Digital will not support such use of the demonstration program.

The development tools facilitate the development of microcode written in MACRO-11 assembly language for execution on the KMV1A Controller's DCT-11 microprocessor. The tools utilities allow the user-written microcode to be linked with the KMV1A Controller's communication executive which is resident in ROM on the controller. The communication executive provides services which create a structured environment in which the user-written microcode processes function together to perform layered communications protocol processing. The services provided by the communication executive to the user-written microcode processes include timer support, interprocess scheduling, interprocess communications, and memory buffer management.

The utilities provided by the tools product to facilitate the microcode development are described below.

#### Microcode Application Generation Procedure

- Host resident command procedure
- Uses the VAX-11 RSX Macro Assembler to assemble user-written microcode
- Links user-written microcode modules to the KMV1A Controller's communication executive and its data base (this is done by using the VAX-11 RSX Task Builder)
- Creates an executable microcode image which is loadable into the KMV1A Controller's RAM

#### Debugger

- Consists of host-resident software and a microcode object module which can be linked with the user-written microcode
- Enables the interactive debugging of user-written microcode from a host terminal
- Provides facilities for:
  - Examining and modifying the contents of the KMV1A Controller's DCT-11 internal registers and RAM

- Starting, breakpointing, and single stepping the execution of the microcode

#### Dump Analyzer

- Host resident program
- Provides a formatted display on a host terminal and an optional disk file of the KMV1A communication executive data structures and the user developed data structures

The development tools also include a demonstration program, provided in source form. The tools demonstration program is provided for instructional purposes only; it is intended to provide a model for the users' development of host-based software and KMV1A microcode. The demonstration program is not provided by Digital to be included, as is, in user-developed application software or KMV1A microcode. Digital will not support the use of the demonstration program, or any part of the demonstration program, as part of a customer's KMV1A based application or as part of a customer's host-based application.

The tools demonstration program includes demonstration host-based software and demonstration KMV1A microcode. The host-based demonstration software is a FORTRAN example which illustrates an effective interface to the KMV1A driver and demonstration microcode. The demonstration microcode includes MACRO-11 modules which provide examples of the following microcode functions:

- Communication of control information with the host, and DMA data transfers with the host, both controlled via the KMV1A driver
- Communication between the microcode and the KMV1A communications line, using HDLC framing
- Verification of valid host command syntax

#### **HARDWARE REQUIREMENTS**

Processors and/or hardware configuration as specified in the System Support Addendum (SSA 28.26.04-x).

#### **SOFTWARE REQUIREMENTS**

*For Systems Using Terminals (No DECwindows Interface):*

OpenVMS Operating System  
VAX-11 RSX  
KMV1A MicroVAX Driver

Refer to the System Support Addendum (SSA 28.26.04-x) for availability and prerequisite/optional required versions of software.

### **ORDERING INFORMATION**

Software Licenses: QL-VCRA\*-.\*\*  
Software Media: QA-VCRA\*-.\*\*  
Software Documentation: QA-VCRA\*-GZ  
Software Product Services: QT-VCRA\*-.\*\*

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

### **SOFTWARE LICENSING**

This software is furnished under the licensing provisions of Digital Equipment Corporation's Standard Terms and Conditions. For more information about Digital's licensing terms and policies, contact your local Digital office.

#### **License Management Facility Support**

This layered product supports the OpenVMS License Management Facility.

License units for this product are allocated on a CPU-capacity basis.

For more information on the License Management Facility, refer to the OpenVMS Operating System Software Product Description (SPD 25.01.xx) or the OpenVMS 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.

<sup>TM</sup> The DIGITAL Logo, DEC, DECwindows, Digital, MicroVAX, OpenVMS, RSX, VAX, and VMS are trademarks of Digital Equipment Corporation.



# System Support Addendum

PRODUCT NAME: KMV1A MicroVAX Driver and Development  
Tools, Version 2.3

SSA 28.26.04-A

## HARDWARE REQUIREMENTS

### *Processors Supported*

VAX: VAX 4000 Model 200,  
VAX 4000 Model 300,  
VAX 4000 Model 400,  
VAX 4000 Model 500,  
VAX 4000 Model 600

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

VAXstation: VAXstation II

### *Processors Not Supported*

VAX: VAXft Model 110,  
VAXft Model 310,  
VAXft Model 410,  
VAXft Model 610,  
VAXft Model 612,  
  
VAX 4000 Model 100  
  
VAX 6000 Model 200 Series,  
VAX 6000 Model 300 Series,  
VAX 6000 Model 400 Series,  
VAX 6000 Model 500 Series  
VAX 6000 Model 600 Series

VAX 7000 Model 600 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 110,  
VAX 9000 Model 210,  
VAX 9000 Model 300 Series,  
VAX 9000 Model 400 Series

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

MicroVAX: MicroVAX I, MicroVAX 2000  
MicroVAX 3100 Model 10/10E , 20/20E,  
Model 30/40, Model 80, Model 90

VAXstation: VAXstation I, VAXstation 2000,  
VAXstation 3100 Model 30/40, Model 38  
/48, Model 76,  
VAXstation 3200, VAXstation 3500, VAXsta-  
tion 3520,  
VAXstation 3540, VAXstation 4000 VLC,  
VAXstation 4000 Model 60, VAXstation  
4000 Model 90,  
VAXstation 8000

VAXserver: VAXserver 3100 Model 10/10E, 20/20E,  
VAXserver 3300, VAXserver 3400,  
VAXserver 3500,  
VAXserver 3600, VAXserver 3602,  
VAXserver 3800,  
VAXserver 3900, VAXserver 4000 Model  
200,  
VAXserver 4000 Model 300, VAXserver  
4000 Model 500,  
VAXserver 6000 Model 210/220, VAXserver  
6000 Model 310/320,  
VAXserver 6000 Model 410/420, VAXserver  
6000 Model 510/520,  
VAXserver 6000 Model 610, VAXserver  
6000 Model 620,  
VAXserver 6000 Model 630



**DISTRIBUTION MEDIA**

TK50 Streaming Tape

**ORDERING INFORMATION**

Software Licenses: QL-VCRA\*-\*\*

Software Media: QA-VCRA\*-\*\*

Software Documentation: QA-VCRAA-GZ

Software Product Services: QT-VCRA\*-\*\*

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

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

™ The DIGITAL Logo, CI, DECwindows, Digital, MicroVAX, OpenVMS, RSX, TK, VAX, VAXcluster, VAXserver, VAXstation, and VMS are trademarks of Digital Equipment Corporation.

