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Digital Drive
Westminster, Massachusetts 01473-0471

SOFTWARE
BILL OF MATERIALS

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QTY	PICK	LOCATION	PART NUMBER	PART DESCRIPTION
1	*FS*		36-28231-07	THERMAL BARCODE LABEL
1	*FS*		99-08545-02	BOOKWRAP
1	_____	(UR)	AQ-FP86N-BN	VAX FORTRAN V5.6 BIN TK50
1	_____	(DP)	AV-PF4FA-TK	SUP REPLACEMENT LETTER
1	_____		EN-01044-07	SFTWR PERFORMANCE REPORT FORM
1	*****	NS (UR)	QA-100AA-WZ5.6	VAX FORTRAN V5.6 UPD DOC
1	*FS*		36-28231-07	THERMAL BARCODE LABEL
1	*FS*		99-08545-02	BOOKWRAP
1	_____	(UR)	AE-JF87L-TE	VAX FORTRAN V5.6 SPD 25.16.36
1	_____	(UR)	AE-LT36H-TE	VAX FORTRAN SSA 25.16.36-A
1	_____	(DP)	AE-NA50A-TK	SOFTWARE WARRANTY ADDENDUM
1	_____	(UR)	AV-N672V-TE	VAX FORTRAN V5.6 READ FIRST
1	_____		EN-02512-05	CHANGE OF ADDRESS CARD

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5 SPD / LETTER



AV-PF4FA-TK

October, 1990

digital™

Dear Service Customer,

Enclosed is a software product update/maintenance release supplied as part of your software maintenance agreement.

As part of its planned License Management Tools program, Digital has initiated replacement of all Service Update PAKs (SUPs) for licensed software product with License Product Authorization Keys (PAKs).

Nothing is necessary for you to do until contacted concerning the SUP-TO-PAK Conversion Program. Contacting customers will be done during the October through January time period.

If by some chance you have not been contacted by that time, or have questions concerning the program in your area please call 800-332-4636.

You may already have a License PAK for the product in this maintenance update, if so, please ensure that it is registered and loaded within the License Management Facility (LMF). Any other Service Update PAKs (SUPs) or Temporary Service PAKs (TSPs) for the product should be disabled/cancelled.

When disabling/cancelling SUPs or TSPs, if you find that you need to purchase additional "license rating" to execute the software on a desired processor or system configuration CALL DECdirect FOR TOLL FREE TELEPHONE ORDERING information at (800) 344-4825.

Thank you for your continued business and support.





Read Before Installing or Using VAX FORTRAN Version 5.6

AV-N672V-TE

Whether you are a new or a continuing VAX FORTRAN customer, please take time to read the following information about your product.

Installation Information

This installation kit contains media for installing VAX FORTRAN Version 5.6. Installation of the full kit requires 9,000 blocks of free disk space.

Installing this product requires VMS Version 5.2 or higher.

Release Notes Information

The release notes for VAX FORTRAN Version 5.6 contain important installation-related instructions and a summary of technical changes, new features, differences, known problems, corrected errors, performance enhancements, documentation errors, restrictions, and incompatibilities.

You can read the release notes before installing VAX FORTRAN by invoking VMSINSTAL and following the instructions in the installation guide. You can locate the release notes after installing VAX FORTRAN by typing the following DCL command:

```
$ HELP FORTRAN RELEASE_NOTES 
```

Contents of This Kit

- **Indented Bill Report (BIL) and Bill of Materials (BOM)**

Please read the BIL and BOM enclosed in this kit and check to see that all items listed are actually in your kit. If your kit is damaged or any items are missing, call your Digital representative.

- **Media**

If you ordered media, you will find the media and the *VAX FORTRAN Installation Guide* in this kit. Consult the *VAX FORTRAN Installation Guide* for information about installing VAX FORTRAN on your system. The installation guide you receive is marked for Version 5.3 (paper copy) or 5.4 (CDROM copy). Both contain accurate information for installing Version 5.6; the procedure has not changed since Version 5.3.

- **Software Product Description (SPD)**

The SPD provides an overview of the VAX FORTRAN kit and its features.

- **System Support Addendum (SSA)**

The SSA describes the technical environment in which the product is supported.



- **Documentation**

Depending on your order, this kit may include copies of the following VAX FORTRAN manuals:

VAX FORTRAN Language Reference Manual
VAX FORTRAN User Manual

User documentation is always included for new customers. However, for continuing customers, user documentation is included only if the customer orders it separately or if it has been revised since the prior release of VAX FORTRAN.

The *VAX FORTRAN Installation Guide* is included with the media.

Note that VAX FORTRAN documentation is also available on CDROM.

- **Software Performance Report (SPR)**

Use this form to report any problems with VAX FORTRAN, provided you have purchased warranty services.

A Final Note

Digital prides itself on responding to customer needs. In order to continue serving you, we need your comments. Each manual contains preaddressed, postage-paid Reader's Comments forms at the back. If you find errors in a manual or want to make comments about it, please fill out one of these forms and send it to us.



Software Product Description

PRODUCT NAME: VAX FORTRAN, Version 5.6

SPD 25.16.36

DESCRIPTION

VAX FORTRAN is an implementation of full language FORTRAN-77 conforming to American National Standard FORTRAN, ANSI X3.9-1978. It includes optional support for programs conforming to the previous standard, ANSI X3.9-1966. VAX FORTRAN meets the Federal Information Processing Standard Publication (FIPS-69-1) requirements by conforming to the ANSI Standard and by including a flagger. The flagger optionally produces diagnostic messages for compile-time elements that do not conform to the Full-Level ANSI FORTRAN X3.9-1978 Standard. VAX FORTRAN also conforms to the International Standard ISO 1539-1980(E). VAX FORTRAN conforms to MIL-STD 1753 with the exception of the specific syntax for octal and hex constants.

The sharable, reentrant compiler operates under the VMS Operating System. It globally optimizes source programs while taking advantage of the VAX floating point and character string instruction set and the VMS virtual memory system.

VAX FORTRAN includes the following enhancements to the ANSI standard:

- Directives to support parallel decomposition of DO-loops on multiprocessor VMS systems
- Directives to control listing page titles and subtitles, object file identification field, and some attributes of common blocks
- Composite data declarations using STRUCTURE, END STRUCTURE, and RECORD statements, and access to record components through field references
- A set of data types beyond those specified for full language FORTRAN-77:
 - LOGICAL*1, BYTE
 - LOGICAL*2
 - INTEGER*2
 - COMPLEX*16, DOUBLE COMPLEX
 - REAL*16
- Explicit specification of storage allocation units for data types (e.g., REAL*8, INTEGER*4)
- Data initialization in type declaration statements
- IMPLICIT NONE statement
- INCLUDE statement
- NAMELIST-directed I/O
- 31-character identifiers that can include dollar sign (\$) and underscore (_)
- DO WHILE and ENDDO statements
- Bit manipulation functions
- Language elements for keyed and sequential access to VAX RMS indexed organization files
- Hexadecimal and octal constants and Z and O format edit descriptors applicable to all data types
- ENCODE and DECODE statements
- ACCEPT and TYPE input/output statements
- DEFINE FILE statement
- USEROPEN subroutine invocation at file OPEN time
- Comments allowed at end of each source line
- Debug statements in source
- Language elements that support the VAX extended range and extended precision floating point architectural features:
 - 64-bit G_floating data type, with an 11-bit exponent and 53-bit mantissa, which provides a range of 0.56×10^{-308} to 0.09×10^{308} and a precision of 15 decimal digits
 - 128 bit H_floating data type, with a 15-bit exponent and a 113-bit mantissa, which provides a range of 0.84×10^{-4932} to 0.59×10^{4932} and a precision of 33 decimal digits

Additional Features

- Generation of optional diagnostic messages for extensions not supported by Digital's ULTRIX and VAX-ELN Operating Systems

- Support for translation of VAX CDD/Plus records into FORTRAN records
- Support for calls to VMS system service procedures
- Generation of symbol tables for the VAX Symbolic Debugger
- Generation of Cross Reference Listings
- Generation of sharable code
- Up to 255 actual arguments in a CALL statement
- Up to 250 named COMMON blocks per subprogram
- Support for providing error diagnostics to the VAX Language-Sensitive Editor component and cross-reference information to the VAX Source Code Analyzer component of VAX Language-Sensitive Editor/Source Code Analyzer
- Support for low level program design, including the processing of pseudocode and the extraction of design information from comments

The VAX FORTRAN compiler provides a multi-phase optimizer that is capable of performing optimizations across entire program units. Specific optimizations performed include:

- Constant folding
- Optimizations of arithmetic IF, logical IF, and block IF-THEN-ELSE
- Global common subexpression elimination
- Removal of invariant expressions from loops
- Global allocation of general registers across program units
- In-line expansion of statement functions
- Optimization of array addressing in loops
- Value propagation
- Deletion of redundant and unreachable code

Note: VAX FORTRAN does not support the use of FDML statements within parallel DO-loops.

HARDWARE REQUIREMENTS

VAX, MicroVAX, VAXstation, or VAXserver configuration as specified in the System Support Addendum (SSA 25.16.36-x).

SOFTWARE REQUIREMENTS

For Systems Using Terminals: (No DECwindows Interface)

VMS Operating System

For Workstations Running VMS:

VMS Operating System

VMS Workstation Software

For Workstations Running DECwindows:

VMS Operating System (and necessary components of VMS DECwindows)

VAX FORTRAN supports a DECwindows compiler interface for compile qualifier selection on workstations. This interface is accessible from FileView.

- * Refer to the System Support Addendum (SSA 25.16.36-x) for availability and required versions of prerequisite/optional software and for information regarding components of VMS DECwindows.

ORDERING INFORMATION

Software Licenses: QL-100A*-**

Software Media: QA-100A*-**

Software Documentation: QA-100AA-GZ

Software Product Services: QT-100A*-**

- * 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 VMS 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 VMS Operating System Software Product Description (SPD 25.01.xx) or the VMS Operating System documentation set.

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

SOFTWARE PRODUCT SERVICES

A variety of service options are available. For more information, please 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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Software Warranty Addendum

DIGITAL WARRANTED SOFTWARE PRODUCTS

SPD 01.10.00

The software product is warranted to conform to the Software Product Description (SPD). This means that DIGITAL will remedy any nonconformance when it is reported to DIGITAL by the customer during the warranty period.

The warranty period is one year. It begins when the software is installed or thirty days after delivery to the end user, whichever occurs first and expires one year later. All warranty related support for this software will end one year after release of the subsequent version.

Warranty is provided in the country of purchase. DIGITAL will provide a service location which will accept reporting (in a format prescribed by DIGITAL) of a nonconformance problem caused when using the licensed software under normal conditions as defined by the SPD. DIGITAL will remedy a nonconformance problem in the current unaltered release of the licensed software by issuing correction information such as: correction documentation, corrected code, or notice of availability of corrected code; or a restriction or a bypass. The customer will be responsible for the preparation and submission of the problem report to the service location.

WARRANTY EXCLUSION

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DIGITAL MAKES NO WARRANTIES WITH RESPECT TO THE FITNESS AND OPERABILITY OF MODIFICATIONS NOT MADE BY DIGITAL.

IF THE SOFTWARE FAILS TO FUNCTION FOR REASONS STATED ABOVE, THE CUSTOMER'S WARRANTY WILL BE INVALIDATED AND ALL SERVICE CALLS WILL BE BILLABLE AT THE PREVAILING PER CALL RATES.

This Software Warranty Addendum is effective for licensed software products ordered in the United States after October 1988 and supersedes all prior versions.

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January 1989
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System Support Addendum

PRODUCT NAME: VAX FORTRAN Version 5.6

SSA 25.16.36-A

HARDWARE REQUIREMENTS

Processors Supported:

VAX: VAXft 3000-310

VAX 4000 Model 200,
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 9000-210, VAX 9000-410
VAX 9000-420, VAX 9000-430, VAX 9000-440

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

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

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

Processors Not Supported:

VAX-11/725, VAX-11/782, MicroVAX I, VAXstation I,
VAXstation 8000

Processor Restrictions:

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

Disk Space Requirements (Block Cluster Size = 1):

VAX FORTRAN Compiler Kit:

Disk space required for installation: 9,000 blocks
(4.6 Mbytes)

Disk space required for permanent use: 4,900 blocks
(2.5 Mbytes)

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.

Memory Requirements for DECwindows Support

The minimum supported memory for this application
running in a standalone DECwindows environment with
both the client and server executing on that same sys-
tem is 8 MB.

Parallel Processing Hardware Requirements

Multiprocessor VAX systems are required for proper ex-
ecution of decomposed DO-loops. However, applica-
tions that are compiled using the VAX FORTRAN paral-
lel processing options will run on all VAX processors for
reasons of compatibility.

OPTIONAL HARDWARE

Floating point intensive applications should be run on
configurations with the appropriate hardware support
for the floating point data types being used. Consult
the base operating system Software Product Descrip-
tion (SPD) for the Floating Point Accelerator or other

floating point hardware appropriate for your configuration.

CLUSTER ENVIRONMENT

This layered product is fully supported when installed on any valid and licensed VAXcluster* configuration without restrictions. The *HARDWARE REQUIREMENTS* section 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

For Systems Using Terminals: (No DECwindows Interface)

VMS Operating System V5.2 - V5.4-1A

For Workstations Running VMS:

VMS Operating System V5.2 - V5.4-1A

VMS Workstation Software V4.2

For Workstations Running DECwindows:

VMS Operating System V5.2 - V5.4-1A (and necessary components of VMS DECwindows)

This product may run in either of the following ways:

- Stand-alone execution — running the X11 display server and the client application on the same machine.
- Remote execution — running the X11 display server and the client application on different machines.

VMS DECwindows is part of the VMS Operating System but must be installed separately on versions prior to V5.4. Installation of VMS DECwindows gives you the option to install any or all of the following three components:

- VMS DECwindows Compute Server (Base kit; provides runtime support)
- VMS DECwindows Device Support
- VMS DECwindows Programming Support

For stand-alone execution, the following DECwindows components must be installed on the machine:

- VMS DECwindows Compute Server (runtime support)

- VMS DECwindows Device Support
- VMS DECwindows Programming Support

For remote execution, the following DECwindows components must be installed on the machine:

Server Machine

- VMS DECwindows Compute Server (runtime support)
- VMS DECwindows Device Support

Client Machine

- VMS DECwindows Compute Server (runtime support)
- VMS DECwindows Programming Support

VMS Tailoring

For VMS V5.x, the following VMS classes are required for full functionality of this layered product:

- VMS Required Saveset
- Programming Support
- Utilities

For more information on VMS classes and tailoring, refer to the VMS Operating System Software Product Description (SPD 25.01.xx).

OPTIONAL SOFTWARE

VAX CDD/PLUS V4.0 - V4.2A

VAX Language-Sensitive Editor/

Source Code Analyzer V3.1

Note: The following restrictions concern the use of the /ANALYSIS_DATA and /DESIGN qualifiers with FORTRAN V5.6:

- To load the analysis data files created by the /ANALYSIS_DATA qualifier into a VAX Source Code Analyzer (SCA) library, the VAX Source Code Analyzer must be at a minimum of V2.0.
- To use the /DESIGN qualifier, the VAX Language-Sensitive Editor (LSE) must be at a minimum of V3.0.

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

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

This product is also available as part of the VMS Consolidated Software Distribution on CDROM.

The software documentation for this product is also available as part of the VMS Online Documentation Library on CDROM.

ORDERING INFORMATION

Software Licenses: QL-100A*-**

Software Media: QA-100A*-**

Software Documentation: QA-100AA-GZ

Software Product Services: QT-100A*-**

* 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. Please contact your local Digital office for the most up-to-date information.

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