

**May 1979**

This document is an introduction to the software documentation set shipped with RSTS/E V7.0.

**RSTS/E V7.0**  
**Documentation Directory**  
Order No. AA-2642D-TC

**SUPERSESION/UPDATE INFORMATION:** This document contains information on RSTS/E V7.0 as of May, 1979.

**OPERATING SYSTEM AND VERSION:** RSTS/E V7.0

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First Edition: July 1975  
Revised: January 1977  
Revised: March 1978  
Revised: May 1979

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# Contents

|  |     |
|--|-----|
| <b>Preface</b>                                       | v   |
| <b>Chapter 1 Documentation Organization</b>          | 1-1 |
| <b>Chapter 2 RSTS/E V7.0 Documentation Summaries</b> | 2-1 |
| Volume 1 - SYSTEM MANAGEMENT                         | 2-1 |
| Volume 2 - THE RSTS/E USER                           | 2-3 |
| Volume 3 - BASIC-PLUS PROGRAMMING                    | 2-4 |
| Volume 4 - MACRO-11 PROGRAMMING                      | 2-5 |
| Volume 5 - PROGRAMMING UTILITIES                     | 2-6 |
| Volume 6 - USING RMS-11                              | 2-8 |
| Auxiliary Documentation                              | 2-9 |

Commercial Engineering Publications Typeset this manual using DIGITAL's  
TMS-11 Text Management System.

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# Preface

RSTS/E (Resource Sharing Timesharing System/Extended) V7.0 consists of:

1. The RSTS/E software contained on the distribution media.
2. A documentation set that describes the functions and operation of the software.

This document contains a brief discussion of the documentation set shipped with RSTS/E V7.0. Its purpose is to help you determine which documents you need in order to use the RSTS/E system.

Chapter 1 describes how the documentation set is organized. Chapter 2 contains an abstract of each document, highlighting new V7.0 features.

This Directory describes the documentation set provided with the RSTS/E V7.0 Operating System. To learn about the separately licensed software products for use with RSTS/E, consult the *RSTS/E and Supported Software Products Catalogue*. This Catalogue describes the software documentation and components for RSTS/E and its optional products. Order the Catalogue from your Digital representative.



# Chapter 1

## Documentation Organization

The RSTS/E V7.0 documentation set is assembled into system binders. The system binders are organized into the following volumes:

- Volume 1 - SYSTEM MANAGEMENT
- Volume 2 - THE RSTS/E USER
- Volume 3 - BASIC-PLUS PROGRAMMING
- Volume 4 - MACRO-11 PROGRAMMING
- Volume 5 - PROGRAMMING UTILITIES
- Volume 6 - USING RMS-11

Each volume contains documentation directed to a particular audience.

Volume 1, SYSTEM MANAGEMENT, consists of two system binders. The documentation in Volume 1 is directed to the RSTS/E system manager. The system manager is responsible for system generation and maintenance, control of system performance and system users, and supervision of day-to-day operations. Volume 1 contains the following documents:

- Software Product Description for RSTS/E V7.0*
- RSTS/E V7.0 Documentation Directory*
- RSTS/E V7.0 Release Notes*
- RSTS/E V7.0 System Generation Manual*
- RSTS/E V7.0 System Manager's Guide*

Volume 2, THE RSTS/E USER, is one system binder. It contains documentation for the general time-sharing user:

- RSTS/E System User's Guide*
- Beginner's Guide to the DEC Editor*
- DEC Editor Reference Manual*

Volume 3, BASIC-PLUS PROGRAMMING, is one system binder. It contains documentation for a time-sharing user who codes programs in BASIC-PLUS:

- BASIC-PLUS Language Manual*
- RSTS/E Programming Manual*

Volume 4, MACRO-11 PROGRAMMING, is two system binders. Volume 4 contains the documentation that a time-sharing user needs to code programs in the MACRO-11 programming language:

*PDP-11 MACRO Language Reference Manual*  
*IAS/RSX ODT Reference Manual*  
*RSTS/E System Directives Manual*

Volume 5, PROGRAMMING UTILITIES, is two system binders. The manuals in Volume 5 describe utility programs used by programmers who code in languages supported by RSTS/E V7.0:

*RSTS/E Programmer's Utilities Manual*  
*RSTS/E Task Builder Reference Manual*  
*RSTS/E FORTRAN IV Utilities Manual*  
*PDP-11 SORT Reference Manual*  
*PDP-11 TECO User's Guide*  
*RSTS/E Text Editor Manual*  
*RSTS/E RUNOFF User's Guide*

Volume 6, USING RMS-11, is for programmers who use the PDP-11 Record Management Services routines. These documents are:

*RMS-11 Installation Guide*  
*RMS-11 User's Guide*  
*RMS-11 MACRO-11 Reference Manual*

The following auxiliary documentation is also part of the RSTS/E documentation set, but is not included in the system binders:

*Introduction to BASIC*  
*RSTS/E Pocket Guide*  
*RSTS/E V7.0 Installation Evaluation*  
*Software Product User Survey*  
*Software Performance Report*



## **Chapter 2**

# **RSTS/E V7.0 Document Summaries**

This chapter describes each document in the V7.0 set, in the order the documents appear in the system binders. New RSTS/E customers should scan the summaries for the documents they may need.

For RSTS/E users who are upgrading to V7.0, we have included a description of features that are new for this version. Manuals that are new to the RSTS/E V7.0 documentation set have the pointer: ✎

### **Volume 1 – SYSTEM MANAGEMENT**

#### **RSTS/E V7.0 Software Product Description**

AE-3400L-TC                      4 pp.

This document describes the minimum hardware and software for the product. It lists optional supported hardware and software, defines the product's support category and update policy, and supplies ordering information. The Software Product Description (SPD) is the legal definition of RSTS/E V7.0.

#### **RSTS/E V7.0 Documentation Directory**

AA-2642D-TC                      20 pp.

This directory is a summary description of the documentation set for RSTS/E V7.0.

#### **RSTS/E V7.0 Release Notes**

AA-5246C-TC                      236 pp.

This document contains information directed primarily to a system manager, and is required for generating RSTS/E. The Release Notes describe the differences between the current RSTS/E release and its preceding release. This document also contains optional feature patches.

The Release Notes establish a maintenance notebook for documentation corrections, software problems and solutions, and programming notes. These articles are published in both the *RSTS/E Software Dispatch Review* and the monthly *RSTS/E Software Dispatch*.

**RSTS/E V7.0 System Generation Manual**  
AA-2669E-TC 282 pp.

This manual describes the procedures to do the following:

- Generate and install RSTS/E software components for V7.0.
- Build and patch run-time systems.
- Build the RSTS/E system libraries.
- Add auxiliary run-time systems.
- Build optional software.

Also, the manual contains information you need to change system characteristics, to optimally arrange system components, to optimize system structures, and to correct hardware and software problems. This material is of interest to the person responsible for system policy and procedure. Usually that person is the system manager, but other authorized personnel may find the manual useful to understand more thoroughly the composition of their RSTS/E system.

Before attempting to generate a RSTS/E system, you should be familiar with RSTS/E software, run-time systems, the hardware devices on which RSTS/E runs, and any published changes (patches) to the system software.

The new system generation features and enhancements for V7.0 are as follows:

- Directory and data caching.
- Resident libraries.
- Large file capability.
- RSX emulation in the RSTS/E Monitor.
- XBUF line printer.
- RSX or BASIC-PLUS-2 system default run-time systems.
- Integration of autpatching into BUILD procedure.
- Support for new devices.
- RL01 overlap seek.

**RSTS/E V7.0 System Manager's Guide**  
AA-2762C-TC 254 pp.

This guide tells you how to operate and manage a RSTS/E system. You should be familiar with the structure and programming of RSTS/E and know time-sharing software and hardware. The basis for this manual is a program set with privileged status and features. Only the RSTS/E system manager and privileged users should have access to this guide.

The guide describes:

- RSTS/E system structure and privilege.
- System start-up, shut down, and automatic restart.
- Time-sharing.
- Account creation.
- Operator services.
- System error package.
- On-line control of RSTS/E using the UTILITY program.
- Disk backup and recovery programs.
- The automated patching facility.

The new features added for V7.0 are:

- SAVE/RESTORE - a fast, disk volume backup and recreate program.
- DEVTST - hardware exerciser programs that can isolate hardware errors on the system.
- ONLCLN - a program that repairs corrupt disk file structures while you are operating under time-sharing.

## **Volume 2 - THE RSTS/E USER**

### **RSTS/E System User's Guide**

AA-5133B-TC 400 pp.

This manual is directed to the general time-sharing user. It provides information on system commands, system programs, and device operating procedures. Most of the functions described are available to the non-privileged user. The material that has been added or updated for RSTS/E V7.0 includes the following:

| <b>Feature</b>             | <b>Section</b> |
|----------------------------|----------------|
| BACKUP                     | Chapter 17     |
| Control characters         | 4.9            |
| DIRECT                     | 15.1           |
| FILCOM                     | 15.3           |
| File attributes            | Chapter 15     |
| FIT                        | 16.3           |
| Multi-volume magnetic tape | Chapter 16     |
| PIP.SAV                    | 16.1           |
| PMDUMP                     | Chapter 22     |
| /POSITION option           | 11.5.3         |
| QUE FLUSH Command          | Table 20-1     |
| QUE SHORT-LIST Command     | 20.3           |
| SPR Instructions           | C.3            |
| TTYSET RESUME and CTRL/R   | Table 19-1     |
| UMOUNT/NOCHECK             | 19.2.3         |

**Beginner's Guide to the DEC Editor**  
AA-D374A-TC 60 pp.

This manual is a tutorial. It leads first-time users through exercises with EDT, in order to learn the DEC Editor.

**DEC Editor Reference Manual**  
AA-5789A-TC 76 pp.

This manual describes the DEC Editor, EDT, which allows you to create files and manipulate their contents. Use this manual as a reference tool for an overview of the editor and its features.

### **Volume 3 – BASIC-PLUS PROGRAMMING**

**BASIC-PLUS Language Manual**  
AA-2623C-TC 280 pp.

This manual is for RSTS/E users who have a knowledge of BASIC programming. The manual is a reference source on regular and advanced programming techniques in BASIC-PLUS. Commonly used system functions are described, as well as formatted ASCII, virtual array, and block I/O operations.

Several new features enhance versatility and allow for compatibility with BASIC-PLUS-2. The following list shows material that has been added or enhanced for V7.0:

| <b>Feature</b>                       | <b>Section</b> |
|--------------------------------------|----------------|
| BASIC-PLUS keyword list              | Appendix A     |
| CCPOS                                | Chapter 10     |
| CHAIN with LINE keyword              | Chapter 9      |
| CLOSE with a negative channel number | 8.3.1          |
| CLOSE statement                      | 9.3            |
| Continuation lines                   | 2.3            |
| DEF*                                 | Chapter 3      |
| Large file I/O                       | Chapter 11     |
| POSITION switch                      | 9.2.4          |
| Pre-extending a virtual array        | 11.3           |
| Terminology                          | Glossary       |

This manual is a complement to the *RSTS/E Programming Manual*.

**RSTS/E Programming Manual**  
AA-2726C-TC 370 pp.

This manual describes device dependent features and more complex system functions for the advanced BASIC-PLUS programmer. Included in the manual are descriptions of file structured and non-file structured operations for disk, magnetic tape, paper tape, card readers, terminals, and line printers. The manual also defines system function calls to the monitor and explains

programming conventions. The material that has been added or updated for RSTS/E V7.0 includes the following:

| <b>Feature</b>                    | <b>Section</b>      |
|-----------------------------------|---------------------|
| Conditionally contiguous files    | 1.4.7               |
| Data caching                      | 1.4.9               |
| File placement                    | 1.4.10, 1.4.11      |
| Large file update and extend      | 1.4.2.2             |
| New disk file MODEs               | 1.4                 |
| New SYS calls                     | 7.2.3.4             |
| Assign/Reassign User Logical      | 7.2.4.3             |
| Creating a job                    | 7.2.23              |
| Data caching                      | 7.2.18              |
| Deassign User Logical             | 7.2.4.4             |
| Directory look up - large files   | 7.2.16              |
| File position                     | 7.2.4.1             |
| File utility functions            | 7.2.24              |
| Return job status                 | 7.2.25              |
| Terminal characteristics          | 7.2.8               |
| New terminal MODEs                | 4.3                 |
| Non-file structured block access  | 1.3.2.1             |
| Paper tape parity                 | 6.2                 |
| Privileged file wipeout on delete | 1.2.2               |
| RX02 floppy diskette              | 1.5                 |
| SPEC%                             | 1.5, 1.7, 2.12, 4.6 |
| SPR instructions                  | C.3                 |
| Tentative files                   | 1.4.6               |

## **Volume 4 - MACRO-11 PROGRAMMING**

### **PDP-11 MACRO-11 Language Reference Manual**

AA-5075A-TC                      182 pp.

This manual is the primary reference tool for users who are developing programs coded in the MACRO-11 assembly language. The manual has three parts.

Part I, "Introduction to MACRO-11," provides an overview of the language and defines source program format. Part II, "Programming," describes symbols and expressions, relocation and linking, and addressing modes. Part III, "MACRO-11 Directives," defines general assembler directives and macros.

Appendices include information on character sets, directives, error messages, coding standards, and allocating virtual memory.

### **IAS/RSX ODT Reference Manual**

DEC-11-OIODA-B-D                90 pp.

The Octal Debugging Tool (ODT) described in this manual is available to RSTS/E users as the object module file ODT.OBJ. A programmer can use ODT to set breakpoints, display and change the contents of memory locations

dynamically (as the program is running), and do other operations useful in debugging. This is done when ODT.OBJ is linked with the user's compiled or assembled object modules with the RSTS/E Task Builder (TKB), using the /DA switch.

☞ **RSTS/E System Directives Manual**  
AA-D748A-TC 438 pp.

This manual contains a brief general description of run-time systems. It devotes major sections to directives to the RSTS/E Monitor and RSX Emulator that can be used in MACRO programs.

The directives perform input/output and other operations useful to an assembly-language programmer in the RSTS/E environment: changing the memory size allocated for the program, accessing resident libraries, switching to a new run-time system, and so forth.

The Monitor directives can be used from MACRO programs running under the RSX Run-Time System, and with some exceptions, from programs running under the RT11 Run-Time System. They can also be used from a run-time system itself. The directives to the RSX Emulator can be used only from MACRO programs running under the RSX Run-Time System or its derivatives.

## **Volume 5 – PROGRAMMING UTILITIES**

☞ **RSTS/E Programmer's Utilities Manual**  
AA-D749A-TC 94 pp.

This manual describes the RSX-based utility programs available to RSTS/E users. These utility programs are:

- MACRO-11 Assembly Utility Program (MAC).
- Librarian Utility Program (LBR) – a library maintenance program that helps you create and maintain library files.
- Object Module Patch Utility Program (PAT) – a program that lets you modify code in a relocatable binary object (.OBJ) module.
- Make a Save Image Library Utility Program (MAKSIL) – a program that allows you to create either a Save Image Library file, a run-time system image file, or a resident library.

**RSTS/E Task Builder Reference Manual**  
AA-5072A-TC 192 pp.

This manual describes the functions and use of the Task Builder for advanced programmers. It contains instructions for linking compiled object modules, resolving external references, allocating system and task memory, building an overlaid task, and linking a task to a run-time system.

- ☞ The update to this manual (AD-5072A-T1) contains information on the creation and use of resident libraries. It describes the switches and options required for library creation and linkage, and contains information on resident library memory usage.

- ☞ **RSTS/E FORTRAN IV Utilities Manual**  
AA-2140B-TC 174 pp.

This manual describes the RSTS/E FORTRAN IV Utilities, which is a set of six programs. These RT11-based utilities are similar to those described in the *RSTS/E Programmer's Utilities Manual*. They will enable you to use the FORTRAN IV compiler and other system resources when running FORTRAN programs.

Chapter 1 is an overview of all the utilities, and Chapter 2 describes all of the utilities for assembling MACRO-11 subprograms. Chapters 3 and 4 discuss linking object modules and debugging assembly language programs.

Chapter 5 discusses creating and maintaining libraries. Chapters 6 and 7 describe patching the utilities and making code modifications to object modules.

The appendices include the ASCII and RADIX-50 character sets, RSTS/E filename extensions, an option summary, and an error message summary.

- ☞ **PDP-11 SORT Reference Manual**  
AA-3341C-TC 114 pp.

This reference manual describes the features and operation of the SORT utility program. Chapter 1 describes the program, its operation and environment. Chapter 2 is an operator's guide for running SORT. Chapter 3 is a reference for those who write the instructions for the program. Chapter 4 describes error conditions, and Chapter 5 contains more detailed information about the program for special applications.

Appendices A and B contain tables of ASCII and EBCDIC, and zone/digit card punch codes. Appendix C contains several examples of a SORT programs. Appendix D discusses internal SORT operations, mainly for the benefit of experienced programmers. Appendix E contains SORT-11 installation information for all systems. Appendix F contains RMS-returned status codes.

A glossary is included to define terminology used in this manual.

- ☞ **PDP-11 TECO User's Guide**  
DEC-11-UTECA-A-D 96 pp.

This manual describes the TECO text editing program and is divided into two parts. Chapter I contains basic information and introduces enough TECO commands for first-time users to create and edit text files. These introductory commands are sufficient for any editing application, although they are less convenient than the advanced commands in Chapter II.

In Chapter II the full TECO command set is introduced. This includes a review of the introductory commands presented earlier. Chapter II also introduces the concept of TECO as a programming language. It explains how basic editing commands can be combined into sophisticated “programs” for the most complicated editing tasks.

**RSTS/E Text Editor Manual**  
DEC-11-UTEMA-A-D 50 pp.

This manual describes the features and operation of EDIT, a BASIC-PLUS editing program distributed with the RSTS/E standard system library. The manual is written for the RSTS/E user with little or no knowledge of character editors.

**RSTS/E RUNOFF User's Guide**  
DEC-11-URUNA-B-D 36 pp.

This manual describes RUNOFF, a system library program that is distributed with RSTS/E. RUNOFF is a formatting program that aids in the production of documents.

Section 1.0 introduces and explains the program for the inexperienced RUNOFF user. Section 2.0 provides a step-by-step guide for executing RUNOFF, including input and output file specification. In Section 3.0 the format for I/O files, commands, case information, and some optional modes of operation is listed.

Section 4.0 lists all RUNOFF commands and their abbreviations. This chapter can serve as a reference for the experienced RUNOFF user. Section 5.0 describes RUNOFF error processing and the errors that you can encounter.

## **Volume 6 – Using RMS-11**

 **RMS-11 Installation Guide**  
AA-H235A-TC 30 pp.

This manual describes the requirements and procedure for installing RMS-11 and RMS-11K software under several operating systems, including RMS-11K for RSTS/E V7.0.

This manual replaces the *RSTS/E RMS-11K Installation Guide*.

 **RMS-11 User's Guide**  
AA-D538A-TC 300 pp.

The RMS-11 User's Guide is a reference tool for users of the Record Management Services on RSTS/E and other operating systems. This manual provides:

- A general introduction to RMS-11.
- Application design information.
- File-organization-specific chapters covering file structure, file design, record operations, and task design.



- Description of the purpose, effect, and operating procedures for the RMS-11 utilities.
- Appendices covering RSTS/E restrictions on RMS-11, RMS-11 restrictions on RSTS/E, the programming languages supporting RMS-11, and error codes.
- A glossary of RMS-11 terms.

This manual introduces RMS-11 and contains information on RMS-11 Utilities.

☞ **RMS-11 MACRO-11 Reference Manual**  
AA-H683A-TC 210 pp.

This manual is written for the advanced MACRO programmer. It includes the reference material needed to understand and use Record Management Services under RSTS/E and other systems. The manual explains how to do the following:

- Declare RMS-11 facilities.
- Access fields in control blocks.
- Allocate and initialize control blocks.
- Perform file and record operations.

The manual also includes appendices on status code returns, a description of block I/O, the handling of ANSI-labeled magnetic tapes, formulas for calculating data capacities of RMS-11 files, sample code segments, and procedures for assembling and task building programs.

## Auxiliary Documentation

**Introduction to BASIC**  
AA-0155A-TK 220 pp.

This handbook introduces the beginning programmer to the concepts, vocabulary, and use of BASIC. The BASIC described is a core language that can be used as a foundation for learning BASIC-PLUS, BASIC-PLUS-2 or other BASIC languages. This book describes elementary statements, program organization, branching, loops, subroutines, functions, and the concept of files. It also contains a glossary and examples.

**RSTS/E Pocket Guide**  
DEC-11-ORFCA-A-D 68 pp.

The *Pocket Guide* is a brief summary of RSTS/E capabilities. It contains information on the RSTS/E system and BASIC-PLUS.



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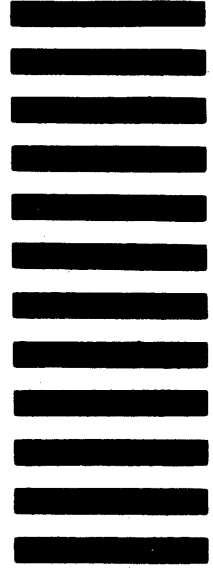
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