

**March 1981**

This document describes the software manual set shipped with RT-11 Version 4. It gives a brief synopsis of each manual and suggests a reading path for the various users of RT-11. Read this document before using RT-11 Version 4 software.

**RT-11  
Documentation  
Directory**

Order No. AA-5285F-TC

**SUPERSESSON/UPDATE INFORMATION:** This manual supersedes the *RT-11 Documentation Directory*, Order No. AA-5285E-TC.

**OPERATING SYSTEM AND VERSION:** RT-11 V4.0

**SOFTWARE VERSION:** FORTRAN IV V2.5  
BASIC-11 V2.0  
MACRO-11 V4.0

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## 1.0 Introduction

This directory describes the software documents associated with the RT-11 operating system. If you are unfamiliar with RT-11, use this document as a guide to recommended reading. If you are familiar with RT-11, use it as a reference to the contents of individual manuals.

The FORTRAN IV and BASIC-11 languages are commonly chosen as options to run on the RT-11 operating system. For the purpose of this directory, assume that the RT-11 operating system includes these optional languages in addition to the standard RT-11 system programs.

## 2.0 Organization of Documentation Set

The RT-11 manuals come in eight 3-ring binders labeled with spine inserts as Volumes 1A through 5. Table 1 lists the documents in the set along with their DIGITAL order numbers.

The manuals are organized in volumes according to the type of information they contain. Operating system manuals are contained in Volume sets 1, 2, and 3. Language manuals are contained in Volumes 4 and 5. Each of these categories is further divided into introductory or once-only manuals, computer manuals, and desk/computer manuals.

The *RT-11 Pocket Guide*, *PDP-11 Keypad Editor Reference Card*, and *TECO Pocket Guide* are each contained in a slash-pocket folder. Each folder is located in the back of the volume containing the manual that covers the same type of information. The *Introduction to BASIC* is not designed to be contained in a binder. To show how these documents should be used, Table 1 groups them with their related manuals.

Once-only manuals are intended to be used once and then stored away. You will have little need for them once your system is in operation and you are familiar with its use. Manuals in this category include all the manuals in Volumes 1A and 1B of the set, and the language installation guides contained in Volumes 4 and 5.

Computer manuals are intended to be used at the computer. They tell you how to use the computer system, and they describe command usage and syntax, system messages, and general system operation. Use them for reference when you are using the system. Manuals in this category include the manuals in Volumes 2A and 2B and the language user guides in Volumes 4 and 5.

Desk/computer manuals are intended to be used at your desk and at the computer. Use them for reference as you write your own application programs. They contain specific programming information for the RT-11 operating system and its associated programming languages. Manuals in this category include all the manuals in Volumes 3A and 3B and the language reference manuals in Volumes 4 and 5.

**Table 1: RT-11 Documentation Set**

| Volume                          | Type              | Document Title  | Order Number  |
|---------------------------------|-------------------|---|---|
| <b>OPERATING SYSTEM MANUALS</b> |                   |   |   |
| 1A                              | Once-only         | RT-11 Documentation Directory<br>Introduction to RT-11<br>Introduction to RT-11, Update 1   | AA-5285F-TC<br>AA-5281B-TC<br>AD-5281B-T1   |
| 1B                              | Once-only         | RT-11 System Release Notes<br>RT-11 Installation and System<br>Generation Guide<br>RT-11 Installation and System<br>Generation Guide, Update 1<br>RT-11 Installation Summary Cards<br>RT-11 Autopatch User's Guide<br>RT-11 Autopatch Release Notes | AA-5286D-TC<br><br>AA-H376A-TC<br><br>AD-H376A-T1<br>AV-H377A-TC<br>AA-K238A-TC<br>AA-K388z-TC*                           |
| 2A                              | Computer          | RT-11 System User's Guide<br>RT-11 System User's Guide, Update 1  | AA-5279B-TC<br>AD-5279B-T1  |
| 2B                              | Computer          | RT-11 System Message Manual<br>RT-11 System Message Manual, Update 1<br>RT-11 Pocket Guide<br>RT-11 Master Index<br>PDP-11 Keypad Editor User's Guide<br>PDP-11 Keypad Editor Reference Card<br>PDP-11 TECO User's Guide<br>TECO Pocket Guide       | AA-5284C-TC<br>AD-5284C-T1<br>AV-5287C-TC<br>AA-H380A-TC<br>AA-H853A-TC<br>AV-H854A-TC<br>DEC-11-UTECA-B-D<br>AV-D530A-TK |
| 3A                              | Desk/<br>Computer | RT-11 Programmer's Reference Manual<br>RT-11 Programmer's Reference Manual,<br>Update 1<br>PDP-11 MACRO-11 Language Reference<br>Manual   | AA-H378A-TC<br>AD-H378A-T1<br><br>AA-5075B-TC   |
| 3B                              | Desk/<br>Computer | RT-11 Software Support Manual<br>RT-11 Software Support Manual,<br>Update 1   | AA-H379A-TC<br>AD-H379A-T1  |
| <b>LANGUAGE MANUALS</b>         |                   |   |   |
| 4                               | Once-only         | RT-11 FORTRAN IV Installation Guide/<br>Release Notes   | AA-5240E-TC   |
|                                 | Computer          | RT-11/RSTS/E FORTRAN IV User's<br>Guide   | AA-5749B-TC   |
|                                 | Desk/<br>Computer | PDP-11 FORTRAN Language Reference<br>Manual   | AA-1855D-TC   |
| 5                               | Once-only         | Introduction to BASIC<br>BASIC-11/RT-11 Installation Guide<br>BASIC-11/RT-11 Installation Guide,<br>Update 1  | AA-0155A-TK<br>DEC-11-LIBTA-A-D<br><br>DEC-11-LIBTA-A-DN1   |
|                                 | Computer          | BASIC-11/RT-11 User's Guide<br>BASIC-11/RT-11 User's Guide,<br>Update 1   | DEC-11-LIBUA-A-D<br><br>DEC-11-LIBUA-A-DN1  |
|                                 | Desk/<br>Computer | BASIC-11 Language Reference Manual  | DEC-11-LIBBB-A-D  |

\* The variable z represents a letter that will change with each release of Autopatch.

Note: Optional software products, in addition to FORTRAN IV and BASIC-11, are available to operate with Version 4 of RT-11. Section 4.0 of this document describes these optional products and how to purchase them.

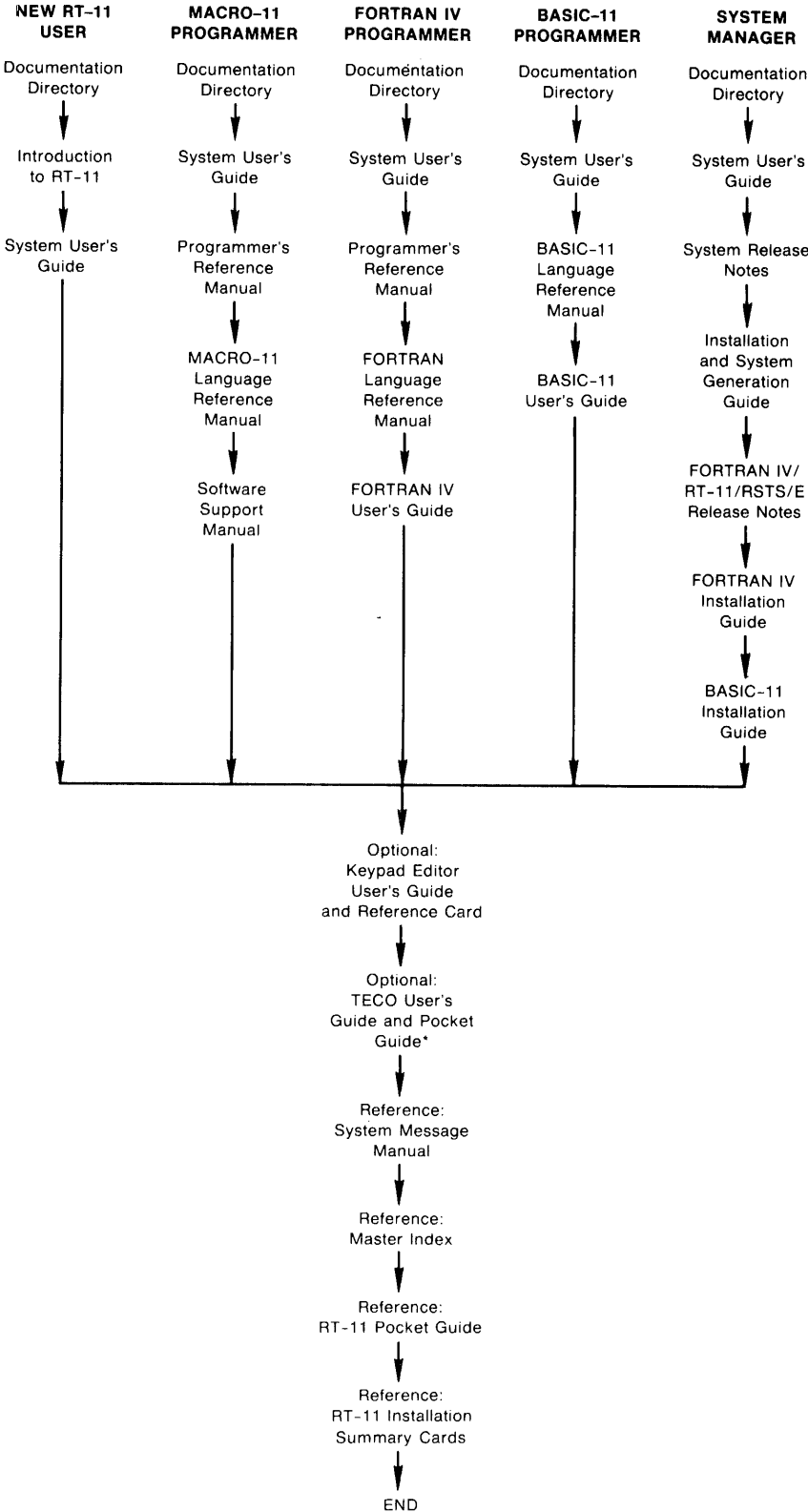
Figure 1 is a reading and reference guide to the documentation set that serves two functions. It categorizes the intended audience for each manual according to general experience, and it suggests various reading paths based on the categories. The levels of experience indicated in Figure 1 are defined as follows:

|                       |  |
|-----------------------|--|
| New RT-11 User        | Unfamiliar with RT-11 operating procedures; probably familiar with a higher-level programming language, may or may not be familiar with computers and software fundamentals. If your goal is to write programs for RT-11, read the manuals indicated by the guide, then choose a programming language and read the appropriate language reference manual and user's guide. |
| MACRO-11 Programmer   | Familiar with the PDP-11 instruction set or an assembly language such as MACRO-11. If you are unfamiliar with RT-11 operating procedures, read the <i>Introduction to RT-11</i> . The <i>RT-11 Software Support Manual</i> is optional reading for MACRO-11 application programmers.   |
| FORTRAN IV Programmer | Familiar with PDP-11 FORTRAN IV or other FORTRAN language. If you are unfamiliar with RT-11 operating procedures, read the <i>Introduction to RT-11</i> . The <i>RT-11 Software Support Manual</i> is recommended reading for FORTRAN IV programmers who are familiar with RT-11.  |
| BASIC-11 Programmer   | Familiar with BASIC-11 or other BASIC language. If you are unfamiliar with BASIC, read the <i>Introduction to BASIC</i> handbook. If you are unfamiliar with RT-11 operating procedures, read the <i>Introduction to RT-11</i> . The <i>RT-11 Software Support Manual</i> is recommended reading for BASIC-11 programmers who are familiar with RT-11.                     |
| System Manager        | Familiar with RT-11 operating procedures. Responsible for generating and maintaining RT-11 and FORTRAN IV or BASIC-11, if present, at the user site.   |

Because RT-11 is a single-user system, more than one of the preceding descriptions may fit you. For example, almost every MACRO-11 system programmer also serves from time to time as system manager. Therefore, the preceding categories are intended to serve only as a guide for locating information of a particular type.

In Figure 1, documents labeled "reference" are intended for all users and are not designed to be read from beginning to end. Documents labeled "optional" are not required for efficient use of RT-11.

**Figure 1: Reading and Reference Guide to RT-11 Documentation Set**



\* DIGITAL does not support TECO. However, widespread use warrants inclusion of TECO documentation in the RT-11 manual set.

## 3.0 Descriptions of Documents

The following sections describe the manuals listed in Table 1. Each description includes the following information:

- title
- brief description
- intended audience
- summary of contents by chapter

### 3.1 RT-11 System Release Notes, FORTRAN IV/RT-11/RSTS/E Release Notes, RT-11/FORTRAN IV Installation Guide, BASIC-11/RT-11 Installation Guide

The release notes and language installation guides are intended for the system manager or programmer responsible for the installation of RT-11. These documents provide up-to-date information on the current releases of the RT-11 monitor and system programs, FORTRAN IV, and BASIC-11.

Before you install the RT-11 system, read the release notes and the appropriate installation guides thoroughly. During installation, use these manuals in conjunction with the *RT-11 Installation and System Generation Guide* (see Section 3.2).

The release notes describe the current version of the software (RT-11 and FORTRAN IV), the differences between the current version of the software and the previous release, known problems present in the distributed software, and corrective patches. The language installation guides describe how to customize, generate, and test the installation of the appropriate languages.

### 3.2 RT-11 Installation and System Generation Guide

The *RT-11 Installation and System Generation Guide* is intended for use by the system manager or programmer responsible for installing and, if necessary, generating RT-11. This guide provides all the information necessary to install, customize, and test the installation of the RT-11 monitors and system programs. It also describes the system generation process, should you need to create a special monitor. This manual's modular structure allows you to read only those chapters that you need for your particular hardware and software.

Before you attempt to install RT-11, you should read the *RT-11 System User's Guide* and review the other RT-11 manuals. Once you have installed RT-11, you can use the appropriate language installation guide to install FORTRAN IV or BASIC-11, if required.

If it is necessary for you to generate your own special RT-11 monitor, you should first be familiar with RT-11 and have read all the manuals in the RT-11 operating system manual set.

Part I of this manual contains Chapter 1, which describes the contents of the RT-11 software kits and introduces installation and system generation concepts. In addition, this chapter is designed to help you define your system requirements and choose a reading path through the manual.

Part II covers installation planning activities and procedures. It contains Chapters 2 through 7. Chapter 2 prepares you for system installation by helping you choose the components you need in your working system, plan the arrangement of components on volumes (if appropriate), identify mandatory patches, and select customizations that you need to make. Chapters 3 through 7 provide installation procedures for specific configurations. You can choose the chapter that describes installation procedures for your configuration.

Part III describes how to perform a system generation. It contains Chapters 8 through 10. Chapter 8 helps you prepare for system generation by describing how to gather the necessary information to answer the SYSGEN dialog questions. Chapter 9 describes running the SYSGEN program, and assembling and linking the monitors and handlers. Chapter 10 describes how to perform system generation from an RX01 diskette.

Appendix A contains answers to the SYSGEN dialog questions that duplicate the distributed monitors. Appendix B contains answers to the SYSGEN dialog questions that create certain typical systems (for example, a system with multi-terminal support). Appendix C describes how to assemble and link system programs. Appendix D describes the FORTRAN program that runs the system generation dialog, the SYSGEN program. Appendix E describes how to toggle in software bootstraps for various devices on systems that do not include hardware bootstraps. Appendix F lists the RT-11 conditionals. Appendix G contains RT-11 software kit maps, which show the organization of files on volumes in the various kits.

### **3.3 RT-11 Installation Summary Cards**

The cards condense the installation procedures in the *RT-11 Installation and System Generation Guide* into an easy-to-use format. They summarize the steps and commands you need to install RT-11 on various configurations. The cards are intended for users who have thoroughly studied the *RT-11 Installation and System Generation Guide* and do not need the more detailed instructions it contains.

### **3.4 RT-11 Autopatch User's Guide**

The *RT-11 Autopatch User's Guide* is intended for users responsible for installing RT-11 and maintaining RT-11 with Autopatch. This manual describes how to use Autopatch to install patches to the RT-11 operating system and its layered products.

Before you run Autopatch, read the *RT-11 Installation and System Generation Guide* through the sections preceding Installing Mandatory Patches, then refer to the *RT-11 Autopatch User's Guide*.

Chapter 1 describes the Autopatch system and process and hardware considerations. Chapter 2 tells you how to prepare for running Autopatch. Chapter 3 describes the Autopatch information-gathering dialog. Chapter 4 describes the patching process itself, and Chapter 5 provides instructions for procedures following an Autopatch session.

Appendix A explains Autopatch error messages. Appendix B provides samples of Autopatch sessions with various configurations.

### **3.5 RT-11 Autopatch Release Notes**

The *RT-11 Autopatch Release Notes* are to be read with the *RT-11 Autopatch User's Guide*. The *RT-11 Autopatch Release Notes* describes the contents of the current Autopatch kit, gives information that relates articles in the *RT-11 Software Dispatch* to the patches included on the Autopatch kit, and provides current kit maps for each Autopatch distribution medium.

### **3.6 Introduction to RT-11**

The *Introduction to RT-11* acquaints new users with the RT-11 commands that perform common system operations. This manual supplies the background material necessary to understand the system operations. It also contains a series of command examples and demonstration exercises.

Chapter 1 outlines general system concepts, introduces the roles of hardware and software in a computer system, and describes the specific hardware and software components of the RT-11 computer system. Chapter 2 shows how to start the system. Chapter 3 demonstrates how to use the console terminal to control system operations. Chapters 4 through 7 describe important system operations, including using the monitor command language, creating and editing text files, comparing text files, and performing file maintenance operations.

Chapter 8 briefly compares BASIC-11, FORTRAN IV, and MACRO-11 and provides guidelines for choosing the language that suits your needs. Chapters 9, 10, and 11 describe the FORTRAN IV, BASIC-11, and MACRO-11 languages, respectively. For FORTRAN IV and MACRO-11 users, Chapter 12 describes linking object programs and Chapter 13 describes constructing library files.

Chapter 14 provides some suggestions for finding and fixing errors in your programs.

Chapter 15 provides an exercise of the foreground/background capability of the RT-11 system.

Chapter 16 describes using indirect files as the source of commands to RT-11 in place of the console terminal.

Chapter 17 contains general guidelines for using RT-11 that help you avoid problems common to new users.

Appendix A describes how to perform manual bootstrapping operations on computers that do not have the hardware bootstrapping capability.

Appendix B supplements the instructions for performing examples and demonstrations in the manual.

This manual also contains a glossary.

### **3.7 RT-11 System User's Guide**

The *RT-11 System User's Guide* describes how to use the RT-11 system to perform ordinary tasks such as program development, program execution, and maintenance of file and storage media.

Part I, RT-11 Overview, describes the RT-11 operating system in general terms. It lists the hardware and software components of the RT-11 system, describes the monitors, and describes the program development process with RT-11.

Part II, System Communication, describes system conventions, such as data formats, physical device names, file naming conventions, and special function key commands. It also introduces the keyboard monitor commands that you use to communicate with the monitor and to perform system jobs.

Part III, Text Editing, shows you how to create and modify files using the RT-11 text editor (EDIT).

Part IV, Utility Programs, consists of chapters that describe the utility programs provided with the RT-11 system. These programs include:

|        |                                     |
|--------|-------------------------------------|
| CSI    | Command String Interpreter          |
| PIP    | Peripheral Interchange Program      |
| DUP    | Device Utility Program              |
| DIR    | Directory Program                   |
| MACRO  | MACRO-11 Assembler Language Program |
| LINK   | Linker Program                      |
| LIBR   | Librarian Program                   |
| DUMP   | Dump Program                        |
| FILEX  | File Exchange Program               |
| SRCCOM | Source Comparison Program           |
| BINCOM | Binary File Comparison Program      |
| RESORC | Resource Program                    |
| FORMAT | Device Formatting Program           |

Part V, System Jobs, describes two utilities that can be run as system jobs or as foreground jobs: the Error Logger and the Queue Package.

Part VI, Debugging and Patching Programs, describes the five utility programs that permit you to examine and change programs in source, object, and executable forms. The five utilities are:

|       |                               |
|-------|-------------------------------|
| ODT   | On-line Debugging Technique   |
| SIPP  | Save Image Patch Program      |
| PAT   | Object Module Patch Utility   |
| SLP   | Source Language Patch Program |
| PATCH | Patch Utility                 |

Appendix A describes BATCH processing. Appendix B contains a summary of the keyboard monitor commands, their abbreviations, and their system program equivalents.

### **3.8 RT-11 Programmer's Reference Manual**

The *RT-11 Programmer's Reference Manual* is for experienced assembly language programmers and FORTRAN programmers who wish to use the services of the system subroutine library, SYSLIB. This manual, along with the *PDP-11 MACRO-11 Language Reference Manual*, contains instructions on programming in the MACRO-11 assembly language under the RT-11 operating system.

Chapter 1 introduces the manual and provides an overview of programmed requests and FORTRAN-callable subroutines. Chapter 2 describes the RT-11 programmed requests available in the system macro library (SYSMAC.SML) that allow you to invoke system monitor services from assembly language programs. In addition, this chapter describes macros that are useful in implementing interrupt service routines and device handlers. Chapter 3 describes the system subroutine library (SYSLIB.OBJ), a library of functions and subroutines that are callable from either FORTRAN or assembly language programs. Appendix A describes the display file handler. Appendix B is a listing of the system macro library.

### **3.9 RT-11 Software Support Manual**

The *RT-11 Software Support Manual* contains descriptions of RT-11 system design philosophy, programs, capabilities, and internal design.

This manual is intended for experienced RT-11 programmers who fall into one of the following categories:

- RT-11 system programmers and experienced application programmers who need to understand RT-11 internals
- RT-11 programmers who need to write device handlers
- RT-11 programmers who wish to acquire valuable background knowledge

Chapter 1 introduces the manual and provides a historical overview of RT-11. Chapter 2 describes RT-11 memory layouts and system components. Chapter 3 describes characteristics of the resident monitor, including foreground/background internals. Chapter 4 describes the extended memory system. Chapter 5 provides in-depth information about the multi-terminal system. Chapter 6 documents interrupt service routines. Chapter 7 describes device handlers and bootstraps. Chapter 8 details file structures and formats. Chapter 9 describes file storage and the device directory. Chapter 10 describes how to program for specific devices.

Appendix A contains device handler listings, with extensive comments. Appendix B describes how to convert device handlers to RT-11 Version 3 format and from Version 3 to Version 4 format. Appendix C provides a sample application program for data acquisition in a laboratory environment. The program illustrates how to design a foreground/background system with an in-line interrupt service routine.

### **3.10 RT-11 System Message Manual**

The *RT-11 System Message Manual* is for everyone who uses RT-11. It lists every diagnostic message that is displayed by the monitors, system utilities, FORTRAN IV compiler and Object Time System, BASIC-11 interpreter, and MACRO-11 assembler. The four major sections are FORTRAN IV, BASIC-11, System, and MACRO-11 messages. Messages are alphabetized within each section.

Both abbreviated and full forms of messages, if present, are listed. For each error condition, a brief explanation covers the most likely causes, and at least one corrective action is suggested.

Several short sections at the beginning of the manual cover general RT-11 system conditions that can cause the system to send you messages. "Hard Error Conditions" summarizes procedures for recovering from error conditions reported by the hardware rather than by the software. "Increasing Storage and Memory Resources" offers guidelines to review when you have inadequate storage for a program's requirements or too large a program to run. "System Failures" describes procedures to use if RT-11 fails completely.

### **3.11 RT-11 Pocket Guide**

The *RT-11 Pocket Guide* is a pocket-sized reference for all RT-11 users. The Pocket Guide contains the following information:

- System Communication Area (SYSCOM) locations
- Permanent device names
- Standard file types
- Special function key commands
- Keyboard monitor command syntax and command summary

- General CSI command string format
- Command summaries for:

|      |        |        |       |             |
|------|--------|--------|-------|-------------|
| EDIT | LINK   | BINCOM | ODT   | BATCH       |
| PIP  | LIBR   | RESORC | SIPP  | MACRO-11    |
| DUP  | DUMP   | FORMAT | SLP   | BASIC-11    |
| DIR  | FILEX  | ERROUT | PAT   | FORTTRAN IV |
|      | SRCCOM | QUEMAN | PATCH |             |

- Format of programmed requests
- Bootstraps
- System subroutine library calls
- Option summary for keyboard monitor commands

### 3.12 RT-11 Master Index

The *RT-11 Master Index* contains references to all the manuals in the RT-11 manual set, excluding the FORTRAN IV and BASIC-11 manuals. All RT-11 users can use the Master Index to locate topics described in the individual manuals.

### 3.13 PDP-11 Keypad Editor User's Guide

The *PDP-11 Keypad Editor User's Guide* describes the text file editor used with the VT100 and VT52 families of video terminals.

Chapter 1 suggests how you can learn the keypad editor and gives an example that demonstrates the most common keypad editor functions.

Chapter 2 describes procedures for starting and stopping a keypad editor session, and how to inspect, edit, and create a file with the keypad editor.

Chapter 3 provides the main reference documentation for the keypad editor functions that are active when you are inspecting a file. The chapter covers all keypad editor functions that allow you to move forward and backward through a file.

Chapter 4 provides the main reference documentation for the keypad editor functions that are active when you are editing an existing file or creating a new file. The chapter covers all keypad editor functions that allow you to add, erase, substitute, and move text.

Chapter 5 describes special keypad editor features: auxiliary file processing; using keypad editor macros; reformatting segments of a file; manipulating local symbols in MACRO-11 programs; and indenting source programs for structured languages.

The Appendix includes all keypad editor messages. Explanations about the cause of error conditions, and suggested remedies, follow each message.

### **3.14 PDP-11 Keypad Editor Reference Card**

The *PDP-11 Keypad Editor Reference Card* summarizes the keypad editor features. The card is a reference document for users who have familiarized themselves with the keypad editor through the *PDP-11 Keypad Editor User's Guide*.

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

The *PDP-11 MACRO-11 Language Reference Manual* describes how to develop MACRO-11 programs. You should be familiar with the PDP-11 family and the instruction set to use this manual.

The manual has three parts. Part I lists the key features of MACRO-11, identifies programming standards and conventions, and describes the format that you use to code MACRO-11 source programs.

Part II presents information essential to programming in MACRO-11, including elements of MACRO-11 instructions, MACRO-11 output, relocation and linking of object modules, and accessing and manipulating data stored in memory.

Part III describes the MACRO-11 directives that control the processing of source statements during assembly. Appendixes include information on character sets, directives, error messages, coding standards, and virtual memory allocation.

Because this manual contains system-independent information, it must be used in conjunction with a system-specific user's guide. The RT-11 supplement is the *RT-11 System User's Guide*.

### **3.16 PDP-11 FORTRAN Language Reference Manual**

The *PDP-11 FORTRAN Language Reference Manual* describes the FORTRAN language as implemented on several PDP-11 software systems.

Chapter 1 of the manual is an overview defining the elements of the FORTRAN language and the structure of a FORTRAN program. Chapter 2 describes the components of a FORTRAN statement, including constants, variables, arrays, and expressions. Chapters 3 through 7 describe assignment, control, input and output, format, and specification statements. Chapter 8 describes subprograms, both those that you write and those provided in the FORTRAN library. The appendixes provide reference information, including the use of extended memory through FORTRAN, character codes, a language summary, and coding examples.

Because the manual contains system-independent information, it must be used in conjunction with a system-specific user's guide. The RT-11 supplement is the *RT-11/RSTS/E FORTRAN IV User's Guide* (see Section 3.17).

### **3.17 RT-11/RSTS/E FORTRAN IV User's Guide**

This document is for the FORTRAN programmer familiar with the language elements described in the *PDP-11 FORTRAN Language Reference Manual* (see Section 3.16). It provides the information necessary to compile, link, execute, and debug a FORTRAN program under RT-11.

Chapter 1 describes the operating procedures for compiling, linking, executing, and debugging a FORTRAN program. Chapter 2 provides information about the Object Time System (OTS), including register usage, the traceback feature, and memory organization. Chapter 3 describes FORTRAN characteristics specific to RT-11. Chapter 4 suggests ways to increase the efficiency of FORTRAN programs. The appendixes contain reference information such as data formats, library subroutine summaries, error diagnostics, and compatibility considerations.

### **3.18 BASIC-11 Language Reference Manual**

The *BASIC-11 Language Reference Manual* describes the BASIC-11 language as implemented on several PDP-11 software systems.

Chapter 1 of the manual provides an introduction to programming in BASIC-11. Chapter 2 describes BASIC-11 data types. Chapter 3 describes terminal input and output. Chapters 4 through 9 describe program control statements, BASIC-11 functions, file input and output, formatted output, program segmentation, and BASIC-11 commands. The appendixes provide BASIC-11 error messages and a language summary.

Because the manual contains system independent information, it must be used with a system-specific user's guide. The RT-11 supplement is the *BASIC-11/RT-11 User's Guide* (see Section 3.19) and the *BASIC-11/RT-11 Installation Guide* (see Section 3.1).

### **3.19 BASIC-11/RT-11 User's Guide**

This document is for the BASIC-11 programmer familiar with the language elements described in the *BASIC-11/RT-11 Language Reference Manual* (see Section 3.18). It provides the information necessary to use BASIC-11 on the RT-11 System.

Chapter 1 describes how to use BASIC-11. Chapter 2 describes system-dependent input and output information. Chapter 3 describes BASIC-11 utility functions. Chapter 4 describes how to use assembly language routines with BASIC-11.

### **3.20 Introduction to BASIC**

*Introduction to BASIC* is a tutorial-style handbook designed for the novice BASIC user. It provides the entry-level BASIC programmer with a background in the syntax and vocabulary of the language.

Chapter 1 of the handbook introduces the concepts of statements, variables, numbers, and operators. Chapter 2 explains how to plan and organize a BASIC program. Chapter 3 describes how to interact with an executing BASIC program. Chapters 4 through 8 describe loops and arrays, subroutines, math and print functions, and files. The appendixes provide a summary of the BASIC language, a description of error messages and recovery procedures, and sample programs.

## 4.0 Optional Software Products

A variety of products are available to support the diverse needs of RT-11 users. These products can be purchased singly or in combination and installed individually after you have installed RT-11. Contact your local sales office to purchase any of these products.

The software products described in this section, as well as FORTRAN IV and BASIC-11, are supported by RT-11 Version 4. The version numbers associated with product names refer to the optional software, not the RT-11 operating system. Optional products that are supported only by specific versions of RT-11 are not listed here.

MU BASIC-11/RT-11, Version 2.0—(Multi-User BASIC-11) A BASIC-11 interpreter that executes under the RT-11 operating system and supports up to eight users simultaneously.

FMS-11, Version 1.0—(Forms Management System) A set of software tools for developing video form applications for data entry and display with RT-11 and the VT100 terminal.

APL-11, Version 1.0—(A Programming Language) A concise and flexible programming language designed to solve problems in text handling and commercial data processing as well as problems in numerical mathematics and statistics.

DECnet-RT, Version 1.1—(RT-11 Network Software) A hardware/software package offering task-to-task communications, network file transfer and network resource-sharing capabilities.

PROM/RT-11, Version 1.0—(Programmable Read Only Memory) A software utility designed to control and operate a universal PROM programming hardware device.

RT-11 2780/3780, Version 1.0—A hardware/software package that emulates an IBM 2780 or 3780 Data Transmission Terminal. It operates under the RT-11 Foreground/Background monitor on a suitably configured RT-11 system.

CTS-300 RDCP (2780/3780), Version 1.0—(Remote Data Communications Package) A hardware/software package that enables a Datasystem running CTS-300 to act as a Remote Job Entry terminal either to a like system, to a DIGITAL system running a 2780/3780 emulator, or to an appropriately configured IBM 360/370 Data Communication terminal.

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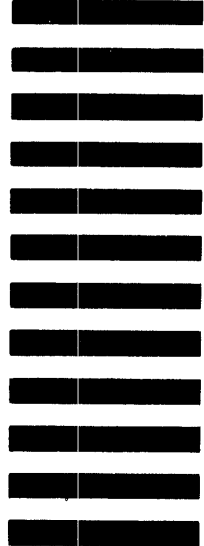


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