

HP 9000 Series 200/300 Computers



**Pascal 3.2
Documentation Guide
and Master Index**



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Pascal 3.2 Documentation Guide and Master Index

HP 9000 Series 200/300 Computers

HP Part Number 98615-90017



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Printing History

The manual printing date and part number indicate its current edition. The printing date will change when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The manual part number will change when extensive changes are made.

Manual updates may be issued between editions to correct errors or document product changes. To ensure that you receive these updates or new editions, you should subscribe to the appropriate product support service. See your HP sales representative for details.

July 1987...Edition 1

Pascal 3.2 Documentation Guide

Introduction

This guide takes you on “sight-seeing tours” of the Pascal 3.2 manuals. Here is what it contains:

- A list of the manuals in this set.
- A “tour” of each manual.
- A Master Index for the manual set.

List of Pascal 3.2 Manuals

Here are the manuals provided with the Pascal 3.2 Workstation system:

- *Pascal 3.2 User's Guide* (HP Part Number 98615-90042)
- *An Introduction to Programming and Problem Solving with Pascal* (HP Part Number 09826-90072)
- *Pascal 3.2 Workstation System* (HP Part Number 98615-90023, two volumes)
 - *Volume 1: Main Command Level and Subsystems*
 - *Volume 2: Programming and Configuration Topics*
- *Pascal 3.2 Procedure Library* (HP Part Number 98615-90032)
- *Pascal 3.2 Graphics Techniques* (HP Part Number 98615-90037)
- *HP Pascal Language Reference* (HP Part Number 98615-90052)
- *MC68000 User's Manual* (HP Part Number 09826-90073)
- *MC68020 User's Manual*¹ (HP Part Number is 98615-90606)
- *MC68881 User's Manual*¹ (HP Part Number is 98615-90607)

¹ This manual is available through the Direct Marketing Division (DMK). To order this manual, call 1-800-538-8787.

Individual Manual “Tours”

The following paragraphs describe the purpose and contents of each manual.

Note

You are highly encouraged to pick up and leaf through each manual as you read through its description. This exercise will help you to quickly familiarize yourself with their content and organization.

Installation Guide (for your model of computer)

An installation manual is shipped with your computer (*not* with the Pascal System). It describes the tasks of setting up the computer and then attaching the keyboard and monitor. It also describes how you can verify that your computer is operating properly. However, the tasks of installing and verifying peripheral devices, such as disc drives and printers, is described in the following manual.

Series 200/300 Peripheral Installation Guide

This manual describes the tasks of configuring and installing peripherals that you can use with your Series 200/300 computer. Here are some peripherals included:

- Memory and interface cards
- Discs
- Printers
- Plotters and other graphics devices

The manual also covers the task of configuring the Pascal system software to “talk to” these devices (i.e. adding device drivers).

Pascal 3.2 User's Guide

(HP Part Number 98615-90042)

This guide begins where the *Peripheral Installation Guide* left off. It describes how to load the Pascal System and get it “up and running.” It also takes you on a tour of the system and its subsystems, as well as shows you how to enter and run a short Pascal program. This manual is also a task-oriented manual.

- Chapter 1: “Vital Information” discusses a “little-known secret to success.” (If you don't read the chapter, it will still be “little-known.”)
- Chapter 2: “Loading Pascal” shows you how to load the Pascal system.
- Chapter 3: “A Few Preliminaries” shows you how to prepare blank discs for use and how to make back-up copies of the system discs.
- Chapter 4: “Using Keyboard and Display” describes using the keyboard and display. You need only read the section that describes your computer's keyboard.
- Chapter 5: “The Main Command Level” shows you how to begin using commands.
- Chapter 6: “The Editor” introduces you to the task of entering text using the Pascal Editor.
- Chapter 7: “The Filer” introduces you to the tasks of managing and storing files using the Pascal Filer.
- Chapter 8: “The Compiler” describes using the Compiler, which you will be using to transform a source program into a form that the computer can execute.
- Chapter 9: “Other Subsystems” briefly discusses the Assembler, Librarian, and Debugger subsystems.
- Chapter 10: “Setting Up Your Environment” is devoted to helping you set up your programming “environment.”
- In Chapter 11: “Program Development Section,” you will be entering, storing, compiling, and running a short Pascal program.
- The Task Reference briefly summarizes the steps for common procedures.
- There is also a subject index at the back of this manual.

An Introduction to Programming and Problem Solving with Pascal

(HP Part Number 09826-90072)

This is a textbook that will teach you the Pascal programming language. It is useful for those who have never programmed using the Pascal language. It is a combination of task-oriented information (such as discussions of how to solve particular programming problems) and object-oriented information (such as descriptions of reserved words and standard procedures).

- The STYLE CLINICS section lists the programming style tips given throughout the book.
- Chapter 1: “An Introduction to Computer Programming” describes the steps involved in developing programs in any computer language.
- Chapter 2: “Algorithms” takes a closer look at developing algorithms. A thorough understanding and *application* of these principles will help you to become a good programmer as quickly as possible. You should memorize and follow the maxim:

“Think First, Code Later.”

- Chapters 3 through 10 present advice and examples of Pascal programming. The titles for these chapters are as follows:
 - Chapter 3: “Basic Pascal Data Types and Declarations”
 - Chapter 4: “Elementary Pascal Programming”
 - Chapter 5: “The Flow of Control”
 - Chapter 6: “Running, Debugging, and Testing Programs”
 - Chapter 7: “Structured Data Types – Arrays”
 - Chapter 8: “Functions and Procedures”
 - Chapter 9: “More Structured Data Types – Records and Sets”
 - Chapter 10: “More Structured Data Types – Files and Pointers”
- Chapter 11: “Program Design Methods” presents a well organized summary of the “program design methods” that have been taught in the book.
- Appendices include the following: syntax diagrams, a list of standard identifiers, character sets, bibliography, selected answers to exercises, and subject index.

Pascal 3.2 Workstation System, Volume 1: Main Command Level and Subsystems

(HP Part Number 98615-90023)

This manual describes the HP Series 200/300 Pascal Workstation system. By reading it, you will learn how to use individual commands as well as how to use the subsystems (Editor, Filer, etc.). The chapters that describe the subsystems first take a task-oriented approach at introducing you to using the subsystem, and then provide an object-oriented discussion of each command at the end of the chapter.

- Chapter 1: “Manual Overview” contains an overview of the manual.
- Chapter 2: “The Main Command Level” provides a quick reference and detailed descriptions of Main Level commands.
- Chapter 3: “The File System” describes the File System of the Pascal Workstation System.
- Chapters 4 through 9 describe the subsystems of the Workstation system: Editor, Filer, Pascal Compiler, Assembler, Librarian, and Debugger. The first part of each chapter describes using the subsystem, while the latter part describes each command. Pay special attention to the concept of *modules*, because the system itself is composed of modules. An understanding of these structures will greatly increase your ability to use the system to its fullest extent.

The titles for Chapters 4 through 9 are as follows:

- Chapter 4: “The Editor”
 - Chapter 5: “The Filer”
 - Chapter 6: “Pascal Compiler”
 - Chapter 7: “The Assembler”
 - Chapter 8: “The Librarian”
 - Chapter 9: “The Debugger”
- A list of errors and subject index are also included at the end of this manual.



Pascal 3.2 Workstation System, Volume 2: Programming and Configuration Topics

(HP Part Number 98615-90023)

This manual describes using the Workstation-specific language features of this system. For instance, it describes programming with features of HP Pascal that are not contained in the “standard” Pascal language of most other computers. Some chapters also provide some handy techniques for making common computations with “standard” Pascal features. The last two chapters provide more task-oriented discussions of standard and special configurations and “non-disc” mass storage devices. Here are the chapters and topics therein:

- Chapter 10: “Overview of Workstation Software Features” provides an overview of the Pascal language and software libraries provided with this system. It shows that the language consists of the “ANSI/ISO Pascal” standard, *plus* several additional enhancements.
- Chapters 11 through 17 describe using Workstation extensions of standard Pascal features. The titles for these chapters are as follows:
 - Chapter 11: “Data Structures”
 - Chapter 12: “Program Flow”
 - Chapter 13: “Numeric Computation”
 - Chapter 14: “String Manipulation”
 - Chapter 15: “Programming with Files”
 - Chapter 16: “Dynamic Variables and Heap Management”
 - Chapter 17: “Error Trapping and Simulation”
- Chapter 18: “Special Configurations” first describes how the system boots itself and then describes how you can alter this “standard” configuration.

- Chapter 19: “Non-Disc Mass Storage” describes using “non-disc” mass storage devices: EPROM and Magnetic Bubble Memory cards, and cartridge tape drives.
- Chapter 20: “Backup Utilities” describes how to “port” programs written for Series 200 computers to Series 300 computers. It first describes the hardware differences between Series 300 and 200 machines, and then discusses several considerations to make when determining how to port a particular program.
- Chapter 21: “HFS Setup and Utilities” describes how to install and maintain the HFS file system on a hard disc.
- Chapter 22: “Porting to Series 300” explains how to make Pascal programs written for Series 200 computers run on Series 300 computers.
- Appendices discuss these topics: System History, file interchange between Series 200/300 BASIC and Pascal language systems, physical and software memory maps, command summaries, glossary, error messages, and subject index.

Pascal 3.2 Procedure Library

(HP Part Number 98615-90032)

This manual describes the library of procedures and functions provided with the Workstation Pascal System. It begins with an overview of modules and the mechanics of using them. The I/O Procedure Library is then covered in detail using a task-oriented approach. Several general and specific examples are provided. The last section of the book provides an object-oriented discussion of each procedure and function in the Procedure Library.

- Chapter 1: “Overview” provides an overview of using the procedures and functions provided in the Procedure Library. You **must** read this chapter (or be familiar with the concepts) if you want to painlessly use the rest of the manual.
- Chapters 2 through 9 describe general I/O programming techniques. The chapter titles are as follows:
 - Chapter 2: “Interfacing Concepts”
 - Chapter 3: “The I/O Procedure Library”
 - Chapter 4: “Directing Data Flow”
 - Chapter 5: “Outputting Data”
 - Chapter 6: “Inputting Data”
 - Chapter 7: “Registers”
 - Chapter 8: “Errors and Timeouts”
 - Chapter 9: “Advanced Transfer Techniques”
- Chapters 10 through 13 describe specific techniques for using the HP-IB, Datacomm, Serial, and GPIO interfaces. The chapter titles are as follows:
 - Chapter 10: “HP-IB Interface”
 - Chapter 11: “Datacomm Interface”
 - Chapter 12: “RS-232 Serial Interface”
 - Chapter 13: “GPIO Interface”

- Chapter 14: “System Devices” is an *advanced* programmer’s tutorial on using the “system devices” such as the beeper, softkeys, clock, timers, and other built-in hardware features.
- Chapter 15: “Segmentation Procedures” is also an *advanced* programmer’s tutorial on how to segment large programs into smaller ones at run time (to decrease memory requirements).
- The Procedure Library Reference section describes individual procedures and functions provided by the Procedure Library.
- There is also a glossary and subject index at the end of the manual.

Pascal 3.2 Graphics Techniques

(HP Part Number 98615-90037)

This manual describes graphics concepts and then graphics programming techniques. It is mostly a task-oriented manual, although it does contain a concept-oriented Graphics Procedures Reference appendix which describes the procedures and functions provided by the GRAPHICS modules.

- Chapter 1: “Introduction to Graphics” describes some fundamental graphics concepts and programming techniques.
- Chapter 2: “Miscellaneous Graphics Concepts” continues with additional concepts and techniques.
- Chapter 3: “External Graphics Displays and Plotters” describes color graphics and interactive graphics programming techniques.
- Chapter 4: “Interactive Graphics” explains how to design an interactive graphics interface for communicating with the computer.
- Chapter 5: “Color Graphics” provides a detailed explanation of color graphics as used with the Device independent Graphics Library (DGL). Some of the topics covered are:
 - The DGL Color System
 - Models for Color Specification
 - Color Spaces
 - Frame Buffers
 - Series 200/300 Color Graphics System
 - Resolution and Color Models
 - Writing Modes and Color
 - Effective Use of Color
 - Reproducing Color Graphics
- Appendix A provides several program listings.

- Appendix B provides descriptions of GRAPHICS procedures and functions provided in the Procedure Library (these descriptions are *exact* copies of descriptions found in the Reference section of the *Pascal Procedure Library* manual).
- This manual also has a subject index.

HP Pascal Language Reference

(HP Part Number 98615-90052)

This manual describes HP Pascal reserved words, standard identifiers, procedures, functions, and terms. It is entirely a concept-oriented manual.

- The Keyword Dictionary section describes these topics: manual organization; symbols, identifiers, reserved words, operators, statements, procedures, and other features of the HP Standard Pascal language.
- The HP-UX Implementation section describes the specific features of the Series 200/300 HP-UX Pascal Compiler (which is irrelevant *unless* you also have a Series 200/300 HP-UX system).
- The Workstation Implementation section describes these specific features of the Series 200/300 Pascal Workstation System: Compiler options, implementation restrictions, UCSD Pascal extensions, Series 200 system programming extensions, Series 200/300 Pascal Workstation File System, heap management, and error messages.

MC68000 User's Manual

(HP Part Number 09826-90073)

This manual describes the hardware operation, assembly language¹, and machine language of the Motorola MC68000 and MC68010 microprocessors. (Note that only 68000 and 68010 processors, not 68008 processors, are used in Series 200 machines; MC68010 and MC68020 are used in Series 300 computers.) You will only need to read it if you are going to be programming in assembly language. It is mostly a concept-oriented manual.

- Section 1 describes MC68000 and MC68010 hardware architecture.
- Section 2 describes addressing modes and data organization.
- Section 3 details the instruction set.
- Section 4 describes how “exceptions” are processed.
- Appendix A discusses condition codes in detail.
- Appendix B provides an alphabetical reference of the Assembler language instructions, and Appendix C summarizes the format of these instructions.
- Appendices D, E, and F show how to determine the time required to execute instructions for different processors in the MC68000 family.
- Appendix G discusses the looping instructions available with the MC 68010 processor.

¹ Extensions to and deviations from this assembly language are described in the “Assembler” chapter in Volume 1 of the *Pascal Workstation System* manual.

MC68020 User's Manual

(HP Part Number 98615-90606)

This manual contains hardware specifications and assembly language instruction syntax¹ for the MC68020 microprocessor.²

MC68881 User's Manual

(HP Part Number 98615-90607)

This manual contains hardware specifications and assembly language instruction syntax¹ for the MC68881 floating-point math co-processor.²

¹ Extensions to and deviations from this assembly language are described in the "Assembler" chapter in Volume 1 of the *Pascal Workstation System* manual.

² This manual is not shipped with any Pascal systems. It must be order separately from the Direct Marketing Division (DMK). To order this manual, call 1-800-538-8787.

The Master Index

The Master Index is a merger of the indexes in the individual manuals in this set. This section describes the notation used in the index.

Referencing Scheme

Since the Master Index references more than one book, it must indicate which book the referenced subject exists in. Here is the notation used to specify where the subject is covered.

- UG:** *Pascal 3.2 User's Guide*
- WS 1:** *Pascal 3.2 Workstation System*
Volume 1: Main Command Level and Subsystems
- WS 2:** *Pascal 3.2 Workstation System*
Volume 2: Programming and Configuration Topics
- PL:** *Pascal 3.2 Procedure Library*
- GT:** *Pascal 3.2 Graphics Techniques*

Here is a sample of index entries:

Access command (Filer) **WS 1:** 126
Access rights (SRM) **WS 1:** 46,110, **WS 2:** 120
Accuracy **WS 2:** 34
Active controller (HP-IB) **PL:** 78,83

Note the following characteristics of this notation:

- An acronym that identifies the manual (such as **WS 1:** or **PL:**) *always* precedes all page numbers for a given topic.
- When a topic is found in more than one manual (such as the second example above), the list may contain several acronyms. In this case, the page numbers between the first and second acronyms are in the manual indicated by the first acronym; the pages between the second and third acronyms are in the manual indicated by the second acronym; and so forth.

Manuals Not Referenced

Note that the following manuals are **not** referenced in the Master Index:

- *An Introduction to Programming and Problem Solving with Pascal*
- *HP Pascal Language Reference*
- *MC68000 User's Manual*
- *MC68020 User's Manual*
- *MC68881 User's Manual*

The Pascal programming text has its own index. The language reference does not need an index, since topics are listed in alphabetical order. The 68000, 68020, and 68881 manuals have no index.

Master Index

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UG: *Pascal 3.2 User's Guide*

WS 1: *Pascal 3.2 Workstation System, Volume 1*

WS 2: *Pascal 3.2 Workstation System, Volume 2*

PL: *Pascal 3.2 Procedure Library*

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