HP 9000 Series 300

HEWLETT PACKARD

Compatibility Supplement for Series 200 Users

Introduction

The Series 300 is HP's newest family of fast, powerful technical computers. Models 310 and 320 are based respectively on the MC68010 and MC68020 microprocessors from Motorola. And they can improve the performance of your current systems. Series 300 is designed to have excellent compatibility with the Series 200.

Run Series 200 programs faster, run them on Series 300.

You want to run Series 200 programs on the new Series 300 because they run 1 to 4 times faster. In most cases you can! That's because we've already addressed your need for this level of compatibility with the new Series 300 and the BASIC 4.0 and Pascal 3.1 software. Most of the programs you've written will run *without change* on the new Series 300 (and the Series 200, too!) Many of the rest, plus most of our HP software packs, will run on the Series 300 with our low-cost HP 98546A Display Compatibility Interface. And the BASIC 4.0 system provides a mode of keyboard operation in which the new HP-HIL keyboard is compatible with (i.e., emulates) the 98203A/B keyboard.

However, a few of your programs may not port directly due to display and other hardware differences between the two series. All of the new displays for the Series 300 feature bit-mapping, so problems could arise depending on how the programmer dealt with the separate alpha and graphics planes of the Series 200 computers and for other hardware or software-related reasons.

Three Types of Compatibility Solutions

Use this supplement to find out for yourself whether your software runs on the Series 300, as is, or whether you need the Display Compatibility Interface or you need to modify your code.

1 Most of the programs you've written will run without change on the Series 300. Just load your program into a Series 300 computer – with no modicfications – and run it.

2 Many of the rest, plus most of our HP software packs, will run on the Series 300 with our low-cost HP 98546A Display Compatibility Interface. Install this interface and run your unmodified code.

3 A few programs may not run using either of the above methods due to display, serial interface, program dependence on system internals, or other hardware differences between the two series. In these cases you must write a simple hardware configuration program and/or modify your existing code and then try the code on your Series 300 Computer.

Compatibility Solutions

1 Just Load and Run

Try it! The chances of your program running first time are very high.

2 Try the Display Compatibility Interface

The HP 98546A Display Compatibility Interface provides separate alpha and graphics planes (one 512 x 390 graphics plane and one 80 character x 25 line alpha plane) and complete monochrome display compatibility with most Series 200 applications that run on the Model 216, 217, 220 or 236A. This interface functions stand-alone or can be used in conjunction with either Series 300, bit-mapped, medium-resolution display boards and an appropriate monitor.

A Series 300 computer may also be configured with both the compatibility interface and a high resolution display board (monochrome or color). But, in this case the compatibility interface requires a separate monitor. Pascal 3.1 and BASIC 4.0 software features enable you to choose between the 98546A alpha/graphics or the bit-mapped displays, so you can go from an old application that might require separate alpha/graphics to a new one that uses Series 300 display features and back again. The compatibility interface is recommended if you find your software will not run as suggested in Step 1 above. Here are situations where this could be true:

- The program depends on having separate alpha and graphics planes, such as using the GRAPHICS ON/OFF statement or clearing the alpha or graphics planes independently.
- The program writes directly into the screen's memory addresses, rather than through a higher level BASIC, Pascal or DGL procedure or function.
- The program depends on blinking or half-bright alpha display highlights (characters with codes 130, 131 and 134 through 143).
- The program depends on a specific graphics resolution of 512 x 390 pixels, alpha display size of 80 characters x 25 lines or on the registration of alpha and graphics pixels.
- The program depends on a specific graphics resolution of 400 x 300. This resolution results in a slightly different (less than 5%) but nearly imperceptible aspect ratio. If your Model 216 program uses absolute plotting you may need to modify your code instead of using the compatibility interface.
- The program uses, but does not rely on, color. In this case, the compatibility interface enables your program to run, but in monochrome only. (Color graphics may be achieved using the HP 98627A Color Video Card Set and a separate color monitor that will display color graphics only; alpha is displayed on the original monitor. However, some code modification may be necessary, i.e., changing PLOTTER IS statements.)

Compatible HP Software Packages

Most of HP's popular software packages run on the Series 300 using the Display Compatibility Interface.

In addition, some of the packages have been ported to run on the Series 300 without the compatibility interface. In these ported programs, the code has been translated for Hewlett-Packard's BASIC 4.0 and Pascal 3.1.

Here's a list:

Program	Language and Operating System	Runs With Compatibility Interface	Ported to Run On Series 300
Stat Library	BASIC	X	
Numerical Analysis	BASIC	X	
Project Management	BASIC	X	
Graphic Presentations	BASIC	X	
Context MBA™	Pascal	X	
Picture Perfect™	Pascal	X	
Diagraph™	Pascal	X	
HP TechWriter	Pascal	No*	X
HP EGS/200	Pascal	No*	X
TEK 4010/HP 2622 Terminal Emulator	Pascal	No†	
HP 3278 Terminal Emulator	Pascal	No†	Staffed
HP 2392A/VT100 Terminal Emulator	Pascal	No* (Rev.1)	Fall '85 (Rev. 2)
Text Editor/200	Pascal	X	Fall '85
Graphics Editor/200	Pascal	X	Fall '85
Data Grapher/200	Pascal	X	Fall '85

** Packages require use of the Series 200 ID PROM.*
† Requires use of a non-HP-HIL keyboard.

Picture Perfect™ is a trademark of Computer Support Corporation.
Diagraph™ is a trademark of Computer Support Corporation.
Context MBA™ is a trademark of Context Management System Inc.

3 A Few Cases May Require Source Code Modification

First, BASIC. If you find your program does not run, then you may need to modify your source code if any of the following are true:

- The program depends on a specific ID PROM value (uses SYSTEM$ values) accessed from a CSUB.
- The program uses ON KBD to trap the EDIT or EXECUTE keys.
- The program running on BASIC 4.0 calls a BASIC 3.0 CSUB. In this case, you need only regenerate your CSUBs using the BASIC 4.0 CSUB Utility.
- The program uses GLOAD. Your array size may not be correct for the new bit-mapped displays.
- The program requires non-HIL keycodes. The BASIC 4.0 system provides a mode of keyboard operation in which the HP-HIL keyboard emulates the 98203B keyboard.

Since Pascal 3.0 and 3.1 are object code compatible, most programs should run without change. However, if you find this is not the case, you may need to modify or recompile your code if any of the following are true:

- The program's object file contains a linked-in 3.0 module that is incompatible with either the 3.1 system or the Series 300 hardware, such as DGL modules.
- The program uses any procedure below the level of Workstation Pascal or Procedure Library features such as the SYSDEV "clock" procedure.
- The program uses the non-HP-HIL keyboard EDIT or RUN keycodes which cannot be generated by the HP 46020A HP-HIL Keyboard.
- The program depends on an ID PROM (this is a memory location that permanently stores the computer's serial number).

If you find your BASIC or Pascal program still does not run, then you may need to modify your source code. Here are the situations in which this could occur:

- If you've tried your color application and it does not run, and you cannot (or you choose not to) use the compatibility interface because your application must have color then you must modify your code.
- The program expects hardware configuration switches for baud rate and line control characterization. In this case, a simple configuration program in BASIC or Pascal enables you to change the (power-up) default values.
- The program is designed for and specifically requires color. In this case, a possible solution is the HP 98627A Color Video Card Set and a separate color graphics monitor that will display color graphics only; alpha will be displayed on your original monitor. Some code modification may be necessary (i.e., changing PLOTTER IS statements).

For more complete information on how to port your software to Series 300, see the chapters on porting in the BASIC Programming Techniques manual (part number 98613-90011) or Pascal Workstation manual (part number 98615-90022).

Hardware and Graphics Differences

The differences in hardware lie in four major areas: the displays, the keyboards, software security and the serial interfaces. These hardware differences, and graphics differences, are summarized in the following charts:

Hardware Differences

Feature	Series 300 Models 310/320	Series 200 Models 216/220/226/236	Series 200 Model 217	Series 200 Model 237
Display Number of memory planes	**B&W:** 1 for both alpha and graphics **Color:** 4 for alpha and graphics	2 (1 for alpha; 1 for graphics) 5 (1 for alpha; 4 for graphics)	2 (1 for alpha; 1 for graphics)	1 for alpha and graphics
Keyboard	8 Softkeys Rotary Control Knob (optional)	10 softkeys; 5 on 216, 220, 98203A Rotary Control Knob (standard)	Same as Series 300	
Software Security Used by HP and Third-party suppliers	Software checks for System ID# encoded in optional HP-HIL 46084A ID Module	Software checks for System ID number which is permanently stored in the computer		
Serial Interface 98626A or 98644A (Built-in or optional)	Any one of these interfaces can be used on any of the computers; however, the lower-cost 98644A has software supplied switch settings; the 98626A hardware switch settings are user-selectable hardware configuration switches.			

Graphics Differences

Model	Alphanumeric Capacity	Display Enhancements (Alpha Highlights)	Graphics Resolution
310/320 without compatibility interface	Bit-mapped 26 x 80	Inverse video, underlining	512 x 400* 1024 x 768†
310/320 with compatibility interface	25 x 80	Inverse video, half-bright, underlining, blinking	512 x 390
216	25 x 80	Inverse video, half-bright, underlining, blinking	400 x 300
217/220	25 x 80	Inverse video, half-bright, underlining	512 x 390
220 with 98204A	25 x 80	None	400 x 300
226	25 x 50	None	400 x 300
236	25 x 80	Inverse video, half-bright, blinking, underlining	512 x 390
236 with color display	25 x 80	Inverse video, underlining, blinking, 8 alpha colors, 16 pure graphics colors (color-mapped)	512 x 390
237	Bit-mapped	Inverse video, underlining	1024 x 768

* *DGL default resolution is 512 x 385.*
† *DGL default resolution is 1024 x 752.*

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