digital™

DIGITAL Server 7000 PowerGrade
Installation Guide

Digital Equipment Corporation

December 1997

Contents

Figures

Tables

Conventions

Symbol	Meaning
▯	**NOTE**: Provides general information.
⚠	**WARNING:** Indicates the presence of a hazard that can cause personal injury if the hazard is not avoided.

▯ **NOTE**: You may lose data if you have not backed up your system. If you do not wish to install this kit yourself, contact DIGITAL Customer Service. For a nominal fee, a Customer Service Technician can install it for you.

Introduction

Thank you for purchasing this PowerGrade kit. This kit contains all the components and instructions required to upgrade your CPU configuration with additional *Pentium® Pro* processors. This procedure is for either the DIGITAL Server 7100 or the rack-mounted 7100R. (For a ZX6000, follow the procedure for Model 7100.)

Installing this kit <u>may</u> involve updating your system BIOS (Basic Input-Output System); however, in most updates this is not necessary.

If you have a PowerGrade with the same processor speed or cache size as your original CPU, you do not have to update your BIOS. You install the new CPU, run the System Configuration Utility (SCU), and you are done.

If you need to update your BIOS because of a change in processor speed or cache size, you will first need to remove any video option card, if installed, and enable the internal VGA controller. Once the BIOS process has completed successfully, you can then reinstall any video option card. If you need to update your BIOS, you **must** install the new BIOS **before** installing your PowerGrade kit, so the BIOS recognizes the new processor speed or cache size. This installation guide provides the necessary details.

Kit Contents

Table 1. Kit Contents

Item
Pentium® Pro CPU chip assembly *or* Processor module with two CPU chips
Voltage regulator module(s)
Antistatic wrist strap
Installation Guide   (If needed, some kits may include a CD-ROM for a BIOS upgrade.)

Note: This is a CPU PowerGrade.

Tools and Supplies Needed

- Phillips screwdriver, 1 pt.

- Antistatic wrist strap with grounding clip (supplied)

- Three 3 ½ inch, 1.44 MB high-density MS-DOS formatted diskettes

Processor Compatibility in a Multiprocessor Environment

DIGITAL recommends using identical steppings/versions of processors within a multiprocessor system whenever possible, since these configurations have received the greatest amount of validation testing. Since it is not possible to validate every combination of processor steppings, each new stepping of a processor is fully validated only against the latest stepping. *At press time, there were no known incompatibility issues about mixing CPU steppings in a multiprocessor system.* Please refer to the readme file on the ServerWORKS Quick Launch CD-ROM to view the latest CPU compatibility information. If you have any concerns about processor compatibility within a multiprocessor system, please contact your local Authorized DIGITAL Reseller for assistance.

NOTE: If your PowerGrade kit did not contain a CD-ROM, the upgrade is much easier. Go directly to the "PowerGrade Installation," page 8.

Boot the Quick Launch CD-ROM and Create Diskettes

If you received a new CD-ROM, perform this procedure to obtain new diskettes. During this procedure, you will create a crisis recovery diskette, BIOS upgrade diskette, and a System Configuration Utility (SCU) diskette. The Quick Launch CD-ROM contains the latest BIOS, crisis recovery software, and SCU.

1. Power on your server and boot the ServerWORKS Quick Launch CD-ROM.

2. Select the "User Documentation" button, then view the Readme file for CPU compatibility issues.

3. From the Quick Launch Main Screen, select the "Installations & Utilities" button and then the Utility tab.

4. Insert a DOS-formatted diskette into drive A, and choose "Crisis Recovery Diskette," and select Continue.

5. Insert another diskette into drive A, choose "BIOS Phlash Diskette," and select Continue.

6. Insert another diskette into drive A, choose "System Configuration Utility (SCU)" diskette, and select Continue.

7. Select the BIOS version that you created in step 5 to create the appropriate SCU diskette.

8. Select Exit to end Quick Launch and remove the CD-ROM.

Enable the On-Board VGA Controller

If your system has an optional video controller, you will need to remove it and enable the on-board VGA controller. If you are already using the on-board controller, skip this procedure and go to "Power Down the Server."

1. Insert the SCU diskette into drive A and turn on or reset your server. The diskette should boot automatically.

2. When the SCU title appears, press any key to continue. Afterwards, follow the instructions on your screen to access the SCU main menu.

3. From the main menu, use the arrow keys to highlight an item and then press Enter to select it. Press F1 at any time for help about a selection.

4. Select the Advanced Control Group and enable the

   Embedded - PCI VGA controller.

5. Select Save and Exit to save this selection.

Power Down the Server

1. Turn off your server.

2. Disconnect any external devices, the **ac power cord**, and the monitor power cord.

3

For DIGITAL Server 7100

3. Unlock the side panel on the server (Figure 1).

4. Remove the left side panel by sliding it toward the rear of the server.

⚠ **WARNING:** You might injure yourself or damage your server if you attempt to remove the side panel before unplugging the ac and monitor power cords.
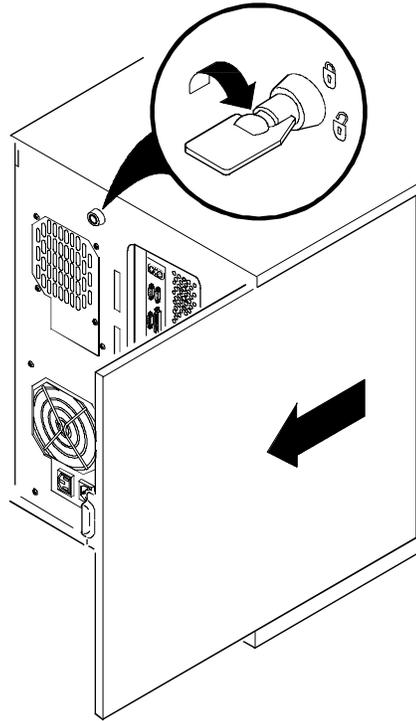
DEC00405-2

Figure 1. Removing the Side Panel (Model 7100)

4

For DIGITAL Server 7100R

3. Remove the front bezel (if installed).

4. Loosen the screws securing the chassis to the rack rails (Figure 2) and slide the chassis forward until it is fully extended.

5. Unlock and remove the top cover.
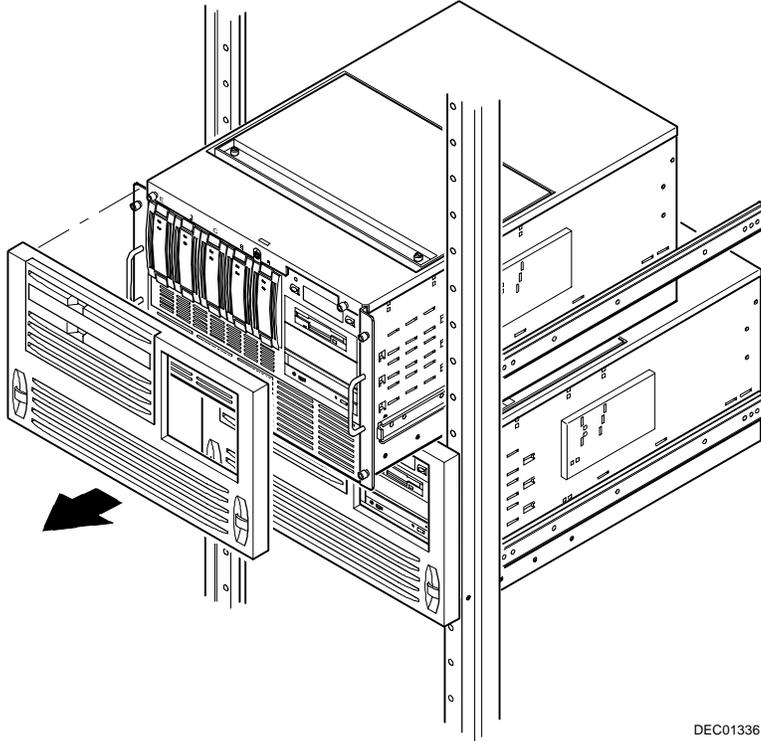
DEC01336

Figure 2. Removing the Front Bezel (Model 7100R)

NOTE: If you are not updating your BIOS, skip the next four steps and continue with the "PowerGrade Installation," page 8.

Remove any Video Option Card

If present, remove any video option card.

Set Switches on the Main Logic Board

Make sure that the following switches are set:

SW1-1	BIOS upgrade	Enabled (On)
SW1-3	Boot block update	Enabled (On)

Model 7100   DEC00692-6

Model 7100R   DEC01320-6
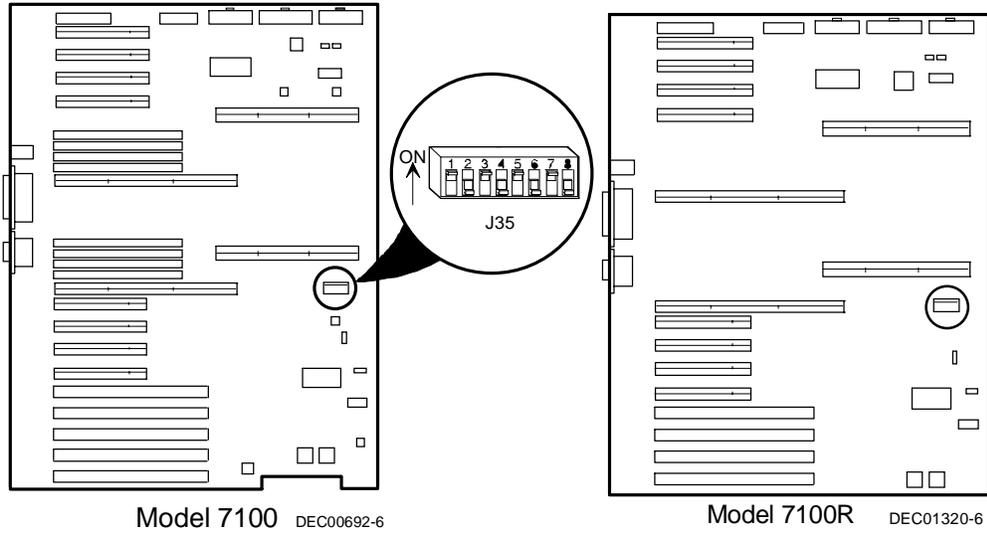
Figure 3. Main Logic Board

6

Replace the Panel and Reconnect the Cables

1. Install the left side (top) panel. The server may not power up with the panel removed.

2. Connect the monitor video cable to the embedded VGA connector if not already connected.

3. Connect any previously removed cables and the server power cord to the back of the server.

Power Up the Server and Update Your BIOS

Use the following procedure to update your BIOS:

1. Power up and boot the server with the BIOS Upgrade diskette installed in drive A.

2. Change the directory to upgrade. Example:

    ```
    A:\cd upgrade
    ```

3. At the MS-DOS prompt, type phlash and press Return.

4. You are prompted with a warning:

    ```
                    ***Warning***
    ```
    ```
    You are about to erase the system BIOS in this machine.
    Are you absolutely sure? Press "Y" to continue.
    ```

5. The BIOS upgrade continues and the system reboots.

    NOTE: DO NOT power down the system once this procedure has started. If the system loses power, or if at the end of this procedure the system fails, please refer to the section, "Troubleshooting – Using the Crisis Recovery Diskette if Necessary."

6. Remove the diskette from Drive A.

PowerGrade Installation

Remove the CPU Module

1. Power down the server, as described on page 3.

2. Place the antistatic wrist strap on your wrist and connect the grounding clip to a non-painted metal surface of the computer's chassis.

3. Unscrew and remove the CPU module retaining bracket (Figure 4 or 5).

4. Grasping both ends of the CPU module, carefully remove it from the main logic board and place it on an antistatic surface.
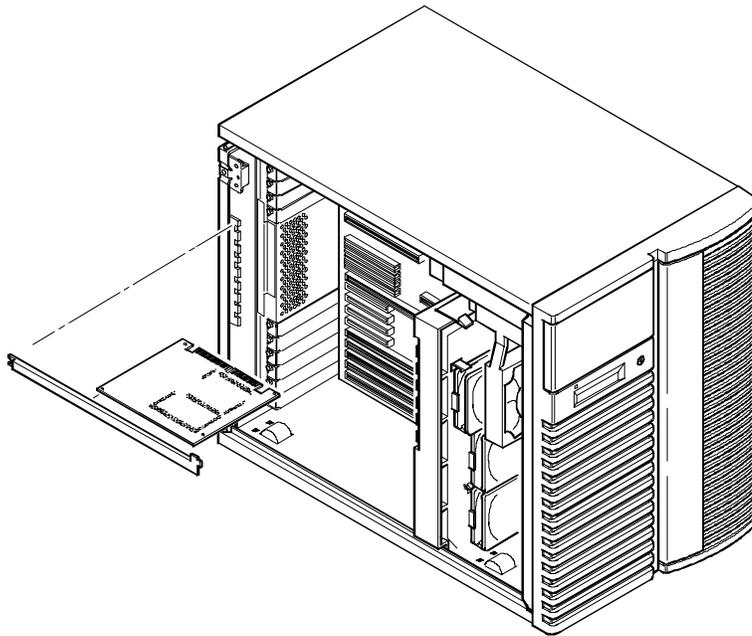
DEC00695-3

Figure 4. Removing the CPU Module (Model 7100)

8
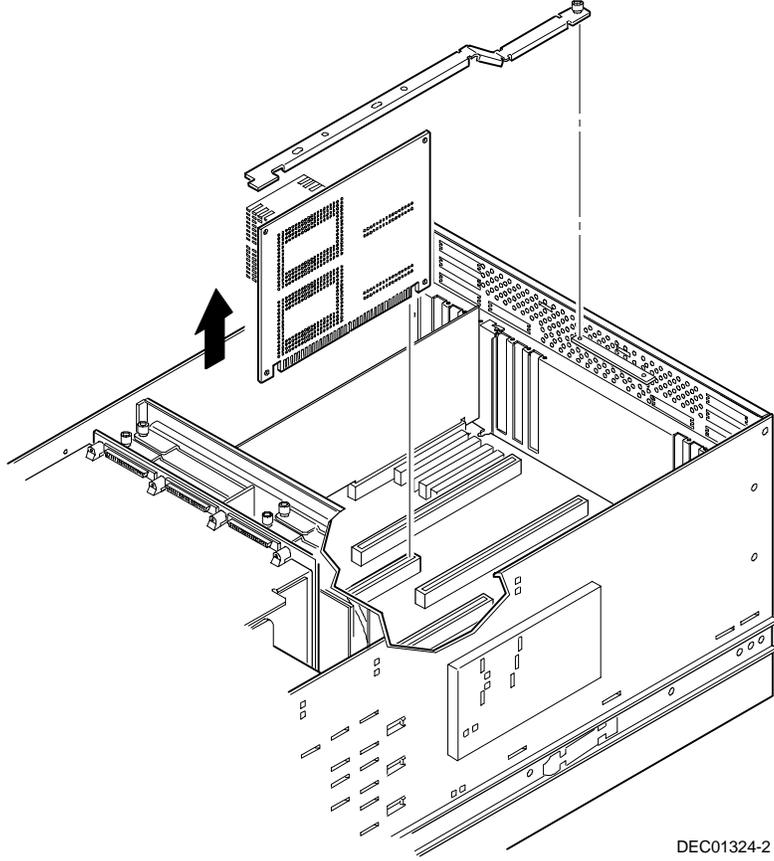
DEC01324-2

Figure 5. Removing the CPU Module (Model 7100R)

Install the CPU Chip

1. Remove the CPU chip from its shipping holder by removing the retaining clip. To remove the clip, press down firmly on the top of the clip. If needed, press down with a small screwdriver in the hole of the second style clip shown in Figure 6.

DEC01211-2

DEC01211-3
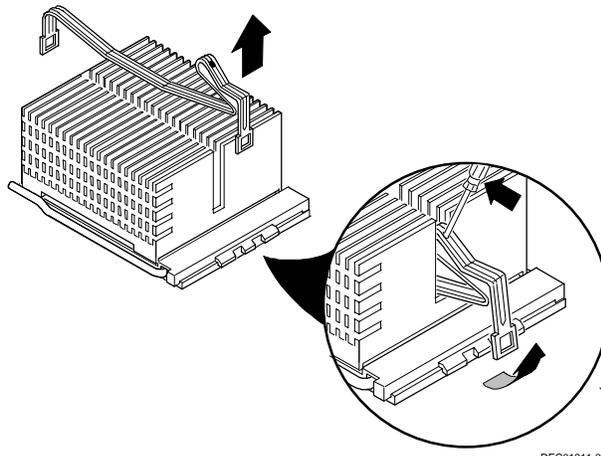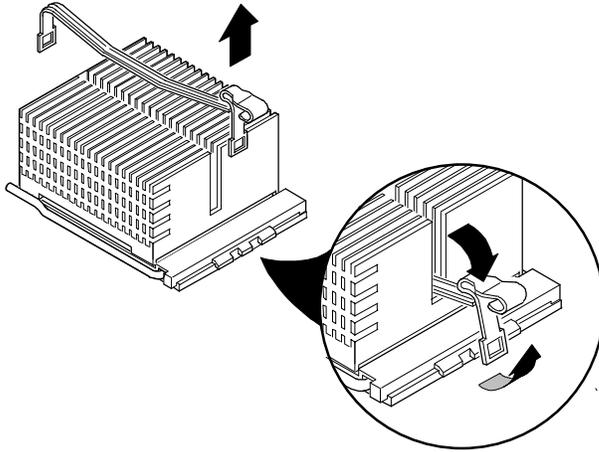
Figure 6. Removing the Clip from the Shipping Holder

10

2. Remove the CPU/heat sink assembly from its shipping holder. Do not pull the heat sink off of the CPU chip. Use care not to bend the pins.
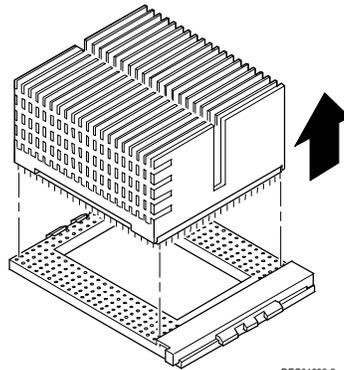
DEC01232-2

Figure 7. Removing the New CPU from its Shipping Holder

3. On the CPU module, lift up on the lever of the empty CPU socket. Position the pins of the new CPU chip in the socket of the CPU module. Note that the pins are denser on one side for correct orientation.

4. Lower the lever to engage the pins (Figure 8).
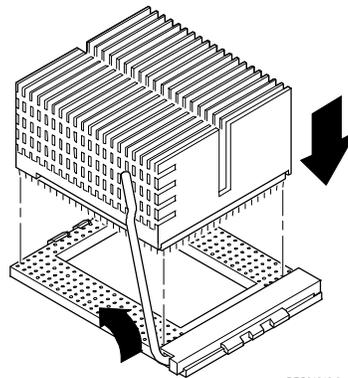
DEC01212-3

Figure 8. Installing the New CPU Chip

11

5. Install the retaining clip by installing the back side of the clip first, then pressing it into place as shown in the circle in Figure 9.
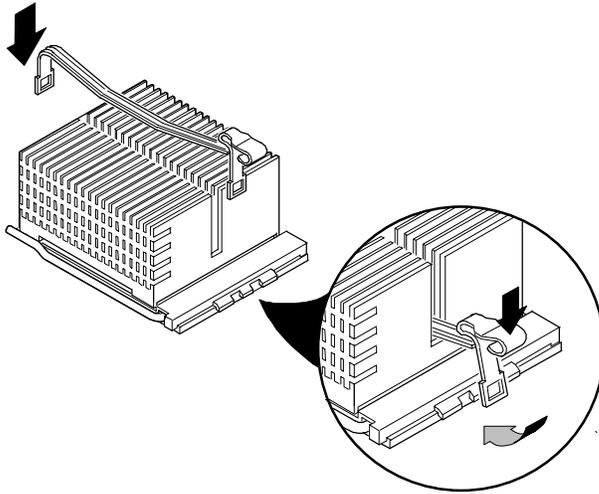
DEC01211-4
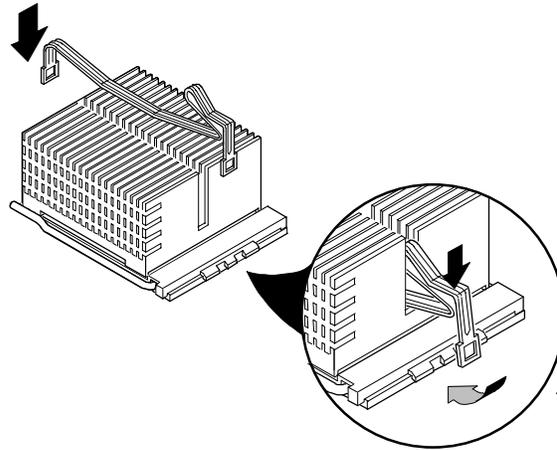
DEC01211-5

Figure 9. Installing the Clip to Secure the CPU to the CPU Module

Install the Voltage Regulator Module(s)

1. Remove the new VRM from its shipping container.

2. Install the VRM into the empty VRM socket (Figure 10).

   NOTE: A voltage regulator module must be installed for each processor that is installed in the server.
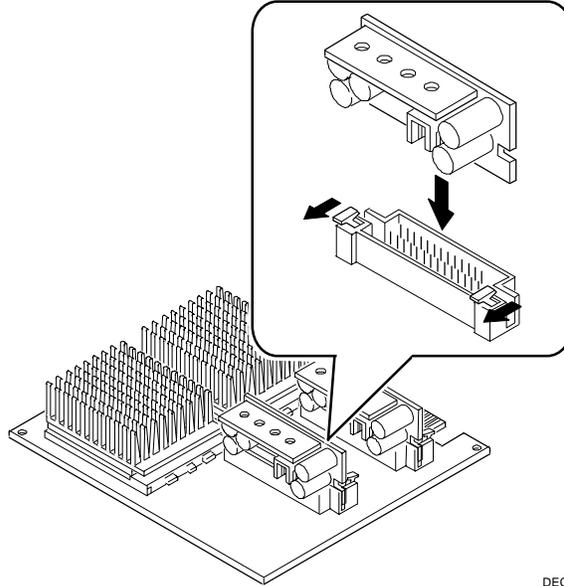
DEC01446

Figure 10. CPU Module Component Locations

13

Check the CPU Speed Settings

Check the switch settings, shown in Figure 11, for the new CPU speed setting, as listed in Table 2.
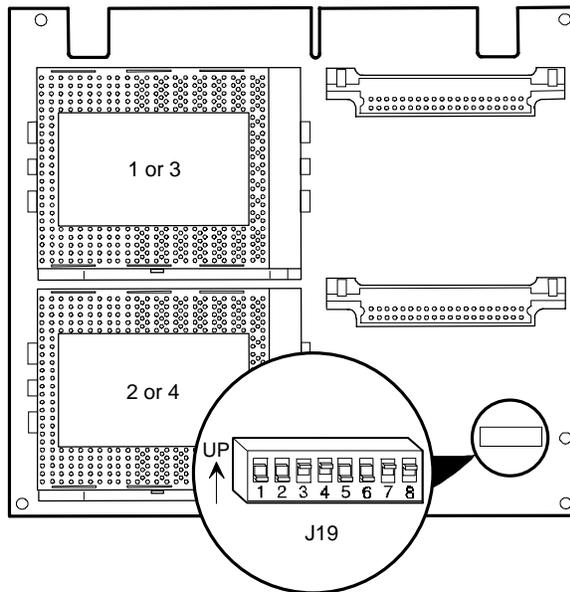
DEC01408-3

Figure 11. CPU Module Switch Location

14

Table 2. CPU Module CPU Speed Switch Settings

Speed		Position	Switches	J19 Switch Settings
120/133 MHz	❏	UP	4, 8	■ ■ ■ □ ■ ■ ■ □
	■	DOWN	1, 2, 3, 5, 6, 7	
150/166 MHz	❏	UP	3, 4, 7, 8	■ ■ □ □ ■ ■ □ □
	■	DOWN	1, 2, 5, 6	
180/**200 MHz***	❏	UP	1, 4, 5, 8	□ ■ ■ □ □ ■ ■ □
	■	DOWN	2, 3, 6, 7	
210/233 MHz	❏	UP	1, 3, 4, 5, 7, 8	□ ■ □ □ □ ■ □ □
	■	DOWN	2, 6	
240/266 MHz	❏	UP	2, 4, 6, 8	■ □ ■ □ ■ □ ■ □
	■	DOWN	1, 3, 5, 7	
270/300 MHz	❏	UP	2, 3, 4, 6, 7, 8	■ □ □ □ ■ □ □ □
	■	DOWN	1, 5	
300/333 MHz	❏	UP	1, 2, 4, 5, 6, 8	□ □ ■ □ □ □ ■ □
	■	DOWN	3, 7	
330/366 MHz	❏	UP	1, 2, 3, 4, 5, 6, 7, 8	□ □ □ □ □ □ □ □

*Default setting.

15

Installing a Second Processor Module (Model 7100)

1. Turn off your server, as described on page 3.

2. Carefully remove the terminator from slot B in the main logic board, so you can plug in the second processor module (Figure 12).

3. Remove the processor module, two regulators, and retaining bracket from the antistatic package.

4. Install any additional CPU chip and voltage regulator module (if necessary), as previously described.
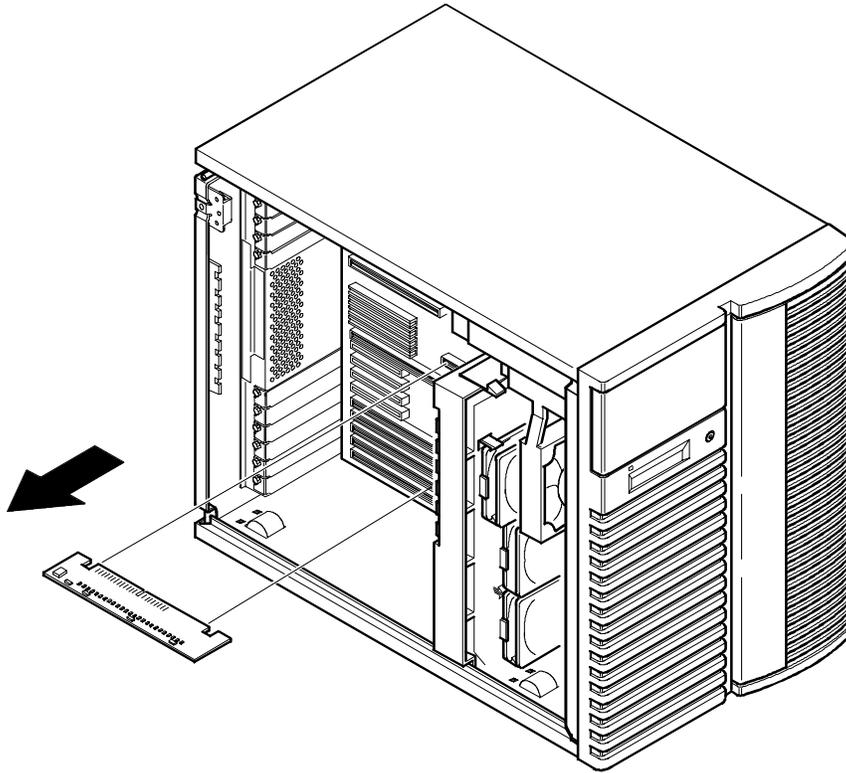
DEC00695-5

Figure 12. Removing the Terminator Card (Model 7100)

16

Installing a Second Processor Module (Model 7100R)

1. Turn off your server, as described on page 3.

2. Remove the top cover as described on page 5.

3. Carefully remove the terminator from slot B in the main logic board, so you can plug in the second processor module (Figure 13).

4. Remove the processor module and retaining bracket from the antistatic package.

5. Install any additional CPU chip and voltage regulator module (if necessary), as previously described.
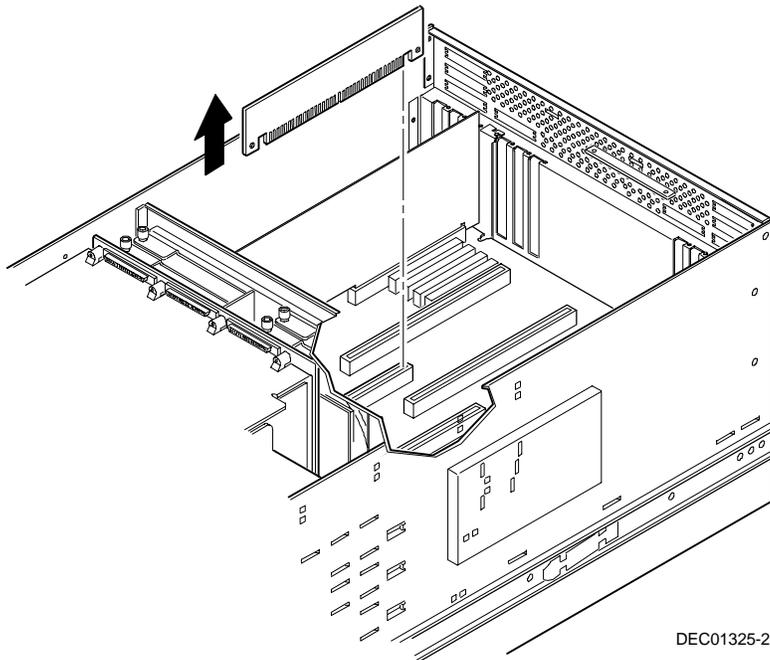
DEC01325-2

Figure 13. Removing the Terminator Card (Model 7100R)

17

Reset the Switches on the Main Logic Board

Make sure that the following switches are set to prevent any unauthorized update to your BIOS (Figure 3, page 6).

SW1-1 Off	BIOS upgrade	Disabled
SW1-3 Off	Boot block update	Disabled

Processor Module Locations

Item A in Figure 14 shows the first processor module location. Item B in shows the second processor module location.

Model 7100   DEC01410-2   Model 7100R   DEC01320-7
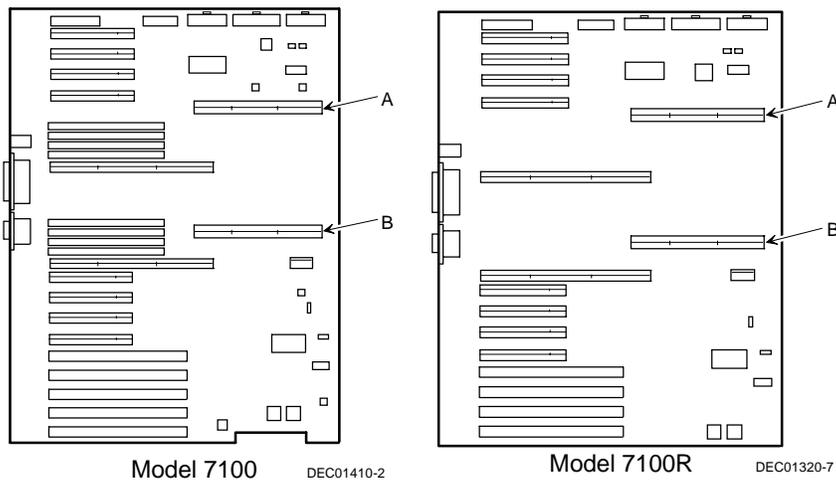
Figure 14. Processor Module Locations

18

Install the CPU Module(s)

1. Install the CPU module(s) into the CPU slot(s) on the main logic board.

> ⚠ **CAUTION:** Make sure you align the processor module with the corresponding slot. Failure to do so might cause faulty processor module or server operation.
>
> Also, the processor module has two rows of gold fingers on its edge that plug into the main logic board slot. The processor module must be pushed firmly in the slot to engage both rows of gold fingers or your server might not power up on boot.

2. Secure the CPU module(s) to the main logic board using the retaining bracket(s), screw(s), and a Phillips screwdriver.
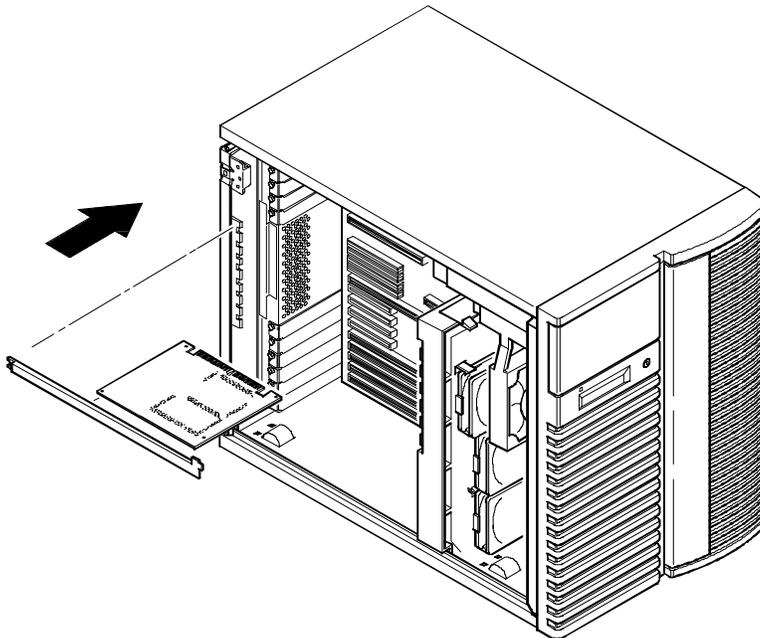
DEC00695-3

Figure 15. Installing a CPU Module (Model 7100)

19
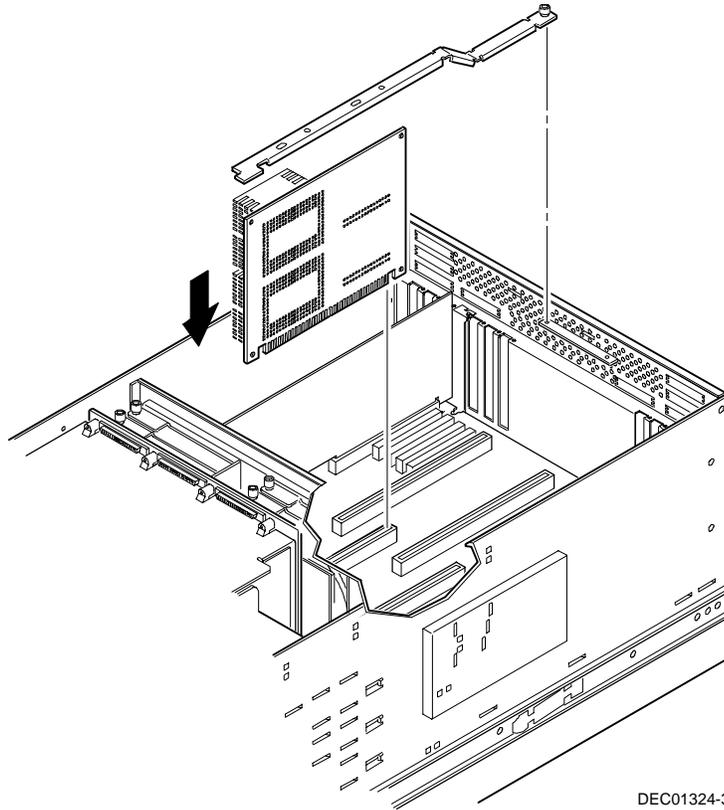
DEC01324-3

Figure 16. Installing a CPU Module (Model 7100R)

Install any Video Option Card

If you previously removed a video option card, you can install it again.

Replace the Panel and Reconnect the Cables

1. Install the left side (top) panel and lock the server. The server will not power up with the panel removed.

2. *Model 7100R* -- Slide the chassis into the rack and then secure using the four previously removed screws. Replace the front bezel.

3. Connect any cables and power cords previously removed to the back of the server.

Run the System Configuration Utility (SCU)

Power up and boot your server from the SCU diskette. The SCU enables you to check or change your server's configuration. Run the SCU to configure your server for the new CPU chip or module.

To start and run the SCU:

1. Insert the SCU diskette into drive A and turn on your server. The diskette should boot automatically.

2. When the SCU title appears, press any key to continue. Afterwards, follow the instructions on your screen to access the SCU main menu.

3. From the main menu, press the up or down arrow to highlight an item and then press Enter to select it. Press F1 at any time for help about a selection.

4. From the main menu select Configure Computer and then View and Edit Details. Example:

   If you installed a video option card, select the Advanced Control Group and disable the Embedded - PCI VGA controller.

5. Select Save and Exit to configure your server for the CPU module.

6. When complete, remove the SCU diskette from drive A.

7. Move the video cable to the newly installed video card (if you have one) and reboot your server.

   Refer to Chapter 2, "Server Software and Utilities," in your computer System Reference manual for any additional information on running the SCU.

Troubleshooting

Using the Crisis Recovery Diskette if Necessary

If you updated your BIOS, the crisis recovery diskette may be used <u>only</u> if your server's BIOS fails or if a BIOS upgrade is unsuccessful.

When using the Crisis Recovery diskette, you must remove any video option card and enable the on-board VGA.

1. Turn off the server and set SW1-2 in Figure 3 to ON (Recovery mode).

2. Insert the Crisis Recovery diskette into drive A and reboot the computer.

> **NOTE**: Remember to return the switch to its Normal position after using the crisis recovery diskette.

Future Updates

For future reference, you can access product information and software updates using the Internet at:

```
http://www.windows.digital.com
```

or

```
http://www.windows.digital.com/~ftp/00-index.stm
```