9FX Motion 331 (PCI) Graphics Option

Owner's Guide

Part Number: EK-V331G-OG. A01

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This guide describes the installation of the 9FX Motion 331 (PCI) Graphics Option on DIGITAL AlphaServer and workstation products.

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However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, the user is encouraged to try to correct the interference.

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Preface

Purpose of This Guide

This guide describes how to install the 9FX Motion 331 (PCI) Graphics Option in your computer system.

Who Should Use This Guide

This guide is intended for anyone who has purchased the 9FX Motion 331 (PCI) Graphics Option, either already installed or as an add-on.

Structure of This Guide

This guide is organized as follows:

- **Chapter 1, Overview-**Provides an overview of the 9FX Motion 331 (PCI) Graphics Option.

- **Chapter 2, Installation-**Describes how to install the 9FX Motion 331 (PCI) Graphics Option in your DIGITAL AlphaServer or workstation running Windows NT, DIGITAL UNIX, or OpenVMS Alpha.

Conventions Used in This Guide

In this guide, every use of Windows NT means the Windows NT operating system, every use of DIGITAL UNIX means the DIGITAL UNIX operating system, and every use of OpenVMS Alpha means the OpenVMS Alpha operating system.

This guide also uses the following conventions:

Convention	Meaning
Note	A note calls the reader's attention to any item of information that may be of special importance.
Caution	A caution contains information essential to avoid damage to the equipment.
italic type	*Italic type* indicates complete titles of manuals.
bold type	**Bold type** indicates text that is highlighted for emphasis.
`monospaced`	In text, this typeface indicates the exact name of a command, routine, partition, pathname, directory, or file.

Reader's Comments

DIGITAL welcomes your comments on this or any other manual. You can send your comments to DIGITAL in the following ways:

- Internet electronic mail to: *readers_comment@zk3.dec.com*

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Overview

Introduction

This chapter provides a brief overview of the 9FX Motion 331 (PCI) Graphics Option.

Module Description

The 9FX Motion 331 (PCI) Graphics Option accelerator module is a single expansion-slot, 64-bit PCI bus graphics option, for use in DIGITAL's AlphaServer 4000/4100, AlphaServer 1000A 5/400, 5/333,and rackmount 5/5xx systems.

The option contains 1 MB of DRAM video memory for use with DIGITAL's AlphaServer systems and 2 MB of DRAM video memory for use with DIGITAL's workstations and optional use on servers.

The following table provides a support matrix for the PB2GA-JC/JD (Number Nine Technologies Motion 331 Graphics Adapter) option.

System	Minimum Console Rev.	AlphaBIOS	O/S Version	Motif	Comments
AS4x00 family	V3.0-10	V5.25	OpenVMS 6.2-1H3 DIGITAL UNIX 4.0b Windows NT 3.51, 4.0	V1.2-3	Must be installed in Hose 0.
AS1000A 5/400 5/333 RM 5/5xx	V4.6-227	V5.2-3	OpenVMS 6.2-1H3 DIGITAL UNIX 4.0b Windows NT 3.51, 4.0	V1.2-3	No restrictions

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Installation

Introduction

This chapter describes the installation of the 9FX Motion 331 (PCI) Graphics Option in your DIGITAL AlphaServer or workstation system. Topics included in this chapter are:

- Unpacking

- Windows NT 3.51 installation

- Windows NT 4.0 installation

- DIGITAL UNIX installation

- OpenVMS Alpha installation

- Hardware installation

Unpacking

The graphics option hardware is packaged in a single carton that contains the graphics option and an owner's guide.

Windows NT 3.51 Installation

Windows NT Version 3.51 does *not* include the graphics driver required by the Motion 331 graphics option.

If you have purchased a DIGITAL AlphaServer system or a workstation that already has the Motion 331 graphics option installed with Windows NT Version 3.51, you do not need to take further action.

_____ **Note** _____

If a graphics option other than the Motion 331 was previously operating in the system, keep that option installed while changing over to the Motion 331 option driver. If the previously installed graphics option is not available or it is not operational, reinstall Windows NT by using the procedure described in the "Custom Windows NT Installation" section of this guide.

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If you have purchased the Motion 331 graphics option as an add-on, or you have chosen not to use the factory-installed software, install the Motion 331 graphics driver by performing the following steps:

1. From the Main Program Group, double-click the **Control Panel** icon.

2. In Control Panel, double-click on the **Display** icon.

3. In the Display Settings dialog box, click on the **Change Display Type** button.

4. In the Display Type dialog box, click on the **Change** button

5. Insert the PB2GA-JC/JD Motion 331 Driver Floppy in the drive unit.

6. In the Select Device dialog box, click on the **Other** button.

7. In the Install From Disk dialog box, click on the **OK** button.

8. In the Select Device dialog box, select the **S3 Video Driver Update 1.13** and then click on the **Install** button.

9. In the Installing Driver dialog box, click on the **Yes** button.

10. In the Windows NT Setup dialog box, click on the **New** button and then the **Continue** button.

11. In the Installing Driver dialog box, click on the **OK** button and then the **OK** button again.

12. In the Display Settings Change dialog box, click on the **Restart Now** button.

13. When the display goes to the ARC Multiboot blue screen or the AlphaBIOS screen, you can remove power from your computer system and install the Motion 331 graphics option as described in the "Hardware Installation" section.

14. When the system reboots, and after logging in, the Invalid Display Settings dialog box appears, click on the **OK** button.

15. In the Display Settings dialog box, click on the **Test** button.

16. In the Testing Mode dialog box, click on the **OK** button, and after observing the test bitmap, click on the **Yes** button.

17. In the Display Settings Change dialog box, click on the **Restart Now** button.

Changing Windows NT Display Characteristics

The resolutions supported by Windows NT are as follows:

Resolution	Colors	Display Frequency (Hz)
640 x 480	16, 256, 65,536	60, 72
800 x 600	16, 256, 65,536	60, 72
1024 x 768	16, 256, 65,536	60, 70, 72
1280 x 1024[*]	16, 256, 65,536	60, 70

To change the display resolution and refresh rate from the Windows NT Control Panel, perform the following steps:

1. Double click on the **Display** icon in the Control Panel dialog box and go through the following process:

   List modes

   Select a mode

   TEST

   The testing operation confirms that the monitor properly synchronizes in the selected mode. If the monitor synchronizes, but the display appears geometrically distorted, you must adjust the monitor geometry controls after rebooting.

2. If the test bitmap was properly displayed, continue to respond affirmatively to the dialog boxes, and when prompted, click on the **Restart now** button to reboot.

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[*] Available only for the 2 MB version of the graphics option.

3. When rebooted, the new display characteristics are loaded and the Motion 331 graphics option comes up in the new display mode.

Custom Windows NT Installation

If the previously installed graphics option is not available or it is not operational, you must reinstall Windows NT.

Install the Motion 331 graphics option as described in the "Hardware Installation" section and then perform the following steps:

1. Insert the Windows NT 3.51 CD-ROM and the Windows NT 3.51 HAL floppy diskette.

2. Press **F2** to enter the AlphaBIOS Setup Menu, then select Install Windows NT and press **Enter**.

3. From the list that appears, select Other and then press **Enter**.

4. At the next Windows NT Setup screen, press **Enter**.

5. From the next list that appears, select the correct DIGITAL computer type and then press **Enter**.

6. At the Welcome to Setup screen, press **Enter**.

7. At the next screen, press **C** to select Custom Setup.

8. At the next setup screen, press **Enter**.

9. From the next list that appears, next to Display: highlight VGA Compatible and then press **Enter.**

10. Insert the PB2GA-JC/JD Motion 331 floppy diskette.

11. From the list that appears, select Other and then press **Enter**.

12. At the next setup screen, press **Enter**.

13. Number Nine FXMotion 331 is the only item on the next list, press **Enter**.

14. Now next to Display: is Number Nine FXMotion 331, press **Enter**.

15. At this point simply continue with the remaining Windows NT installation steps.

Windows NT 4.0 Installation

Windows NT Version 4.0 already includes the graphics driver required by the Motion 331 graphics option.

If you have purchased a DIGITAL AlphaServer system or a workstation that already has the Motion 331 graphics option installed, you do not need to take further action.

_____ **Note** _____

If a graphics option other than the Motion 331 was previously operating in the system, keep that option installed while changing over to the Motion 331 option driver. If the previously installed graphics option is not available or it is not operational, reinstall Windows NT by using the procedure described in the "Custom Windows NT Installation" section of this guide.

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If you have purchased the Motion 331 graphics option as an add-on, or you have chosen not to use the factory-installed software, install the Motion 331 graphics driver by performing the following steps:

1. From the Task bar, press **Start**. Point to **Settings** and then click **Control Panel**.

2. In Control Panel, click on the **Display** option.

3. In the Display Properties box, click on the **Settings** tab.

4. Click on **Display Type**. Click on the **Change** button. The Change Display dialog box shows a list of current devices.

5. Insert the Windows NT installation CD-ROM into the CD-ROM drive unit.

6. In the Change Display dialog box (under Manufactures), click on the **Number Nine Visual Technologies**.

7. Under Display, click on Number Nine Visual Technologies 9FX Motion 331 PCI and then click on the **OK** button.

8. In the Installing Driver dialog box, click on the **OK** button.

9. Click on the **Close** button in the Display Type dialog box.

10. Click on the **Close** button in the Display Properties dialog box.

11. Click on **Yes** in the System Settings Change dialog box, this restarts the computer.

12. When the display goes to the AlphaBIOS screen, you can remove power from your computer system and install the Motion 331 graphics option as described in the "Hardware Installation" section.

13. When the system reboots, the graphics driver is loaded and the Motion 331 graphics option comes up in the 640 x 480 default mode.

Changing Windows NT Display Characteristics

The resolutions supported by Windows NT are as follows:

Resolution	Colors	Display Frequency (Hz)
640 x 480	16, 256, 65,536	60, 72
800 x 600	16, 256, 65,536	60, 72
1024 x 768	16, 256, 65,536	60, 70, 72
1280 x 1024[*]	16, 256, 65,536	60, 70

To change the display resolution and refresh rate from the Windows NT Control Panel, perform the following steps:

1. Double click on the **Display** icon in the Control Panel dialog box and go through the following process:

   List modes

   Select a mode

   TEST

   The testing operation confirms that the monitor properly synchronizes in the selected mode. If the monitor synchronizes, but the display appears geometrically distorted, you must adjust the monitor geometry controls after rebooting.

2. If the test bitmap was properly displayed, continue to respond affirmatively to the dialog boxes, and when prompted, click on the **Restart now** button to reboot.

3. When rebooted, the new display characteristics are loaded and the Motion 331 graphics option comes up in the new display mode.

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[*] Available only for the 2 MB version of the graphics option.

Custom Windows NT Installation

If the previously installed graphics option is not available or it is not operational, you must reinstall Windows NT.

Install the Motion 331 graphics option as described in the "Hardware Installation" section and then perform the following steps:

1. From the AlphaBIOS blue screen menu, press **F2**.

2. Select **Install Windows NT.**

3. Within the Windows NT Workstation Setup process, the system queries for either **Express Setup** or **Custom Setup** installation. Select **C** for custom installation. If you encounter difficulty, refer to the Windows NT installation guide for help.

4. Early in the Custom Setup process, the program queries for either a **New Version** or an **Upgrade.** Select **N** for new version.

5. A list of hardware and software components is displayed. From the menu, select the desired display.

6. Insert the Windows NT installation CD-ROM into the CD-ROM drive unit.

7. When queried, select the **Number Nine Visual Technologies 9FX Motion 331 PCI VGA Display Adapter** or **S3 compatible video driver** option and press **Return**.

8. Press **Return** again to continue, and follow the Windows NT installation process instructions.

_____ **Note** _____

Near the end of the first half of the Windows NT Setup process, an automatic reboot is invoked. Setup then continues in graphics mode. If you experience any difficulty, refer to the Windows NT installation guide for help.

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9. Near the end of the last half of the Windows NT Setup process (after the point where the system clock is set), a dialog box appears acknowledging the presence of the Motion 331 graphics option. Click on the **OK** button to proceed and then select the **List all modes** ... option.

10. Set up a new default display mode as instructed in the "Changing Windows NT Display Characteristics" section.

11. When Windows NT reboots, the new display characteristics are loaded and the Motion 331 graphics option comes up in the selected display mode.

DIGITAL UNIX Installation

DIGITAL UNIX V4.0b (minimum version) already includes the display driver software required by the Motion 331 graphics option.

If you have purchased a DIGITAL AlphaServer system or a workstation that already has the Motion 331 graphics option installed, and you choose to use the factory-installed software, you do not need to take further action.

If you have purchased the Motion 331 graphics option as an add-on, or you have chosen not to use the factory-installed software and you choose to do a new DIGITAL UNIX V4.0b installation, you need to install DIGITAL UNIX V3.2d-1 as described in the "New DIGITAL UNIX V4.0b Installation" section. Refer to the *DIGITAL UNIX Installation Guide* for additional information.

If you have purchased the Motion 331 graphics option as an add-on, and your system is currently running DIGITAL UNIX V4.0b, which was upgraded to that version while a graphics option other than the Motion 331 was installed, you need to install the Motion 331 driver software. You install the driver software from the DIGITAL UNIX V4.0b installation CD-ROM as described in the "DIGITAL UNIX Upgraded to V4.0b with Another Graphics Option Installed" section.

Optionally, you can change the resolution of the graphics option as described in the "Changing DIGITAL UNIX Display Characteristics" section.

_____ **Note** _____

When the DIGITAL UNIX system is powered on, the Motion 331 graphics option runs in VGA text mode as a terminal device. If a graphics option other than the Motion 331 was previously running on the system, X/Motif cannot be started until the operating system kernel has been reconfigured.

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New DIGITAL UNIX V4.0b Installation

Install the Motion 331 graphics option as described in the "Hardware Installation" section and then perform the following steps:

1. Shut down your DIGITAL UNIX system to the SRM console prompt (>>>).

2. Insert the DIGITAL UNIX V4.0b CD-ROM into the system CD-ROM drive unit.

3. Boot the CD-ROM that contains DIGITAL UNIX V4.0b.

4. Refer to your *DIGITAL UNIX Installation Guide* and complete the V4.0b installation.

DIGITAL UNIX Upgraded to V4.0b with Another Graphics Option Installed

Install the Motion 331 graphics option as described in the "Hardware Installation" section and then perform the following steps:

1. Insert the DIGITAL UNIX V4.0b or greater CD-ROM into the system CD-ROM drive unit.

2. From the appropriate drive, boot the system disk file genvmunix to single-user mode:

   ```
   >>> boot -file genvmunix dka0 -fl s
   ```

3. Using the appropriate device name, mount the DIGITAL UNIX installation CD-ROM, install the driver software, and rebuild the kernel:

   ```
   # /sbin/bcheckrc
   # mount -r /dev/rzxc /mnt
   # setld -l /mnt/ALPHA/BASE/OSFSERPCI360
   # doconfig -c
   # cp /sys/HOSTNAME/vmunix /vmunix
   # reboot
   ```

4. Upon rebooting, the operating system automatically detects the presence of the Motion 331 graphics option and defaults to the 1024 x 768, 70 Hz display resolution mode.

Changing DIGITAL UNIX Display Characteristics

DIGITAL UNIX supports 256 colors and resolutions as follows:

Resolution	Frequency (Hz)	Pixel Frequency (MHz)
640 x 480	60, 72	25.18, 31.5
800 x 600	60, 72	40, 50
1024 x 768	60, 70, 72	65, 75, 74.37
1280 x 1024	60, 66, 72	110.16, 119, 131

To change to any of the other supported resolution and refresh modes, perform the following steps:

1. Change directory to cd /var/X11:

   ```
   # cd /var/X11
   ```

2. Change the mode of Xservers.conf:

   ```
   # chmod +w Xservers.conf
   ```

3. Edit the file Xservers.conf:

   ```
   # vi (or emacs) Xservers.conf
   ```

4. At the end of the file there is a line for Xserver command line arguments:

   ```
   ! you specify command line arguments here

   args <

       -pn

   >
   ```

Append the command line switches that correspond to the resolution and vsync (vertical synchronization) desired from the table. For example, 1280 x 1024 at 70 Hz would be:

```
! you specify command line arguments here

args <

    -pn -screen 1280 -vsync 72

>
```

5. When the editing is complete, save the file and perform reboot or restart the Xserver for the changes to take:

reboot:

```
# shutdown -r now
```

restart Xserver:

```
# /sbin/init.d/xlogin stop
```

```
# /sbin/init.d/xlogin start
```

OpenVMS Alpha Installation

OpenVMS Alpha Version 6.2-1H1 or 6.2-1H2 (minimum version) already includes the driver software required by the Motion 331 graphics option.

If you have purchased a DIGITAL AlphaServer system or a workstation that already has the Motion 331 graphics option installed, and you choose to use the factory-installed software, you do not need to take further action. However, you can change the display resolution and vertical synchronization frequency.

Changing OpenVMS Alpha Display Characteristics

OpenVMS Alpha supports 256 colors and resolutions as follows:

Resolution	Frequency (Hz)	Pixel Frequency (MHz)
640 x 480	60, 72	25.18, 31.5
800 x 600	60, 72	40, 50
1024 x 768	60, 70, 72	65, 75, 74.37
1280 x 1024	60, 66, 72	110.16, 119, 131

_____ **Note** _____

Although the 640 x 480 and 800 x 600 resolutions are available, DIGITAL does not recommend their use because many X11/Motif applications make assumptions about minimum screen size.

_____

To change to any of the other supported resolution and refresh modes, perform the following steps:

1. Copy the DECwindows server setup template to a command file:

   $ COPY SYS$MANAGER: -
   _$ DECW$PRIVATE_SERVER_SETUP.TEMPLATE -
   _$ SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.COM

2. Edit the file SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.COM to add the following lines in the **Cluster Common or Standalone Workstation Setup** area of the file, along with the other setup options:

   DECW$XSIZE_IN_PIXELS == 1024

DECW$YSIZE_IN_PIXELS == 768

DEFINE/SYSTEM DECW$SERVER_REFRESH_RATE 70

3. Invoke the shutdown and reboot process:

$ @SYS$SYSTEM:SHUTDOWN

4. Continue to use the defaults until prompted to reboot and then type **Y** to reboot.

5. During reboot of OpenVMS Alpha, the new characteristics are loaded and the Motion 331 graphics option comes up in the selected display mode.

_____ **Note** _____

During reboot, the system display may dim momentarily. This condition corrects itself when the DECwindows server comes up.

_____

Hardware Installation

The following section describes how to install the 9FX Motion 331 (PCI) Graphics Option. To install the graphics option, perform the following steps:

_____ **Note** _____

Before installing the graphics option, check your monitor specification for signal compatibility and supported features offered by the graphics option.
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_____ **Caution** _____

Static electricity can damage sensitive electronic components. When handling your graphics option, use an antistatic wriststrap that is connected to a grounded surface on your computer system.
_____

1. Remove power from your computer system and disconnect the monitor cable.

2. Remove the cover from your computer (refer to your system documentation).

3. If your computer has an existing graphics module, remove the hardware that secures it and then remove the module.

4. If your system had a previously installed graphics option, you can use that slot if it is a PCI bus, or you can select any empty PCI expansion slot. Remove the slot cover if you are using a new slot.

_____ **Note** _____

For the Windows NT operating system, you must install the graphics option in a slot that is located in front of the PCI-to-PCI bridge. Refer to your system owner's guide for information about graphics option slots.
_____

5. Grasp the top edge of the graphics option and carefully insert it into the slot, then firmly seat it.

6. Secure the module retaining bracket.

7. Replace the computer cover.

8. Ensure that the monitor cable is connected to the video output connector located on the back of the graphics option.