COMPAQ

Compaq PowerStorm 300/AGP and 300/PCI Graphics Options

Installation Guide

Part Number: EK-PBXAC-IN. A01/330430-001

September 1998

This guide describes the installation of the Compaq PowerStorm 300/AGP and 300/PCI Graphics Options on Compaq Professional Workstation products.

Compaq Computer Corporation
Houston, Texas

September 1998

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Preface

Purpose of This Guide

This guide describes how to install the Compaq PowerStorm 300/AGP and 300/PCI Graphics Options in your workstation.

Who Should Use This Guide

This guide is intended for anyone who has purchased the Compaq PowerStorm 300/AGP or 300/PCI Graphics Option, either already installed or as an add-on.

Structure of This Guide

This guide is organized as follows:

- **Chapter 1, PowerStorm 300/AGP Overview-**Provides an overview of the Compaq PowerStorm 300/AGP Graphics Option.
- **Chapter 2, PowerStorm 300/PCI Overview-**Provides an overview of the Compaq PowerStorm 300/PCI Graphics Option.
- **Chapter 3, Installation-**Describes how to install the Compaq PowerStorm 300/AGP and 300/PCI Graphics Options in your Compaq Professional Workstation running Windows NT.

Related Documentation

- *Compaq PowerStorm 300 Software Installation Guide for Microsoft Windows NT Intel* (DIGITAL Part Number AA-REKEA-TE, Compaq Part Number 330646-001)

Conventions Used in This Guide

In this guide, every use of Windows NT means the Microsoft Windows NT 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.

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1
PowerStorm 300/AGP Overview

1.1 Introduction

This chapter provides a brief overview of the PowerStorm 300/AGP Graphics Option.

1.2 Module Description

The PowerStorm 300/AGP Graphics Option accelerator module is a single expansion-slot, 32-bit AGP bus graphics option that provides 2D and 3D graphics acceleration for Compaq Professional Workstations running Windows NT.

The PowerStorm 300/AGP graphics option includes 16 MB of CDRAM texture memory and is available in an ATX or a full-length NLX form factor. These options are listed in Table 1-1.

Table 1-1 PowerStorm 300/AGP Graphics Options

DIGITAL Option Part Number	Compaq Option Part Number	Description
SN-PBXGD-BA	328778-B21	PowerStorm 300/AGP graphics module in an ATX form factor.
SN-PBXGD-BB	328778-B21	PowerStorm 300/AGP graphics module in a full-length NLX form factor.

Table 1-2 provides a support matrix for the PowerStorm 300/AGP graphics option.

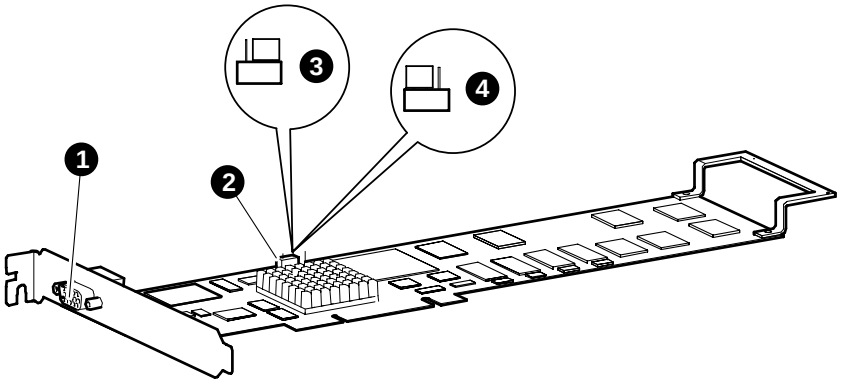
Table 1-2 Compaq PowerStorm 300/AGP Support Matrix

System	Service Pack	O/S Version
Compaq Professional Workstation AP400	Service Pack3	Windows NT 4.0
Compaq Professional Workstation AP500	Service Pack3	Windows NT 4.0
Compaq Professional Workstation SP700	Service Pack3	Windows NT 4.0

The PowerStorm 300/AGP graphics option (see Figure 1-1 and Figure 1-2) contains one standard 15-pin VGA connector on the AGP bulkhead.

The option module contains one 3-pin jumper for enabling or disabling the VGA capability when more than one VGA graphics module is installed in the same system.

Figure 1-1 PowerStorm 300/AGP Graphics Option ATX Form



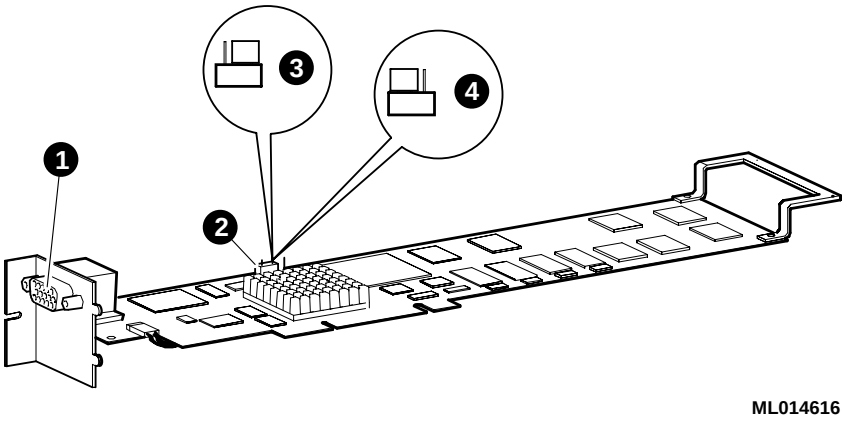
❶ Standard 15-pin VGA connector

❷ VGA enable/disable jumper

❸ VGA enabled (default)

❹ VGA disabled

Figure 1-2 PowerStorm 300/AGP Graphics Option NLX Form



❶ Standard 15-pin VGA connector

❷ VGA enable/disable jumper

❸ VGA enabled (default)

❹ VGA disabled

1.3 Connector Pinout

Table 1-3 contains a listing of the pins and signals found on the standard 15-pin VGA connector.

Table 1-3 Standard 15-Pin VGA Connector Pinout

Pin No.	Signal
1	RED VIDEO
2	GREEN VIDEO or COMPOSITE SYNC with GREEN VIDEO
3	BLUE VIDEO
4	NC (no connection)
5	GROUND
6	GROUND
7	GROUND
8	GROUND
9	+5V
10	GROUND
11	NC (no connection)
12	SERIAL DATA
13	HORIZONTAL SYNC or COMPOSITE SYNC
14	VERTICAL SYNC (VCLK)
15	SERIAL CLOCK

1.4 Specifications

Table 1-4 lists the specifications for the PowerStorm 300/AGP graphics option.

Table 1-4 PowerStorm 300/AGP Graphics Option Specifications

Resolution	1280 x 1024 (maximum) @ 85 Hz
Color planes	24 bit double buffered
Overlay	8 bit, shared with Alpha planes
	4 bit, shared with stencil
Stencil planes	4 bit, shared with overlay
Alpha planes	8 bit, shared with 8 bit overlay
Window ID	4
Z-buffer	24 bit
Total bits/pixel	96
Frame buffer	15 MB
Texture memory	16 MB
Form factor	Single full-length AGP card in ATX or NLX form
AGP	AGP 1X, 32-bit, 66 MHz, 5V signaling
Input voltage	3.3 Vdc, 5 Vdc, +12 Vdc
Power	25 W maximum
Operating temperature	10°C to 40°C (50°F to 104°F)
Relative humidity	10% to 90% noncondensing

2
PowerStorm 300/PCI Overview

2.1 Introduction

This chapter provides a brief overview of the PowerStorm 300/PCI Graphics Option.

2.2 Module Description

The PowerStorm 300/PCI Graphics Option accelerator module is a single expansion-slot, 32-bit PCI bus graphics option that provides 2D and 3D graphics acceleration for Compaq Professional Workstations or the DIGITAL Personal Workstation running Windows NT. The PowerStorm 300/PCI graphics option includes 16 MB of CDRAM texture memory. This option is listed in Table 2-1.

Table 2-1 PowerStorm 300/PCI Graphics Option

DIGITAL Option Part Number	Compaq Option Part Number	Description
SN-PBXGD-AC	317733-B21	PowerStorm 300/PCI graphics module.

Table 2-2 provides a support matrix for the PowerStorm 300/PCI graphics option.

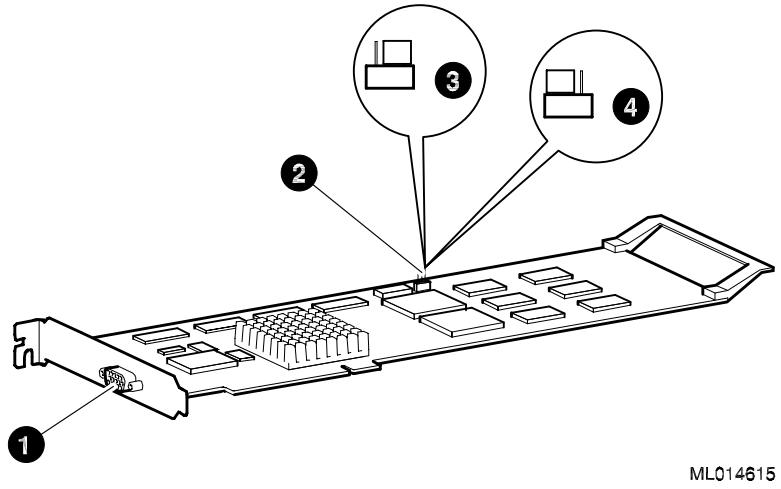
Table 2-2 Compaq PowerStorm 300/PCI Support Matrix

System	Service Pack	Minimum BIOS	O/S Version
DPWS 500a	Service Pack3	V5.65	Windows NT 4.0
DPWS 600a	Service Pack3	V5.65	Windows NT 4.0

The PowerStorm 300/PCI graphics option (see Figure 2-1) contains one standard 15-pin VGA connector on the PCI bulkhead.

The option module contains one 3-pin jumper for enabling or disabling the VGA capability when more than one VGA graphics module is installed in the same system.

Figure 2-1 PowerStorm 300/PCI Graphics Option



❶ Standard 15-pin VGA connector

❷ VGA enable/disable jumper

❸ VGA enabled (default)

❹ VGA disabled

2.3 Connector Pinout

Table 2-3 contains a listing of the pins and signals found on the standard 15-pin VGA connector.

Table 2-3 Standard 15-Pin VGA Connector Pinout

Pin No.	Signal
1	RED VIDEO
2	GREEN VIDEO or COMPOSITE SYNC with GREEN VIDEO
3	BLUE VIDEO
4	NC (no connection)
5	GROUND
6	GROUND
7	GROUND
8	GROUND
9	+5V
10	GROUND
11	NC (no connection)
12	SERIAL DATA
13	HORIZONTAL SYNC or COMPOSITE SYNC
14	VERTICAL SYNC (VCLK)
15	SERIAL CLOCK

2.4 Specifications

Table 2-4 lists the specifications for the PowerStorm 300/PCI graphics option.

Table 2-4 PowerStorm 300/PCI Graphics Option Specifications

Resolution	1280 x 1024 (maximum) @ 85 Hz
Color planes	24 bit double buffered
Overlay	8 bit, shared with Alpha planes
	4 bit, shared with stencil
Stencil planes	4 bit, shared with overlay
Alpha planes	8 bit, shared with 8 bit overlay
Window ID	4
Z-buffer	24 bit
Total bits/pixel	96
Frame buffer	15 MB
Texture memory	16 MB
Form factor	Single full-length PCI card
PCI	PCI 2.1, 32-bit, 33 MHz, 5V signaling
Input voltage	3.3 Vdc, 5 Vdc, +12 Vdc
Power	25 W maximum
Operating temperature	10°C to 40°C (50°F to 104°F)
Relative humidity	10% to 90% noncondensing

3
Installation

3.1 Introduction

This chapter describes the installation of the PowerStorm 300/AGP and 300/PCI Graphics Options in a Compaq Professional Workstation system or a DIGITAL Personal Workstation system. Topics included in this chapter are:

- Unpacking
- Windows NT 4.0 installation
- Hardware installation

3.2 Unpacking

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

3.3 Microsoft Windows NT 4.0 Installation

Note

If a graphics option other than the PowerStorm 300/AGP or 300/PCI was previously operating in the system, keep that option installed and refer to Section 3.3.2. If the previously installed graphics option is not available or it is not operational, refer to Section 3.3.1.

3.3.1 New Installation or Upgrade of Windows NT

Before installing Compaq PowerStorm Software during a Windows NT upgrade or new installation, install the PowerStorm 300/AGP or 300/PCI graphics option as described in Section 3.5. You can then install Windows NT as described in the Windows NT documentation.

During Windows NT installation, a hardware and software component list is displayed, like the one shown here:

Computer: Compaq Professional Workstation xxx (xxx = CPU type)

Display: VGA Compatible

Keyboard: XT, AT, or Enhanced Keyboard (83-104 keys)

Keyboard Layout: US

Pointing Device: Mouse Port Mouse

No Changes: The above list matches my computer

When you have completed the Windows NT installation, go to Section 3.3.2.

3.3.2 Upgrade of Graphics Software Drivers

If you have purchased the PowerStorm 300/AGP or 300/PCI graphics option as an add-on, you must install the Compaq PowerStorm Software drivers. Install the 2D and 3D drivers (the Compaq optimized OpenGL support) from the Compaq PowerStorm Software package CD-ROM by performing the following steps:

1. Boot your system and log into Windows NT if you have not already done so.
2. From the desktop, choose **My Computer**.
3. From My Computer, choose **Control Panel**.
4. From Control Panel, choose **Display**.
5. From the Display Properties dialog box, choose the **Settings** tab.
6. From the Settings dialog box, choose the **Display Type** button to see the driver and adapter (board) information.
7. From the Display Type dialog box, choose **Change**.
8. From the Change Display dialog box, choose **Have Disk**.
9. In the Install from Disk dialog box, you are prompted to insert the manufacturer's installation disk into the selected drive. Insert the Compaq PowerStorm Software CD-ROM into the CD-ROM drive unit.

10. Enter the path of the PowerStorm 300 driver and choose **OK**.

    The path is of the following format, where `dev:\` is the drive name (for example, `E:\` for the E drive):

    ```
    dev:\i386\pbxgdac\nt40     (Intel systems)
    ```

11. In the Change Display dialog box, the driver whose path you just defined is displayed. Confirm this choice by choosing **OK**.

    The driver name displayed is:

    ```
    Compaq PowerStorm 300 (pbxgdac)
    ```

12. When the message displays stating that this is a third party driver, confirm by choosing **Yes**.

    A status box displays reflecting the progress of the driver installation.

13. When the Compaq PowerStorm 300 files have been copied to your hard disk, a dialog box indicating that the driver was successfully installed is displayed. Choose **OK** and remove the CD-ROM from the drive.

14. Choose **Close** to close the Display Type dialog box.

15. Choose **Close** to close the Display application.

16. When a message displays stating that you must restart your computer to use the new display driver, choose **No**.

17. Shut down your system by choosing **Shut Down** from the Start menu, then remove power from your computer system and install the PowerStorm 300/AGP or 300/PCI graphics option as described in Section 3.5 if you haven't already done so.

18. After installing the PowerStorm 300/AGP or 300/PCI graphics option. Reboot your system to access the new display driver. After your system reboots, a message displays indicating that the default screen resolution and refresh rate are being used. For information on changing these values, refer to Section 3.3.3.

3.3.3 Changing Windows NT Display Characteristics

After installing the PowerStorm 300/AGP or 300/PCI graphics option, you can change the screen resolution and refresh rate, collectively referred to as the *display mode*. Before changing the display mode, you should verify that your monitor can accept the new values (refer to the monitor documentation). To change the display resolution and refresh rate, perform the following steps:

1. From the desktop, choose **My Computer**.
2. From My Computer, choose **Control Panel**.
3. From Control Panel, choose **Display**.
4. From the Display Properties dialog box, choose the **Settings** tab.
5. From the Settings dialog box, click on the arrows in the **Desktop Area** to change the screen resolution.

   To change the refresh rate, choose one of the options in **Refresh Frequency**. (You can also change the resolution and refresh rate by choosing **List All Modes** and the desired mode, and then choosing **OK**.) If the refresh rate selected is not supported by the resolution you chose, the resolution will automatically change to the nearest value supported by that refresh rate, or the refresh rate will change to support the resolution.
6. Choose **Test** to verify that the settings work correctly. A test pattern will be displayed on your monitor for about five seconds.
7. You will now see the question “Did you see the test bitmap properly?”. If you are satisfied with the video display, choose **Yes**.

   Choose **OK** to accept the changed settings.
8. You may have to adjust your monitor to align the new resolution to the monitor. This is typically done by using the controls on the front or side of the monitor.

3.4 Changing the PowerStorm 300/AGP Bulkhead Bracket

The PowerStorm 300/AGP graphics option is shipped with the ATX bulkhead bracket (see Figure 1-1) attached. The NLX bulkhead bracket (see Figure 1-2) is also included in the option kit and can be switched by the customer or service provider.

Use the following procedure to remove the ATX bulkhead bracket and install the NLX bulkhead bracket:

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. Put on an antistatic wriststrap.

Caution

An antistatic wriststrap must be worn when handling any module to prevent damage to the module.

2. Use a 3/16-inch nutdriver to remove the two nuts on either side of the VGA connector that secure the ATX bulkhead bracket to the PowerStorm 300/AGP graphics option.
3. Remove the ATX bulkhead bracket.
4. Install the NLX bulkhead bracket onto the graphics option.
5. Secure the NLX bulkhead bracket to the PowerStorm 300/AGP graphics option with the two nuts that were removed in step 2.

3.5 Hardware Installation

The following section describes how to install the PowerStorm 300/AGP or 300/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.

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. Perform a normal power down of your computer system and disconnect the monitor cable.
2. Disconnect the power cord from your computer system.
3. Remove the cover from your computer (refer to your system documentation).
4. Put on an antistatic wriststrap.

Caution

An antistatic wriststrap must be worn when handling any module to prevent damage to the module.

5. If your computer has an existing graphics module, remove the screw that secures it and then remove the module.
6. If your system had a previously installed graphics option, you can use that slot if it is a AGP bus (300/AGP) or PCI bus (300/PCI), or you can select any compliant full-length AGP or PCI expansion slot. Remove the slot cover if you are using a new slot. Refer to the documentation shipped with your workstation for information about graphics option slots.
7. Grasp the top edge of the graphics option and carefully insert it into the slot, then firmly seat it.

8. Secure the module retaining bracket.
9. Replace the computer cover.
10. Ensure that the monitor cable is connected to the video output connector located on the back of the graphics option.
11. Reconnect the power cord.
12. Perform a normal power up of your computer system.