IBM

S15 Graphics PCI Adapter Installation Guide

> **Note**
>
> Before using this information and the product it supports, be sure to read the general information under "Product Warranties and Notices" included with your system unit.

First Edition (November 1996)

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Safety Information

DANGER

> **An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.**
>
> **Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.**
>
> **When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.**
>
> **Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.**
>
> **During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communication lines.**

About This Book

This book (when used with your system unit documentation) will help you install the
S15 Graphics PCI Adapter and the associated device driver software.

Related Publications

This book refers to the documentation that came with your system unit.

ISO 9000

ISO 9000 registered quality systems were used in the development and
manufacturing of this product.

Trademarks

AIX is a registered trademark of International Business Machines Corporation.

PowerPC is a trademark of International Business Machines Corporation.

Windows NT is a trademark of Microsoft Corporation.

Chapter 1. Overview

The S15 Graphics PCI Adapter is a high-performance VRAM-based PCI graphics adapter with an integrated video co-processor and supports multisync monitors having at least 64 kHZ horizontal scan capability.

Important: Be sure to retain your proof of purchase. It might be required to receive warranty service.

Specific Hardware Characteristics

The S15 Graphics PCI Adapter consists of the Weitek P9100 GUI accelerator chip, the RGB525 RAMDAC, the Weitek 9130 video accelerator, and 2 MB or 4 MB of VRAM frame buffer memory.

- The GUI accelerator chip provides the following functions:

    - Host PCI bus access of VRAM, GUI accelerator and CRT controller registers, RAMDAC, 9130 Video Coprocessor, and clock generator.
    - Linear frame buffer addressing
    - Frame buffer arbitration for video co-processor support
    - VRAM memory refresh and access control
    - CRT controller (CRTC) functions
    - GUI drawing functions, including BitBLTs and quadrilateral polygon draws and fills
    - Clipping and raster ops during blits and draw fills
    - VGA compatibility
    - VESA DPMS power management support

- The RAMDAC performs the following functions:

    - 64-bit pixel port throughput at up to 170 MHz pixel rate supports display modes up to 1600 x 1280
    - Pixel color translation through triple 245 x 8 color lookup tables (CLUTs)
    - 24-bit digital to analog RGB conversion through triple 8-bit DACs
    - Hardware cursor support color modes
    - Integrated digital phase-locked loop provides serial clock and divided dot clock from a 50.0 MHz reference clock.

Display Modes and Resolutions

The following resolutions and color depths may be supported by the S15 Graphics PCI Adapter, at up to 170 MHz pixel rate (PIXCLK):

- 640 x 480 x 8bpp
- 640 x 480 x 16bpp
- 640 x 480 x 24bpp
- 800 x 600 x 8bpp
- 800 x 600 x 16bpp
- 800 x 600 x 24bpp
- 1024 x 768 x 8bpp
- 1024 x 768 x 16bpp
- 1280 x 1024 x 8bpp
- 1600 x 1280 x 8bpp

All of the above modes may be used at ISO screen refresh rates except the 1600 x 1280 mode, which is limited to 60 Hz.

In general the operating system device driver, in concert with the user and application, is free to choose the resolution from the list above. Size of the attached monitor will determine optimum resolution and vertical refresh rate.

Display Power Management

The S15 Graphics PCI Adapter supports Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS). The four DPMS modes are:

On   Full display power

Suspend Less than 80 watts

Standby Less than 30 watts

Off   Less than 10 watts

Handling the Adapter

Attention: Static electricity can damage your equipment. Leave the adapter in its static-protective bag until you are ready to install it in your computer.

Electrostatic Discharge Protection

Be sure you are familiar with all of these precautions. Static electricity can damage the graphics adapter or other components in your computer.

Attention: Do not open the static-protective bag containing the graphics adapter until instructed to do so. **Do not perform the following steps. This is for informational purposes only**.

To prevent electrostatic discharge:

- Turn off all attached devices first; then, turn off the computer.

- Unplug all the power cords from electrical outlets before starting installation.

- Disconnect all power cables from your computer and attached devices before starting installation.

- Limit your movement. Movement can cause static electricity to build up around you.

- Handle the graphics adapter carefully and by the edges.

- Do not touch any exposed printed circuitry.

- Prevent other people from touching the components or the adapter card.

- When you are installing the adapter, touch the static-protective package containing the adapter to a metal expansion-slot screw or other unpainted metal surface on the computer, for at least 2 seconds. (This drains static electricity from the package and from your body.)

- When possible, remove the graphics adapter and install it directly into the computer without setting it down. If this is not possible, place the adapter, component side up, on the static-protective bag on a flat surface until the adapter card is installed.

- Do not place the adapter on the computer cover or on a metal table.

Chapter 2.   Installing Device Driver Software

Prior to installing the hardware, you must install and configure the device software.

AIX Software Installation

1. Turn the system unit on.

2. Log in as **root**.

3. Insert the media containing the device driver software into the appropriate media device, for example, CD-ROM drive.

4. Enter:

   ```
   smit install
   ```

   and press Enter.

5. The **Software Installation and Maintenance** screen is displayed. Select "Install and Update Software" and press Enter.

6. The **Install and Update Software** screen is displayed. Select "Install/Update Selectable Software (Custom Install)" and press Enter.

7. The **Install/Update Selectable Software (Custom Install)** screen is displayed. Select "Install Additional Device Software" and press Enter.

   The **Install Additional Device Software** screen is displayed. The INPUT device/directory for software option is highlighted. The cursor is positioned on the entry field where you can enter the input device you are using.

8. Press F4 to display a list of input devices from which you can select.

9. Select the appropriate device and press Enter. The device you selected is now displayed in the INPUT device/directory for software entry field.

   The "Install Additional Device Software" is displayed.

10. Press F4 to display a list of software packages you can select.

    The "SOFTWARE to install" option is highlighted. Press F4 to display a list of software you can install.

11. Enter a / to display a Find dialog.

12. Enter:

    ```
    devices.pci.0e100091
    ```

    and press Enter.

13. Press F7 to select the highlighted software and press Enter.

14. The **Install Additional Device Software** screen is displayed with the required fields filled in. Press Enter.

15. The COMMAND STATUS screen is displayed. The term RUNNING is highlighted to indicate that the install and configure command is in progress. When RUNNING changes into OK, scroll down to the bottom of the page and locate the Installation Summary. If the installation was successful, SUCCESS will appear in the Result column of this summary.

16. Remove the installation media from the drive.

17. Press F10 to exit SMIT.

18. Enter:

    shutdown -F

    and press Enter.

19. Turn the machine off after the

    Halt completed

    message is displayed. You are ready to install the new hardware.

Windows NT (PowerPC Edition) Software Installation

The S15 Graphics PCI Adapter is supported on Windows NT (PowerPC Edition) Version 3.51.

Device driver software is provided in Windows NT (PowerPC Edition). After you install the adapter, reboot your system unit. Your operating system should recognize the adapter and automatically update your system unit configuration.

Chapter 3. Hardware Installation

This section provides preparation information and step-by-step procedures for installing the graphics adapter. Checklists are provided in "Installation Checklist" to help you ensure that all required steps are completed.

Preparing for Installation

This section describes the handling considerations and the preliminary steps which must be completed prior to physical installation of the S15 Graphics PCI Adapter.

Installation Requirements

To install the S15 Graphics PCI Adapter, you need the documentation that came with your computer.

The only tool required to install the adapter is a flat-blade screw driver.

Attention: Do not remove the S15 Graphics PCI Adapter from its anti-static package at this time.

Installation Checklist

The following checklist presents the steps in the graphics adapter installation process. ***Do not perform the steps now.*** After you have read the checklist to familiarize yourself with the procedure, then start the installation. The checklist can then be used to ensure that you have completed all the required steps.

Important: All steps should be performed in the prescribed sequence. Where checklist tasks refer to particular sections in this or other manuals, read the referenced material *before* you attempt to carry out the instructions.

Hardware Installation

___ 1. Ensure that the computer and all peripheral devices are turned off.

___ 2. Disconnect the computer power cord from the power outlet.

___ 3. Make a note of where all cables are connected to the rear of the computer; then disconnect them.

___ 4. Remove the floor stand, if installed.

___ 5. Be sure the cover on the computer is unlocked.

___ 6. Remove the computer cover. Refer to the manual that came with your computer for instructions.

___ 7. Locate an unused PCI adapter slot inside your computer.

___ 8. If you are going to replace an existing graphics adapter, remove it and store it in an anti-static package.

___ 9. Install the new graphics adapter in the PCI adapter slot.

___ 10. Reinstall any drives or cables that were removed to gain access to the adapter slot.

___ 11. Replace the computer cover.

___ 12. Connect the display, keyboard, and mouse, and any other peripheral devices to their respective I/O ports at the rear of the computer.

___ 13. Verify that the computer power switch is still off. Connect the computer power cord to the electrical outlet.

Diagnostics

Refer to your system unit documentation for information about running diagnostics.

Appendix A. Communications Statements

The following statement applies to this product. The statement for other products intended for use with this product appears in their accompanying documentation.

Federal Communications Commission (FCC) Statement

Note: The &typemod. been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult an authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from authorized dealers. Neither the provider nor the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

> International Business Machines Corporation
> New Orchard Road
> Armonk, New York 10504
> Telephone: (919) 543-2193

FCC Tested to Comply
With FCC Standards

FOR HOME OR OFFICE USE

European Union (EU) Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. The manufacturer cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of option cards supplied by third parties. Consult with your dealer or sales representative for details on your specific hardware.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC Standard 950.

United Kingdom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They interface with this equipment using Safe Extra Low Voltages only. In order to

maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer.

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe B est conform à la norme NMB-003 du Canada.

Canadian Department of Communications Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

VCCI Statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に
基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的
としていますが、この装置がラジオやテレビジョン受信機に近接して使用される
と、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

The following is a summary of the VCCI Japanese statement in the box above.

This product is a Class B Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). This product is aimed to be used in a domestic environment. When used near a radio or TV receiver, it may become the cause of radio interference. Read the instructions for correct handling.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG–Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

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