

FEDERAL COMMUNICATIONS COMMISSION

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.

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- Reorient or relocate the receiving antenna.
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- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interface cables must be used in order to comply with emission limits.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Getting Started...

- Installing Your Graphics Accelerator Card
- Installing the Enhanced Display Driver for Windows 95 or Windows NT 4.0.
- Troubleshooting Tips

These graphics accelerators are the most advanced on the market today. They improve the performance of your system and display exceptional graphics. Your graphics accelerator comes complete with enhanced drivers and comprehensive award-winning software utilities designed to make you more productive. Please read this guide before attempting to install your card.

Preparing Your Computer



Turn off the power to your system and discharge your body's static electric charge by touching a grounded surface — e.g., the metal surface of the power supply — before performing any hardware procedure. The manufacturer assumes no liability for any damage, caused directly or indirectly, by improper installation of any components by unauthorized service personnel. If you do not feel comfortable performing the installation, consult a qualified computer technician. Damage to system components, the accelerator card, and injury to yourself may result if power is applied during installation.

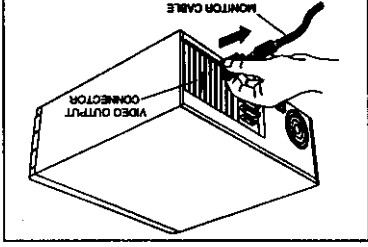
If you are using special drivers that are not 640x480 VGA and an operating system other than Windows 95, you may encounter conflicts with the card. We recommend that you first reconfigure your operating system to use a VGA driver supplied with your operating system before installing the card. For more information about changing your operating system configuration, see your operating system documentation.

Installing Your Graphics Accelerator Card

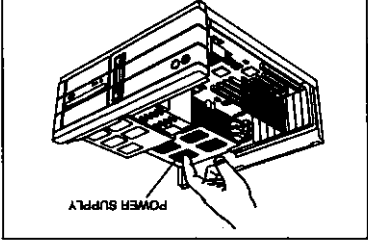
Now that you have prepared your computer, you are ready to install your graphics accelerator card.

To install your graphics accelerator card

- 1 Power off the computer and monitor, then disconnect the monitor cable from the back of your computer.

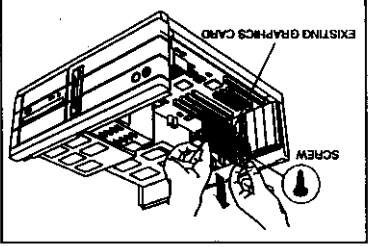


- 2 Remove the computer cover. If necessary, consult your computer system manual about removing the cover.



Remember to discharge your body's static electricity by touching the metal surface of the computer chassis.

- 3 If there is an existing graphics card, remove it from your computer.

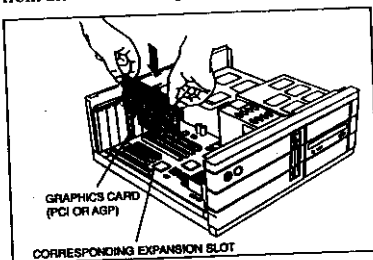


If the old graphics card sticks, rock it gently from end to end. Remember to save the screw.

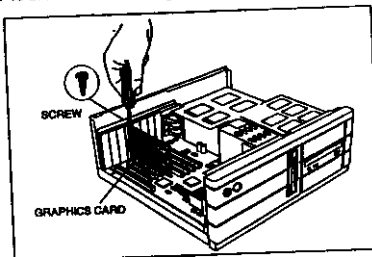
or
If your computer has any on-board graphics capability, you may need to disable it on the motherboard. For more information, see your computer documentation.

- 4 Align your card with an empty expansion slot (PCI cards use a PCI slot; AGP cards use an AGP slot) and gently insert the card into place. You may need to remove the cover from the rear of the expansion slot that you selected.

Grasp the card by the top edge and carefully seat it firmly into the corresponding expansion slot (PCI or AGP).

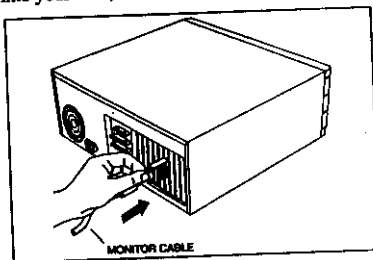


- 5 Replace the screw to fasten the card in place, and replace the computer cover.



- 6 Plug the monitor into your card, then turn on the computer and monitor.

Make sure your monitor cable is securely fastened.



You are now ready to install the enhanced drivers. For Windows 95, see page 4.
For Windows NT, see page 5.

Installing Enhanced Drivers for Windows 95

You need to install the enhanced driver for Windows 95 takes advantage of your card's higher performance, resolutions, and special features.

To ensure that you install the latest driver, install the enhanced driver located on the CD-ROM shipped with your graphics accelerator card.

To install the enhanced driver for Windows 95



When you restart your system following installation of your graphics card, Windows 95 will detect the new hardware and may attempt to install a driver from its system registry. When prompted to "Restart the computer now", select NO. Then follow the normal installation procedure below.

Selecting 'NO' for the initial restart prompt is a necessary step since Windows 95 may load an older display driver that is incompatible with your new graphics card. Always use the driver available on the diskette or CD-ROM that came with your computer, or an applicable driver update.

- 1 Insert the driver diskette into your diskette drive.
- 2 Click on the Start button in the Start menu.
- 3 Scroll up to Settings and click on Control Panel.
- 4 Double click on System.
- 5 Click on the Device Manager tab.
- 6 Click on the plus (+) sign to the left of Display adapters.
- 7 Double click on the name of your display card in the drop-down list.
- 8 Click on the Driver tab.
- 9 Click on the Change Driver... button.
- 10 Click on the Have Disk button.
- 11 Use the Browse button if needed to select the driver diskette and click OK.
- 12 Wait for a moment, then select the name of your card from the listing shown and click OK.
- 13 You will now be back in the window with the Driver tab. Click OK.
- 14 The "Copying Files" dialog box appears as your drivers are installed.
- 15 Click on the Restart button.

For correct resolution and refresh rate operation, you need to select a monitor. Please refer to the online help for more information.

Installing Enhanced Drivers for Windows NT

After installing your graphics card, Windows NT will default to standard VGA mode (640 x 480, 16 colors). The procedure below describes how you install the enhanced driver for Windows NT 4.0.

To install the enhanced driver for Windows NT 4.0

1 Boot Windows NT.

2 Double-click the My Computer icon.

3 Double-click the Control Panel icon.

4 Double-click the Display icon.

5 Click on the Settings tab.

6 Click the Display Type button.

7 Click Change.

8 Click the Have Disk button.

9 Select your diskette drive (usually A:) and click OK.

10 The "Change Display" window appears. Click OK.

11 When it asks "Do you wish to proceed?" click Yes.

12 After the files have been copied to your computer, click OK.

13 Close open windows. When the "System Settings Change" dialog box appears, click Yes to reboot Windows NT.

14 After reboot, the Invalid Display Settings window appears. Click OK.

15 The Display Properties dialog box appears. Select a desired display mode. For more detailed information about changing your display mode, click Help.

For correct resolution and refresh rate operation, you need to select a monitor. Please refer to the online help for more information.

Troubleshooting Tips

The following troubleshooting tips may help you if you experience problems. Contact your dealer for more advanced troubleshooting information.

- Check that the card is seated properly in its expansion slot. If the problem still exists, try a different PCI or AGP expansion slot.
- Ensure the monitor cable is securely fastened to the card.
- Make sure that the monitor and computer are plugged in and receiving power.
- Disable any built-in graphics capabilities on your mainboard. For more information, see your computer documentation.
- Make sure that you selected the appropriate monitor when you installed your enhanced driver.
- For Windows 95, right-click the icon in the taskbar and select Troubleshooting. If you have problems during start-up, load Windows 95 in Safe Mode by pressing the F8 key when "Starting Windows 95" appears on the screen.

EUT:VGA CARD

FCC ID:ICUVGA-GW809D

GAINWARD CO., LTD.

USER'S MANUAL

FEDERAL COMMUNICATIONS COMMISSION

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Congratulations and thank you for selecting this graphics card — Savage3D™ brings high performance 3D graphics to the mainstream PC by integrating 2D acceleration, MPEG-2 video acceleration, and leading edge 3D performance into a cost effective package. Savage3D provides the solution for the high performance consumer, corporate desktop user and entry level professional.

System Requirements

The minimum system requirements for installing the graphics card are as follows:

- a personal computer with a Pentium, Pentium II or compatible microprocessor and at least 8MB of memory
- a VGA analog monitor supporting a minimum 60Hz vertical refresh rate
- a free 32-bit AGP bus slot
- a CD-ROM drive

Features

High Performance 3D/2D/Video Accelerator

- New Single Cycle 3D Architecture
- 5M triangles/second Triangle Setup Engine
- 128-bit Dual Rendering Pipeline
- 125M pixels/sec Trilinear Fill Rate
- Full AGP 2X Implementation including Sideband Addressing and AGP Execute Mode

3D Rendering Features

- Single Cycle Trilinear Filtering
- S3® Texture Compression
- True Color Rendering
- Void and Cluster Dithering for 16-bit Modes
- Specular Lighting and Diffuse Shading
- Alpha Blending Modes
- MPEG-2 Video Textures
- Edge Anti-Aliasing, Vertex and Table Fog, 16- or 24-bit Z-buffering
- Sprite Anti-Aliasing, Reflection and Environment Mapping, Texture Morphing, Shadows, Procedural Textures, and Atmospheric Effects

2D Acceleration Features

- Highly Optimized 128 bit Graphics Engine
- Full Featured 2D Engine for acceleration of Bitblt, Rectangle Fill, Line Draw, Polygon Fill, Panning/Scrolling and HW Cursor
- 8,16, and 32bpp Mode Acceleration

High Speed Memory Interface

- Over 100MHz SDRAM/SGRAM with Block Write
- 64-bit Synchronous Memory Bus
- 2-, 4-, or 8MB Frame Buffer (SGRAM Version)
- SDRAM for cost savings (8MB Frame Buffer)

Motion Video Architecture

- High Quality Up/Down Scalar
- Motion Compensation
- Subpicture Blending and Highlights
- Optimized Software DVD Decoders
- Streams Processor™ for on-the-fly stretching and blending of multiple video streams
- Multiple Video Windows
- Brightness, Hue, and Saturation Controls
- 60MHz VIP Video Port allows HDTV Resolutions
- Glueless Interface for HW MPEG-2 Decoders and Video Digitizers

High Quality TV Out (Optional)

- Integrated NTSC/PAL Encoder
- Optional Macrovision® 7.1 Support (S3 86C390 Support only)
- Programmable 3-tap Flicker Filter
- Vertical Overscan Compensation
- Simultaneous CRT and TV Display

Additional Features

- Flash ROM and 12 C Serial Communications Bus
- 250MHz RAMDAC with Gamma Correction
- PCI Power Management
- DDC Monitor Communications

Software Support

- Windows 3.1
- Windows® 95 and 98 Display Drivers
- Windows NT4.0 and NT3.51 Display Drivers
- OS/2 3.0 and 4.0
- Direct3D™, DirectDraw™, and Direct Video™
- OpenGL™ ICD for Windows 9X and NT

CAUTION !

- Static electricity can severely damage electronic parts. Take these precautions:
- Before touching any electronic parts, drain the static electricity from your body. You can do this by touching the internal metal frame of your computer while it's unplugged.
- Don't remove a card from the anti-static container it shipped in until you're ready to install it. When you remove a card from your computer, place it back in its container.
- Don't let your clothes touch any electronic parts.
- When handling a card, hold it by its edges, and avoid touching its circuitry.

Before You Begin

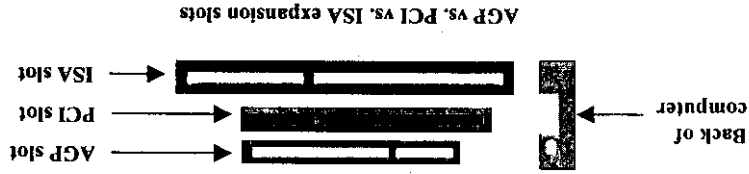
Before you process further, make sure your computer system meets the peripheral requirements and switch to the standard VGA display driver.

Prepare Your Computer for Installation

Prior to working on your computer, make sure the power of the computer and any related equipment is turned off.

Select a Vacant Expansion PCI (AGP) Slot

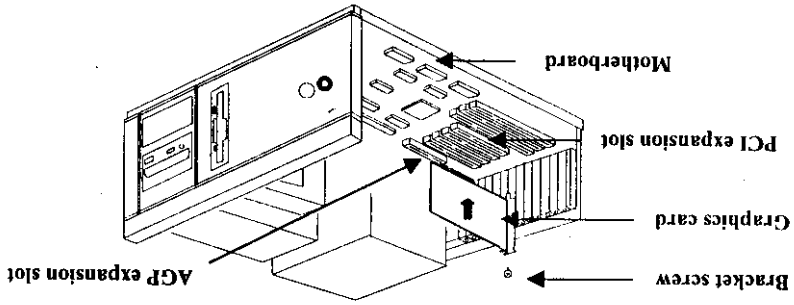
Most AGP (PCI) bus computers have a combination of AGP (PCI) and ISA expansion slots. AGP (PCI) are usually made with plastic of a contrasting brown color (beige color), and are shorter than other slots in your computer. Your system manual should identify the AGP (PCI) slots. Plugging your Graphic card into a non-AGP (PCI) slot could damage the card, your computer, or both.



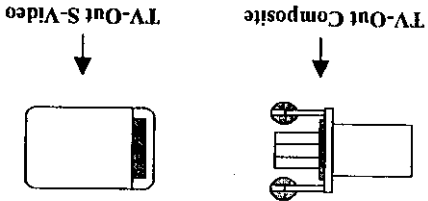
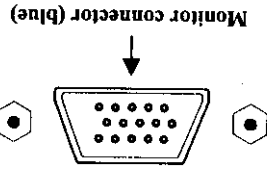
3

Insert your Graphic Card

Remove the cover for the slot you intend to use and save the screw for the mounting bracket. Then, pick up the Graphic card and position it over the expansion slot you've chosen. Push the card with firmly and evenly until it's fully seated in the slot. Replace the screw to secure the bracket of the Graphic card to the computer chassis.

**Connect the monitor**

Plug your monitor cable into the monitor connector on your Graphic card. Make sure the other end of the monitor cable is properly connected to your monitor.



4

Microsoft Windows 3.1 Drivers

- ☛ If you are performing a driver and utility upgrade, first configure Windows for a standard Windows display driver and ensure that the Display Control Panel is not running before continuing.

SETUP DRIVER

1. Insert the **Driver CD** into your CD-ROM drive.
2. Change directory to Windows 3.1 at DOS prompt and type "SETUP".
3. Select "DISPLAY" [ENTER].
4. Change to "Other" [ENTER].
5. Type D:\win31 [ENTER]. (D is the letter of your CD-ROM drive)
6. Select the resolution and color which you need then click ENTER button to save the result.

Microsoft Windows 95/98 Drivers

- ☛ Before installing the Display driver, make sure your Windows 95 is installed in VGA mode and work fine.
- ☛ Please install the DirectX before you want to play the MPEG Movie Player.
- ☛ The pictures as below are only for reference under Windows 95.

SETUP VGA MODE

Click the right mouse button anywhere on the Windows 95/98 desktop and select **Properties** from the pop-up menu that appears on screen. Select **Settings | Change Display Type** (If you use the OSR2, please select **Settings | Advanced Properties**. If you use the Windows 98, please select **Settings | Advanced**) and then click the [Change] button for Adapter Type. When the **Select Device** dialog box appears on the screen, please select [Standard display types] from the manufactures and select **Standard Display Adapter (VGA)** from the Models then click **OK** button. (Figure 1)

SETUP DRIVER

1. Turn on your computer and start Windows 95/98.
2. Insert the **Driver CD** into your CD-ROM drive.
3. Click the Start button on the task bar. Select **Run** and type D:\Cdsetup.exe [Enter] in the **Run** dialog box. (D is the letter of your CD-ROM drive)
4. The **PowerStrip Setup Wizard** dialog box will appear on the screen, please click **Next** button to begin the installation. (Figure 2)

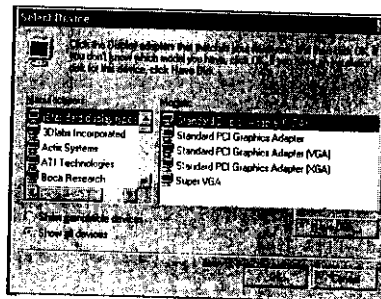


Figure 1

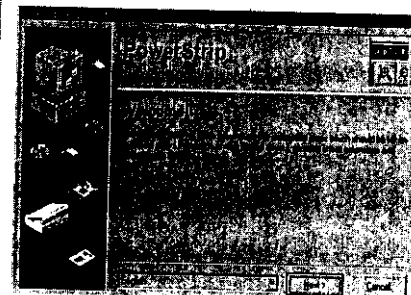


Figure 2

5. Choose the **Select all for removal (files will not be deleted)** check box as Figure 3 and then click **Next** button to continue the installation.
6. Finally, click **Finish** button as Figure 4 to complete the PowerStrip Setup.

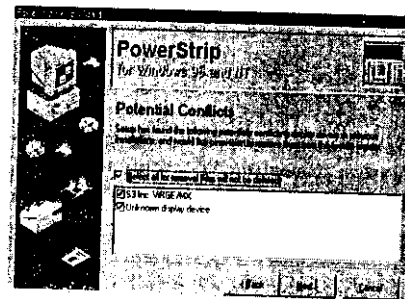


Figure 3

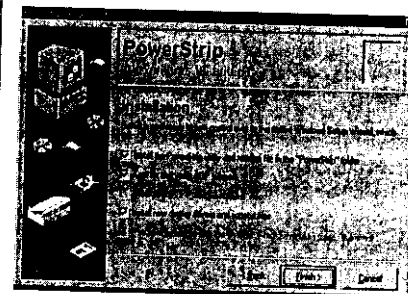


Figure 4

7. At the same time during the installation, the driver will also choose the correct path and VGA card automatically so that you can easy to finish the installation. Click **OK** button. (Figure 5) In **Advanced Display Properties** dialog box, click **Close** button.
8. If the driver doesn't choose the correct path and VGA card automatically, please click the right mouse button anywhere on the Windows 95/98 desktop and select **Properties** from the pop-up menu that appears on screen. In **Display Properties**, select **Settings | Change Display Type** (If you use the OSR2 please select **Settings | Advanced Properties**.) and then click the **Change | Have Disk** button and enter the path to the driver installation diskette (e.g., D:\win95). Click **OK** button and follow the instructions on screen to install.

9. When the Display Properties dialog box appears on the screen, please click OK (Figure 6)

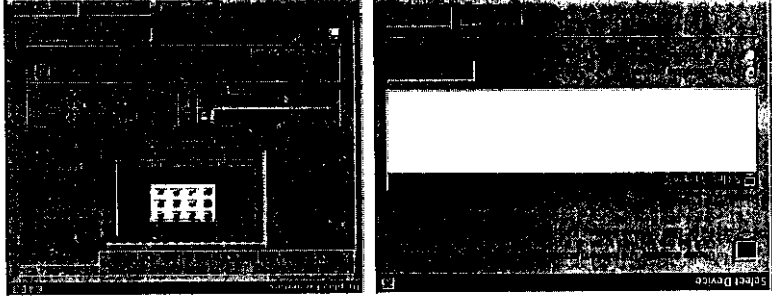


Figure 5

10. If you use the Win98 please select Settings | Advanced | Adapter . Click the Change | Next button, in Update Device Wizard dialog box, choose the second checkbox: Display a list of all the drivers in a specific location, so you can select the driver you want. Then click "next" and click "Have Disk" button and follow the instructions on screen to finish the installation.

Microsoft Windows NT4.0 Drivers

- If you are running Windows NT, please note that drivers for NT are not compatible with earlier releases of NT, and vice versa. Consult your dealer, local user support groups or on-line services from time to time to ensure you have the latest release for the version of NT you are running.
11. To use an ACP graphics card with NT4.0, you may need to pre-install NT with Service Pack 3 (SP3) before installing the ACP card.

SETUP DRIVER

1. Turn on your computer and start Windows NT.
2. Insert the Driver CD into your CD-ROM drive.
3. Click the Start button on the task bar. Type D:\Cdsetup.exe [Enter] in the Run dialog box. (D is the letter of your CD-ROM drive)
4. The PowerStrip Setup Wizard dialog box will appear on the screen, please click the Next button to begin the installation.
5. Finally, click Finish button to complete the PowerStrip Setup.
6. At the same time during the installation, the driver will also choose the correct path and VGA card automatically so that you can easy to finish the installation.

7. If the driver doesn't choose the correct path and VGA card automatically, please click the right mouse button anywhere on the Windows NT desktop and select Properties from the pop-up menu that appears on screen. In Display Properties, select Settings | Display Type and then click the Change | Have Disk button and enter the path to the driver installation diskette (e.g., D:\winNT4). Click OK button and follow the instructions on screen to install.
8. When the Display Properties dialog box appears on the screen, please click Close button to restart your computer so that the settings you choose can take effect.

Windows 95/98/NT Display Properties

Windows 95/98/NT allows you to select resolution, color depth, refresh frequency and font size using the standard Windows 95/98/NT Display Properties sheet, which can be accessed by right clicking anywhere on the Windows 95/98/NT desktop, and then selecting Properties from the pop-up menu that appears on screen.

Flash ROM Upgrade

1. Copy the utility from your CD directory "DOSFLASH" to your harddisk.
2. Type sflash.exe <Rom file> to update your ROM file (Rom file can be downloaded from the web site).

The PowerStrip is a display control and desktop enhancement utility for Windows 95/98/NT, specially designed and optimized for use with your graphics accelerator or monitor. You should think of the PowerStrip as a kind of supplementary "device driver" which works in conjunction with your accelerator's display driver, and allows you to get the most from your monitor.

For maximum compatibility and flexibility, the PowerStrip program and drivers are loaded and unloaded *dynamically*, but note that many of the features the program provides are only available while the PowerStrip is running.

Starting the Power Strip

1. When you install the PowerStrip, the program and on-line documentation is added to the PowerStrip folder under the Windows Start menu.
2. To start the PowerStrip, click **Start | Programs | PowerStrip | PowerStrip**.
3. Change the PowerStrip interface to the language of your choice at any time, by clicking the **PowerStrip | Advanced options | About the PowerStrip | Appearance**.

Removing the PowerStrip from your system

1. To subsequently remove the PowerStrip, click the **Start | Settings | Control Panel | Add-Remove Programs**.
 2. The Add/Remove Programs Properties dialog box will appear on screen, select **PowerStrip (remove only)** from the list of programs on the Install/Uninstall page.
 3. Then click the Add/Remove button.
- Before removing the PowerStrip from your system, it is a good idea to first switch to PowerStrip "safe mode". When you uninstall the PowerStrip, you remove all program files related to the program.

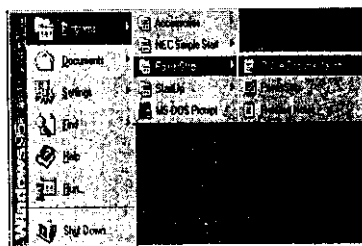


Figure 7



Figure 8



Figure 9

You can switch your Monitor and TV in the Display Properties dialog box. The path is **Display Properties | Switch**. (Figure 10)

- The pictures as below are only for reference under Windows 95.
- If you want to use the TV function please select the TV Check box.

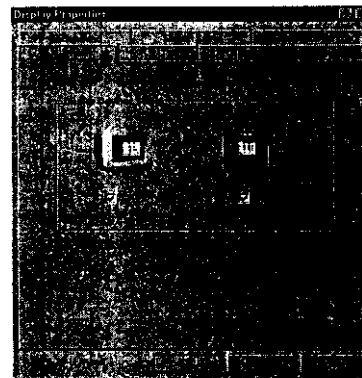


Figure 10

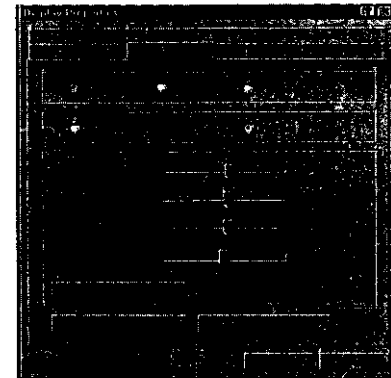


Figure 11

- If you want to use TV function with the Video RCA CONNECTOR, please select the Composite Check box. On the other hand, if you want to use TV function with the S-Video CONNECTOR, please select the S-Video Check box. (Composite and S-Video can not be selected simultaneously).

TV Control: Allows you to adjust the TV Brightness, Contrast, Color and Tint.

Default Button: Allows you to set the TV Brightness, Contrast, Color and Tint to BIOS default value.

Adjust TV Position Button: Click this button to invoke the Adjust TV Position controls to shift the position of images displayed on TV Screen horizontally and/or vertically.

TV Enhancements Button: Allows you to invoke a dialog box to set the TV Flicker Filter, Horizontal Size and/or Vertical Size.

TV-TYPE reference table

NTSC	ASIA: JAPAN, SOUTH KOREA, TAIWAN
	AMERICA: USA, CANADA
PAL	ASIA: SINGAPORE, INDONESIA, THAILAND, HONGKONG, CHINA, NORTH KOREA
	EUROPE: GERMANY, DENMARK, ITALY, ENGLAND, IRELAND
	AUSTRALIA: NEW ZEALAND, AUSTRALIA
	AFRICA: SOUTH AFRICA

Problem: After installation and restarting, Windows 95 informs me that display setting is still incorrect. What can I do?

There may be conflict between previous and current display drivers.
This is caused by not complete removal of previous display driver. Try the following steps to remove it:

Solution:

- (1) Use right button of mouse to click on "My Computer" icon on desktop.
- (2) Select "Properties" and "System Properties" box appears
- (3) Click on "Device Manager" tab
- (4) You will see a list of devices on your computer.
- (5) Open "Display adapters" in the list (double click it).
- (6) You will find two (or more) conflicted adapters listed here.
- (7) Remove all previous adapters by selecting them and press "Remove"
- (8) Close Device Manager and restart Windows 95.
- (9) Now display driver will work correctly.

Problem: After installing the driver, Windows 95 doesn't prompt me for restarting and the driver still doesn't work after I reboot it by myself.
You may have installed similar drivers before. Try the following steps to install:

Solution:

- (1) Use right button of mouse to click on "My Computer" icon on desktop.
- (2) Select "Properties" and "System Properties" box appears
- (3) Click on "Device Manager" tab
- (4) You will see a list of devices on your computer.
- (5) If "Display adapters" appears in the list, click it.
If "Display adapters" doesn't appear, jump to step 9 and continue.
- (6) The name of your card will be listed in the box. Double click it.
- (7) The properties box of your card appears. Select "Driver" tab.
- (8) Click "Change Driver..." and follow the installation steps.
- (9) Click "Other devices" you will see your card is listed.
- (10) Click on the name of card, the properties box appears.
Select "Driver" tab.
- (11) Click "Change Driver..." and follow the installation steps.

Problem: When using VIA MVP3 Main Board, the system will hang up under the 37 item (Texture swapping) of 3Dwinbech's Quality. (But it is normal with 440LX/BX)

Solution: This question will be fixed in the future driver.

When you need advanced technique service, please Complete this form and FAX to your dealer.

Your name:

Phone :

Product S/N:

PCB NO.:

HARDWARE CONFIGURATION

Mainboard Chipset:		CPU Clock:		MHz	
Mainboard CPU:		VGA Memory Type:			
Mainboard Memory:		MB	VGA Memory		MB
Mainboard Brand:		VGA Memory Brand:			
Cache Memory:		KB	FDD/HDC Card:		
Monitor:		Horizontal Freq. :		kHz	to KHZ
		Vertical Freq. :		HZ	to HZ
Other Cards on Mainboard:					
Note:					

Trouble Shooting

6

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13

SOFTWARE CONDITION	
ONFIG.SYS:	
AUTOEXEC.BAT:	
Operation System or Test Program:	
Application Software or Test Program:	
Problem Description:	
Note:	