

nVIDIA

GeForce 2 GTS

Multimedia VGA Controller

Installation Guide

Version 1.0

06/2000

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MM0GF2G-01E-00

FCC Notice

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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Notice:

This equipment has 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 manufacturer's 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 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.
- . Plug the computer into a different outlet so that the two devices are on different branch circuits.
- . If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

Warning:

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.

CSA Notice:

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

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Chapter 1 Overview

Congratulation on the purchase of your new graphics accelerator card! You are now the owner of a state-of-the-art video adapter that offers features and functionality equal to, and beyond any other in its VGA class.

System Requirements

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

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

Features

- 256Bit Graphics architecture
- Support 2/4X AGP with Fast Write AND Execute mode
- Integrated 350MHz RAMDAC, resolution up to 2048x1536 True Color @75Hz
- Full acceleration for Microsoft DirectX7 and Open GL 1.2 ICD
- 2nd generation T&L Engines
- 32-bit color & 32-bit Z/Stencil buffer
- Cube Environment Mapping
- 8 Texels Per Clock with Hypertexel
- Order Environment Mapping
- 25M Triagngles/sec through Set-up & 1600M texels/sec.
- DirectX Texture Compression
- Enhanced Motion compensation for full speed DVD playback
- Support DVI-I 1.0 Digital Flat Panel output (Optional)
- Support NTSC/PAL TV-OUT with flicker filter (Optional)
- S3TC Support
- Support Video In (Optional)
- Support VIP I/O port (Optional)

High Performance 256-bit 2D Acceleration

- True-color hardware cursor
- Multi-buffering for smooth animation and video playback

Visually Stunning Interactive 3D

- 8 texture-mapped ,filtered ,lit texels per clock cycle
- 32-bit Z/stencil buffer (Floating point or integer)
- 32-bit ARGB rendering with destination alpha
- High Quality Texture Filtering, including Anisotropic
- Single pass multi-texture

High Quality HDTV/DVD Playback

- 8:1 up scaling and down scaling
- Video acceleration for DirectShow, MPEG-1, MPEG-2 and Indeo
- Multiple Video windows with hardware color space conversion and filtering

Software Support

- Microsoft Windows 95/98/2000
- Microsoft Windows NT4.0
- DirectDraw
- Direct3D Direct Video
- ActiveX

Chapter 2 Hardware Installation

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 proceed 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 AGP (PCI) Slot

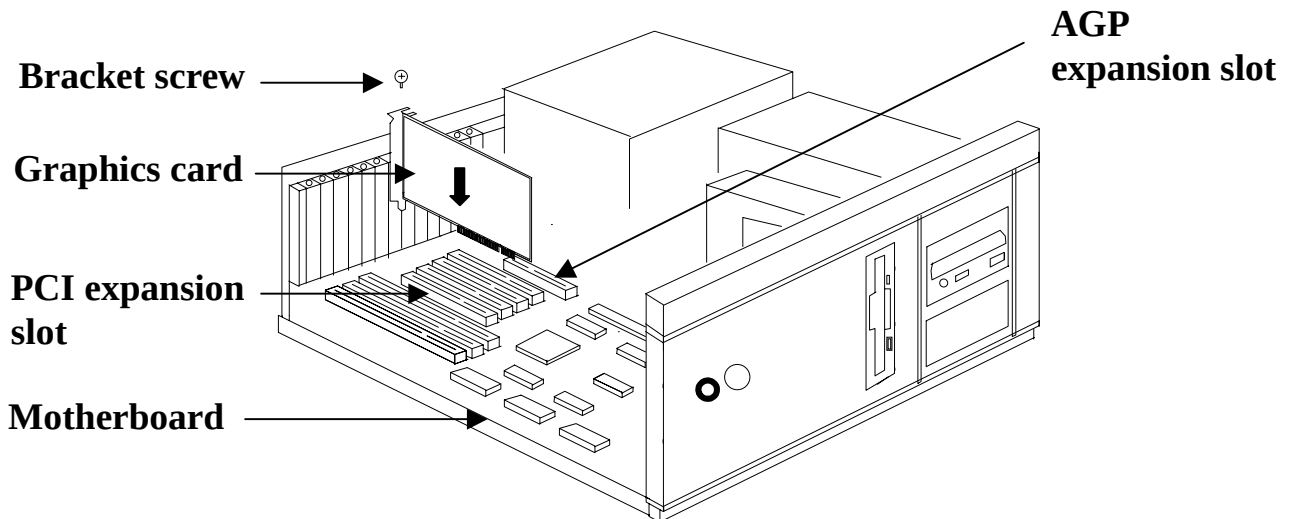
Most computers have a combination of AGP, PCI and ISA expansion slots. AGP slots are usually made from plastic of a contrasting brown color (beige color), and are shorter than other slots in your computer. Your system manual should identify the AGP or PCI slots, as appropriate for your model. Plugging your Graphic card into an incorrect slot could damage the card, your computer, or both. Do not try to force a card into a slot that does not accommodate it, as it is probably the wrong slot.



AGP vs. PCI vs. ISA expansion slots

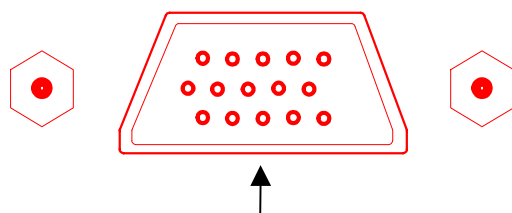
Insert your Graphic Card

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 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.

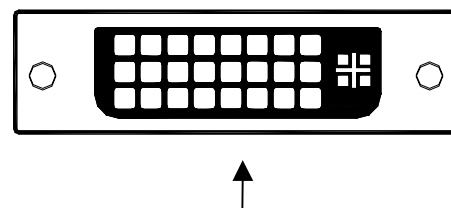


Connect the Monitor/DVI (Optional)

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



Monitor Connector (Blue)



DVI Host Receptacle Connector

Chapter 3 Software Installation

- ☞ *Before installing the Display driver, make sure your Windows 95/98/2000/NT was installed in VGA mode and functions properly.*
- ☞ *For Windows 95 systems, please install DirectX before attempting to use the MPEG Movie Player.*
- ☞ *To use an AGP graphics card with NT4.0, you may need to re-install NT with Service Pack 3 (SP3) or later version before installing the AGP card.*
- ☞ *If you are running Windows NT4.0, please note that some drivers are not compatible with earlier releases of Windows NT. Consult your dealer or local support to ensure you have the most recent releases for Windows NT and the drivers.*
- ☞ *The pictures in this chapter are only for Win98 reference.*

Before You Begin

If your system is running Windows 95/98/2000/NT, the **New Hardware Found** dialog box will appear after restart. Select **Driver from disk provided by hardware manufacturer**, click **OK**, then follow all on-screen instructions. If the **New Hardware Found** dialog box does not appear, follow the instructions below.

Setup VGA Mode

Click the right mouse button anywhere on the Windows 95/98/2000/NT desktop and select **Properties** from the pop-up menu that appears on screen. Select **Settings | Change Display Type** (For OSR2 users, please select **Settings | Advanced Properties**. For Windows 98 users, please select **Settings | Advanced**. For Windows NT users, please select **Setting | Display Type**) 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 manufacturers list and select **Standard Display Adapter (VGA)** from the list of models then click **OK**.

Install Software Driver

Method 1 – Automatically install VGA Driver and Applications:

1. Turn on your computer and start Windows 95/98/2000/NT.
2. Insert the **Driver CD** into your CD-ROM drive.
3. Click the **Start** button on the task bar and then select **Run** button.
4. Type **D:\cdsetup.exe [Enter]** in the **Run** dialog box (where D:\ is the location of your CD-ROM drive).
5. The **Expertool VGA Installation** dialog box will appear on the screen, please click “**Continue**” button and follow the instructions on screen to complete installation.
6. Final, restart your computer for the changes to take effect.

Method 2 – Manually install VGA Driver without Applications:

1. Turn on your computer and start Windows 95/98/2000/NT.
2. Insert the **Driver CD** into your CD-ROM drive.
3. Click the right mouse button anywhere on the windows 95/98/2000/NT desktop.
4. Select **Properties** from the pop-up menu that appears on the screen. (Figure 3-1)
5. Select **Settings | Advanced** in the **Display Properties** dialog box. (Figure 3-2)



Figure 3-1

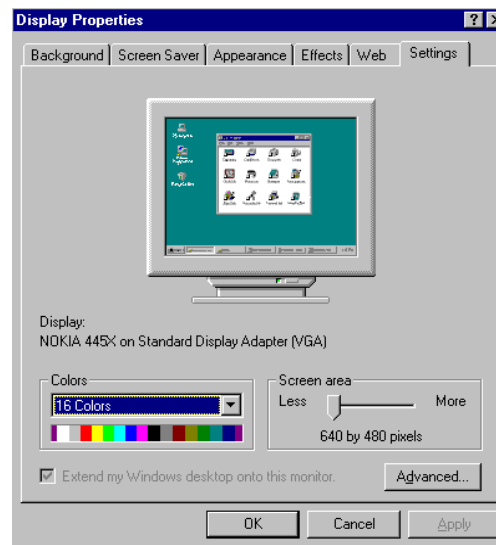


Figure 3-2

6. Click the **Change** button for **Adapter** item. (Figure 3-3)
7. Click **Next** button in the **Update Device Driver Wizard** dialog box. (Figure 3-4)

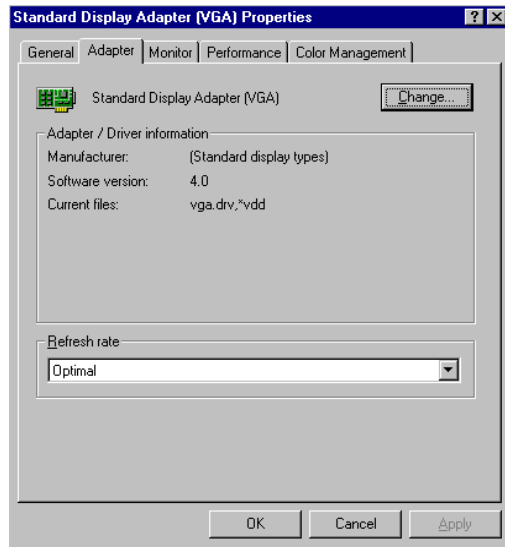


Figure 3-3



Figure 3-4

8. Select **Display a list of all the drivers in a specific location, so you can select the driver you want** check box and click **Next** button. (Figure 3-5)
9. Select **Show compatible hardware** check box and click **Have Disk** button. Type the path to the folder containing the driver files and click **OK**. Choose the compatible VGA Models from your Driver. Then click **Next** button to continue the installation. (Figure 3-6)



Figure 3-5

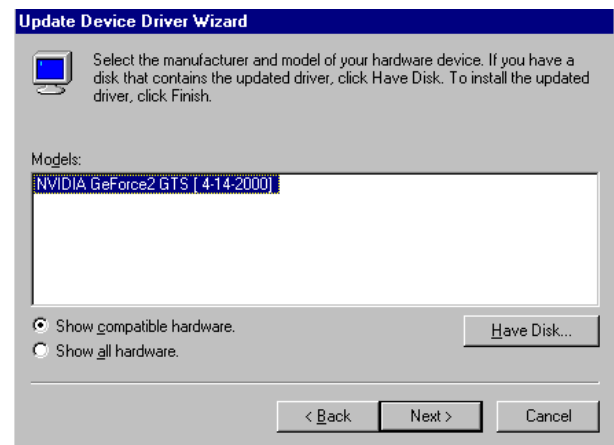


Figure 3-6

10. Final, restart your computer to allow the changes to take effect. (Figure 3-7)

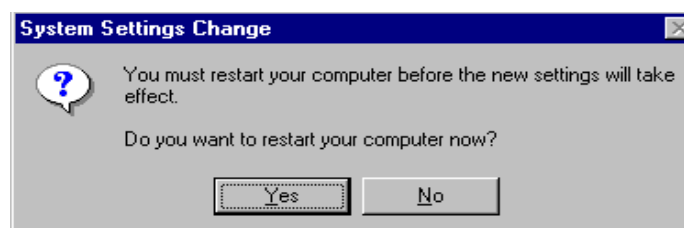


Figure 3-7

Chapter 4 Display Properties for Windows

The pictures in this chapter are only for Win98 reference.

☞ *If the Color Correction doesn't appear, please adjust the color palette to High color or True color.*

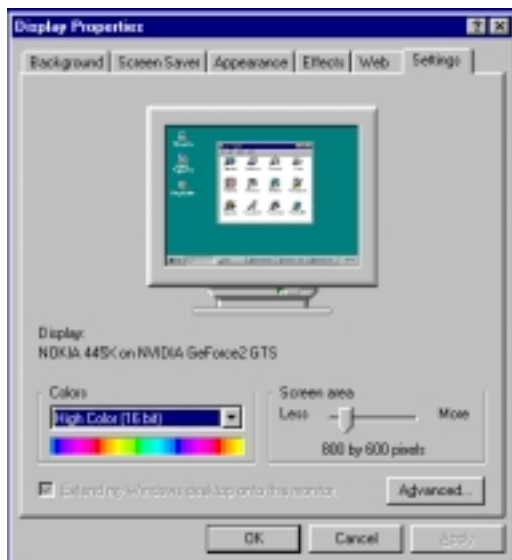


Figure 4-1



Figure 4-2

Click the right mouse button anywhere on the Windows desktop and select **Properties** from the pop-up menu that appears on screen. In **Display Properties** dialog box, for Win95, please select **GeForce 2 GTS** item. For Win98, please select **Settings** | **Advanced** button then choose **GeForce 2 GTS** item as Figure 4-2. Then click **Additional Properties** button, the **Additional GeForce 2 GTS Properties** dialog box will appear. In the **Additional GeForce 2 GTS Properties** dialog box, select **Color Correction** item as Figure 4-3.

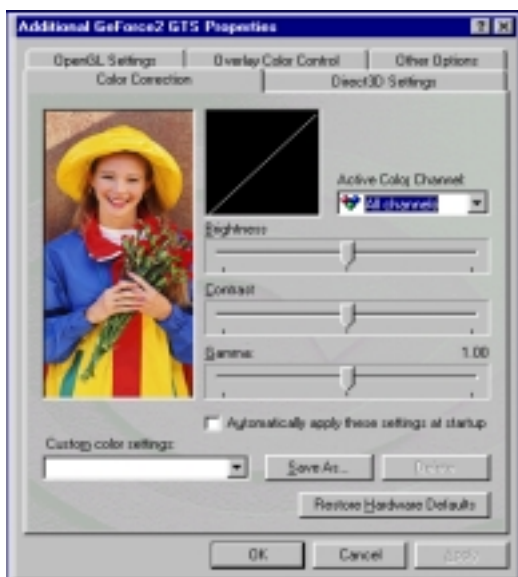


Figure 4-3

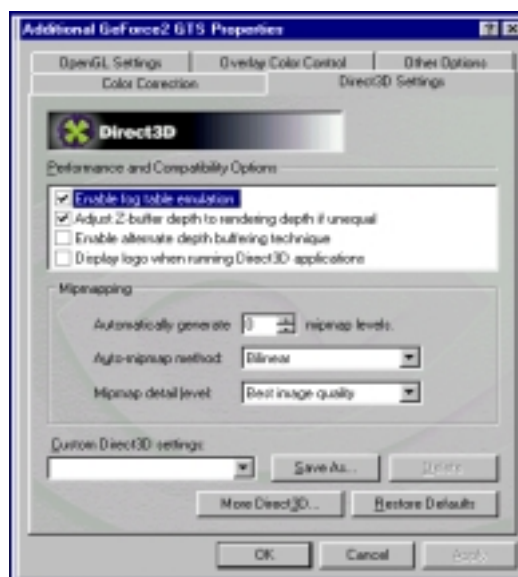


Figure 4-4

(As Figure 4-3)

Active Color Channel: Allows you to select the color channel controlled by the sliders. You can adjust the red, green or blue channels individually or all three channels at once.

Brightness/Contrast/Gamma: The slider controls allow you to adjust the brightness, contrast or gamma values for the selected color channel.

Automatically apply these settings at startup: Selecting this option will automatically restore the color adjustments you have made here when Windows is restarted.

Custom Color Settings: A list of the custom color settings you have saved. Selecting an item from the list will activate the setting.

Save As: Lets you save the current color settings as a custom setting. Saved settings will then be added to the adjacent list.

Delete: Delete the custom color setting currently that selected in the list.

Restore Hardware Defaults: Restore all color values to the hardware factory settings.

(As Figure 4-4)

Performance and Compatibility Options: This option is used to turn fog table emulation on or off.

Automatically generate mipmap levels: The NVIDIA graphics processor automatically generate mipmaps to increase the efficiency of texture transfers across the bus and provide higher application performance.

Auto-mipmap method: Allows you to select the auto-mipmapping method used by the graphics processor.

Mipmap detail level: Allows you to adjust the LOD (Level of Detail) bias for mipmaps. A lower bias will provide better image quality, while a higher bias will increase application performance.

Custom Direct3D settings: A list of the custom settings (or "tweaks") you have saved. Selecting an item from the list will activate the setting. To apply the setting, choose the "OK" or "Apply" button.

More Direct3D: Display a dialog that allows you to customize additional Direct3D settings.

Restore Defaults: Restores all settings to their default values.

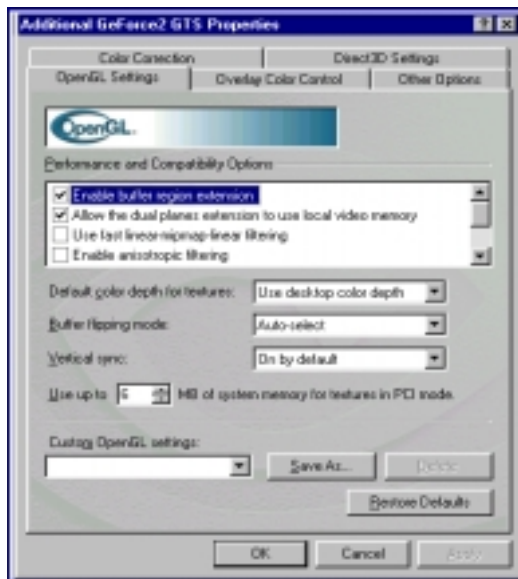


Figure 4-5

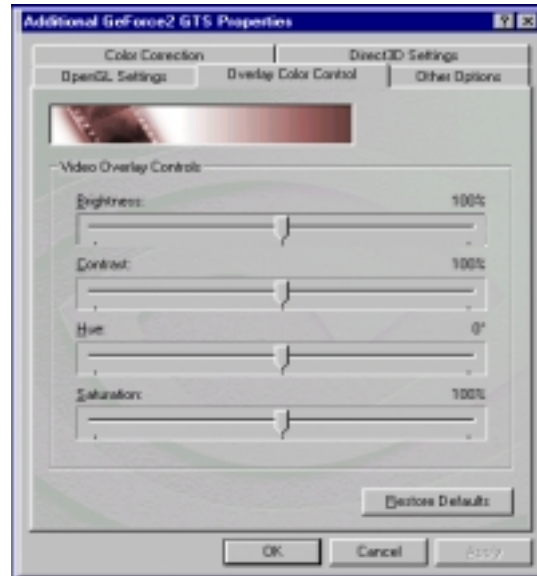


Figure 4-6

(As Figure 4-5)

Performance and Compatibility Options: Allowing fast linear-mip-linear filtering provide in increased application performance at the expense of some image quality.

Default color depth for textures: This option determines whether textures of a specific color depth should be used by default in OpenGL applications.

Buffer flipping mode: This option determines the buffer flipping mode for full-screen OpenGL applications.

Vertical sync: This option lets you specify how vertical sync is handled in OpenGL.

Use up to MB of system memory for textures in PCI mode: This allows the graphics processor to utilize up to the specified amount of system memory for texture storage [in addition to the memory installed on the display adapter itself.]

This setting applies only to PCI display adapters [or AGP display adapters running in PCI compatibility mode.]

(As Figure 4-6)

Video Overlay Controls: Use these sliders to adjust the quality of video or DVD playback on your monitor. You can independently control the brightness, contrast, hue and saturation to achieve optimal image quality when playing back videos or DVD movies on your computer.

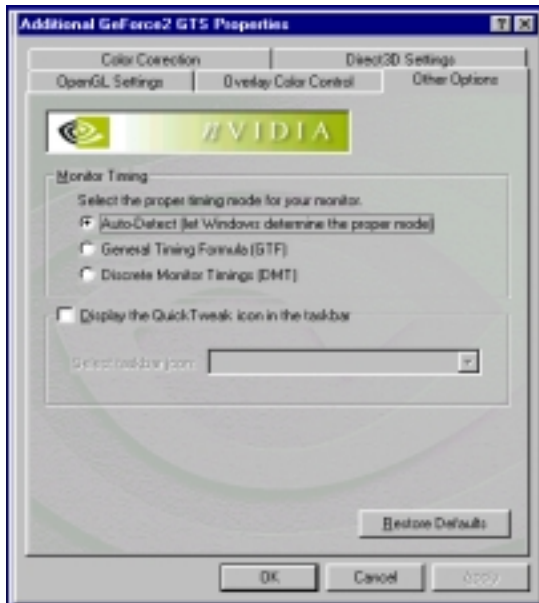


Figure 4-7



Figure 4-8

(As Figure 4-7)

Monitor Timing: Allows you to select your monitor timing mode.

Auto-Detect [let Windows determine the proper mode]: Allows Windows to receive the proper timing information directly from the monitor itself. This is the default setting. Note that some older monitors may not support this feature.

General Timing Formula (GTF): It's a standard used by most newer hardware.

Discrete Monitor Timings (DMT): It's an older standard still in use on some hardware. Enable this option if your hardware requires DMT.

Display the Quick Tweak icon in the taskbar: Adds the NVIDIA Quick Tweak icon to the Windows taskbar. The icon allows you to apply any of the custom Direct3D, OpenGL or color settings "on the fly" from a convenient pop up menu. The menu also contains items for restoring default settings and accessing the Display Properties dialog.

Select taskbar icon: Allows you to choose the icon used to represent the Quick Tweak utility in the Windows taskbar. Select the icon you want displayed from the list. Then choose "OK" or "Apply" to update the icon in the taskbar.

(As Figure 4-8)

In **NVIDIA GeForce 2 GTS Properties** dialog box, select **Output Device** item. These options in this dialog box allow you to select the output display devices [monitor, digital flat panel or TV, depending on which devices your display adapter supports.]

Device Setting button: Opens a window where you can customize the settings for the active display device.

As Figure 4-8, click **Device Settings** button, the **Output Device Settings** dialog box will appear. In the **Output Device Settings** dialog box, you can use the arrow buttons to adjust the position of the desktop on your monitor as Figure 4-9.



Figure 4-9

Chapter 5 Expertool for Windows

- ☞ *For maximum compatibility and flexibility, the Expertool utility can be loaded and unloaded dynamically. Notice: Many features which by the Expertool and only available when Expertool was activated.*
- ☞ *These pictures in this chapter are only for Win98 reference.*

Expertool is a **display control and desktop enhancement utility** for **Windows 95/98/2000/NT**, specially designed and optimized for use with your graphics accelerator. You should think of Expertool as a kind of supplementary “**device driver**” which works in conjunction with your accelerator’s display driver.

Installation

Expertool will automatically install when you use the Setup program under Windows 95/98/2000/NT (refer to Chapter 3). Once installed, it can be activated by selecting **Programs | Expertool | Expertool** (Figure 5-1) or clicking on the “**Expertool**” (Figure 5-3) icon in the System tray to show the Expertool Properties on your screen. (Figure 5-2)

Uninstall

1. Click **Close** button to close Expertool. (Figure 5-2)
2. Then click **Start** button on the task bar and select **Settings | Control Panel | Add/Remove Programs**.
3. Choice **Expertool** item for Install/Uninstall and click the **Add/Remove** button.
4. Click **OK** to uninstall Expertool.

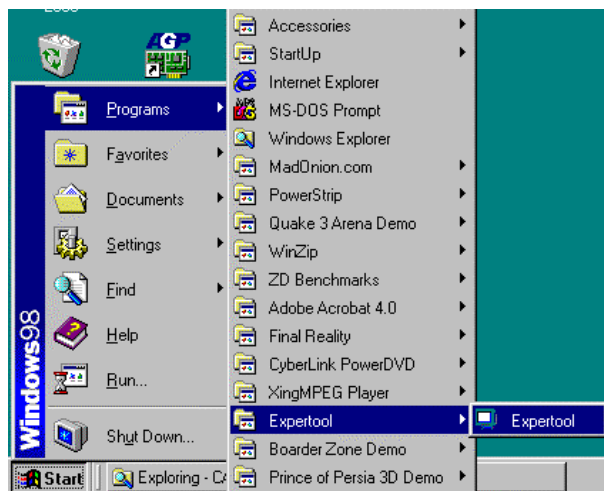


Figure 5-1



Figure 5-2

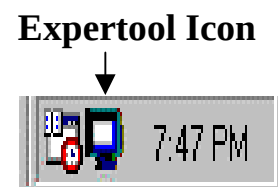


Figure 5-3

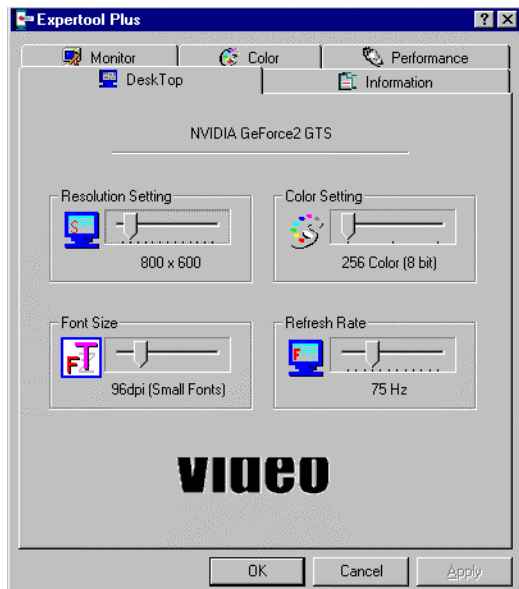


Figure 5-4

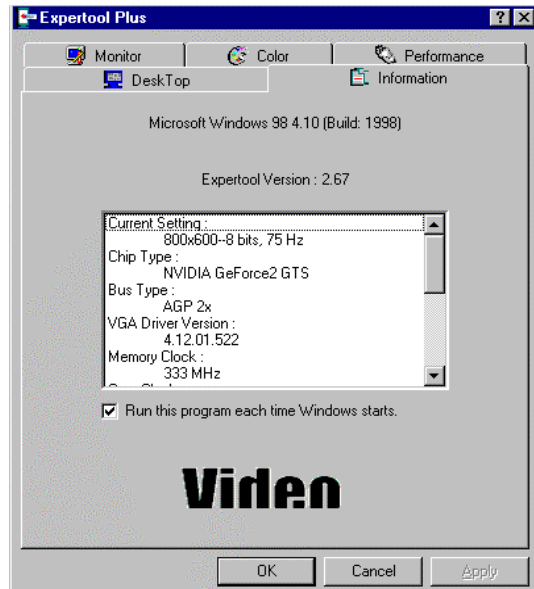


Figure 5-5

(As Figure 5-4)

DeskTop: Displays the current Resolution Setting, Color Setting, Font Size and Refresh Rate for the monitor. Drag the slider to specify values for each setting and click **OK** to put changes into effect.

(As Figure 5-5)

Information: Displays the current display settings and information of your computer. **Run this program each time Windows starts** - check box: Select this option to run Expertool immediately each time Windows starts.



Figure 5-6

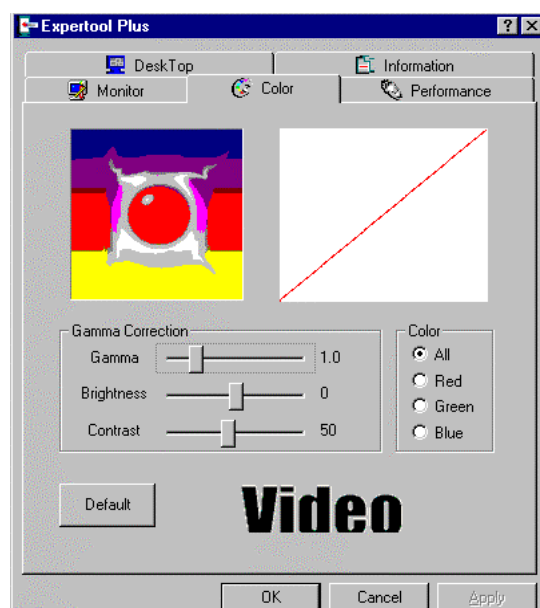


Figure 5-7

(As Figure 5-6)

Screen Adjustment: Selects **Adjust** to adjust the screen position with the keyboard. If you wish to cancel any changes you've made, select **Default**.

Monitor Information: Shows information about your monitor.

Hide modes that this monitor cannot display: Unchecking this box will allow you to set your display to modes that this monitor cannot display correctly. This may lead to an unusable display and/or damaged hardware.

Power Saving: Allows you to adjust the Power Saving settings for Standby, Suspend or Shut-off mode.

Standby check box: This option instantly places your monitor in standby mode, which delivers minimal power savings but provides optimal recovery time.

Suspend check box: This option instantly places your monitor in Suspend mode, which delivers maximum savings but requires a somewhat longer recovery time than Standby mode.

Shut-off check box: This option effectively turns your monitor off, and recovery time is practically equivalent to turning the monitor on using the monitor's power switch.

(As Figure 5-7)

Color: Moves the slider to adjust the gamma value. The farther you slide this to the right, the higher the gamma value, and the brighter your display will be. The more you slide this to the left, the lower the gamma value, and the dimmer your display will be.



Figure 5-8

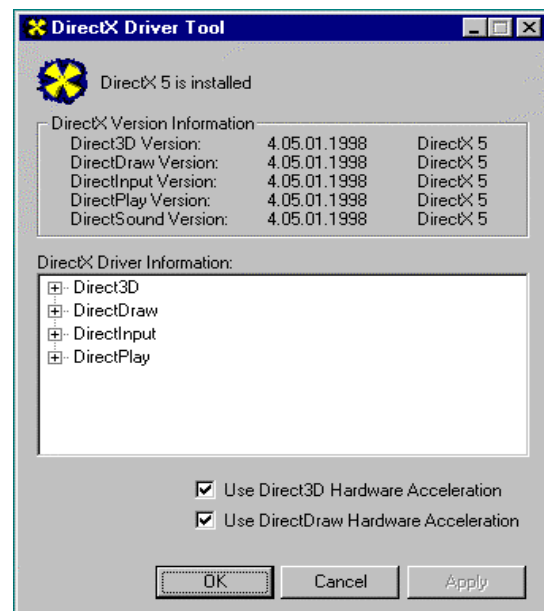


Figure 5-9

(As Figure 5-8)

Memory/Core Clock Setting Slider Control: Allows you to adjust your video memory/core clock for peak performance and maximum stability. The higher you set the memory/core clock the greater the performance increase. But changing this value will affect the stability of the VGA card. It is recommended that you use the original setting.

(As Figure 5-9)

DirectX: DirectX properties vary depending on the version of windows you are running, the version of DirectX installed, and the type of DirectX enabled drivers installed. This dialog box will also display the system's DirectX capabilities, and related information.



Figure 5-10

(As Figure 5-10)

Zoom In: Clicks on the client area and drags the mouse to zoom the desktop.

(As Figure 5-2)

Minimize: Close the menu and minimizes this application.

Close: Close this application and disables the features it supports.

Chapter 6 Technical Information

Display Memory Configuration

Memory-Resolution/Color

The table below is for reference only.

	256 color	16bit	32bit
640x480	240Hz	240Hz	240Hz
800x600	240Hz	240Hz	240Hz
1024x768	240Hz	240Hz	200Hz
1152x864	200Hz	200Hz	170Hz
1280x960	170Hz	170Hz	150Hz
1280x1024	170Hz	170Hz	150Hz
1600x900	150Hz	150Hz	120Hz
1600x1200	120Hz	120Hz	100Hz
1920x1080	100Hz	100Hz	85Hz
1920x1200	100Hz	100Hz	85Hz
1920x1440	85Hz	85Hz	75Hz
2048x1536	75Hz	75Hz	60Hz

Monitor Connector Pin Assignments

Pin no. Function

- 1 Red Video
- 2 Green Video
- 3 Blue Video
- 4 NC
- 5 Ground
- 6 Red Return (ground)
- 7 Green Return (ground)
- 8 Blue Return (ground)

Pin no. Function

- 9 +5V
- 10 Sync Return (ground)
- 11 NC
- 12 DDC DATA
- 13 Horizontal Sync
- 14 Vertical Sync
- 15 DDC CLOCK

DVI Connector Pin Assignments and Description

Pin no.	Signal Name	Description
1	TX2-	TMDS negative differential output, channel 2
2	TX2+	TMDS positive differential output, channel 2
3	SHLD2/4	Shield for TMDS channel 2/4
4	TX4-	TMDS negative differential output, channel 4
5	TX4+	TMDS positive differential output, channel 4
6	DDC_CLK	DDC2B Clock
7	DDC_DAT	DDC2B Data
8	Vertical Sync	Signal for the analog interface
9	TX1-	TMDS negative differential output, channel 1
10	TX1+	TMDS positive differential output, channel 1
11	SHLD1/3	Shield for TMDS channel 1/3
12	TX3-	TMDS negative differential output, channel 3
13	TX3+	TMDS positive differential output, channel 3
14	+5V Power	Logic +5V supply
15	Ground	Ground reference for +5 volt power pin. Used as return by Hsync and Vsync Signals
16	HPD	Signal is driven by monitor to enable the system to identify the presence of a monitor.
17	TX0-	TMDS negative differential output, channel 0
18	TX0+	TMDS positive differential output, channel 0
19	SHLD0/5	Shield for TMDS channel 0/5
20	TX5-	TMDS negative differential output, channel 5
21	TX5+	TMDS positive differential output, channel 5
22	SHLD Clock	Shield for TMDS clock differential pair
23	TXC+	TMDS positive differential output, channel Clock
24	TXC-	TMDS negative differential output, channel Clock

Flash ROM Upgrade

1. Copy the utility from your CD directory “\Nvidia\Dos\FLASH\GeForce” to your harddisk.
2. Type nvflash.exe -f<filename> to update your ROM file (Rom file can be downloaded from the web site).

Chapter 7 Trouble Shooting

Problem: After installation and restarting, Windows 95 informs me that display settings are still incorrect. There may be conflict between previous and current display drivers. This is caused by incomplete removal of previous display driver. Try the following steps to remove it.

Solution:

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

Problem: After installing the driver, Windows 95 doesn't prompt me to restart and the driver still doesn't work after a manual reboot. You may have installed similar drivers before. Try the following steps to install:

Solution:

- (1) Use right mouse button to click on the "My Computer" icon on your desktop.
- (2) Select "Properties" and the "System Properties" box appears.
- (3) Click on the "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, skip 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 "Update Driver.." and follow the installation steps.
- (9) Click "Other devices" and you will see your card listed.
- (10) Click on the card, and when the properties box appears.
Select the "Driver" tab.
- (11) Click "Change Driver.." and follow the installation steps.

Problem: When the system is starting up, there is a series of prolonged beeps.

Solution:

The VGA card may not be firmly inserted into the expansion slot. Ensure that the gold-striped bus connector of the graphics card is properly inserted into the expansion slot. Ensure this by pressing the card gently and evenly into the slot. Alternatively, remove the card and re-insert it.

Problem: Monitor display flickers after Windows 95 or Windows 98 starts.

Solution:

Your monitor may not support the resolution or refresh rate that you have set. You must use display settings supported by the monitor. To change the display settings:

- (1) Restart your system in Windows 95/Windows 98 Safe mode. To do so:
 - a. Restart your system and when the message "Starting Windows 95/98..." appears, press F8. A list of options including Safe Mode and Command Prompt Only Mode appears.
 - b. Select Safe Mode and press **ENTER**.
- (2) Lower your monitor's resolution.

For the resolutions supported by your monitor, refer to its manual.

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 Speed: MHz		
Mainboard CPU:		VGA Memory Type:		
Mainboard Memory: MB		VGA Memory MB		
Mainboard Brand:		VGA Memory Brand:		
Cache Memory: KB		FDD/HDC Card:		
Monitor Type:		Horizontal Freq. :	KHz to KHz	
		Vertical Freq. :	HZ to HZ	
Operating System or Test Programs:				
Application Software:				
Other Cards installed in system:				
Problem Description:				

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