

# NVIDIA

## TNT2 Pro / TNT2 M64



## VANTA / VANTA LT



# 3D GRAPHIC ACCELERATOR

# MANUAL

# NVIDIA TNT2 Pro, TNT2 M64, VANTA, VANTA LT AGP and PCI

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## 1. NVIDIA TNT2, VANTA Family CHP

TNT2 Pro, TNT2 M64, VANTA , VANTA LT

Memory Size:

5100 - TNT2 Pro : 32MB on Board with SDRAM

5200 - VANTA : 8/16MB on Board with SDRAM

5300 - TNT2 M64 : 16/32MB on Board with SDRAM

5200LT - VANTA LT : 8/16 MB on Board with SGRAM or SDRAM

5100PCI - TNT2 Pro : 32MB on Board with SDRAM

5200PCI - VANTA : 8/16MB on Board with SDRAM/SGRAM

5300PCI - TNT2 M64 : 8MB/16/32MB on Board with SDRAM

## 1.1 NVIDIA TNT2 Pro / TNT2 M64 Features

- \* Optimized Direct3D and OpenGL acceleration
- \* Complete DirectX5.0, 6.x and OpenGL support
- \* 2<sup>nd</sup> Generation 128-bit Twin Texel architecture
  - 2 texture-mapped, lit pixels-per-clock cycle
  - Single-pass multi-texturing
- \* 32-bit Z/stencil Buffer
- \* 32-bit ARGB rendering with destination alpha
- \* Point-sampled, bilinear, and 8 tap Anisotropic filtering
- \* Texture Blend support
  - Multi-texture
  - Bump map
  - Texture modulation
  - Light maps
  - Reflection maps
  - Detail texture
  - Environmental maps
  - Procedural textures

### High performance 128-bit 2D acceleration

- \* Hardware acceleration for Windows GDI operations
- \* Optimized for multiple color depths including 32, 24, 16, 15, and 8-bits per pixel
- \* Multi-buffering (up to quad buffering) for smooth animation and video playback
- \* Fast 32-bit VGA/SVGA support

### High quality video playback

- \* 30fps full screen DVD playback
- \* DVD sub-picture alpha-blended compositing
- \* Video acceleration for DirectShow, MPEG-1, MPEG-2, and Indeo
- \* Advanced support for DirectDraw
- \* Hardware color space conversion(YUV 4:2:2 and 4:2:0)
- \* NTSC and PAL TV output with AV and S-Video output connector (Optional)

### Robust system interface

- \* Comprehensive AGP 4x / 2x interface (AGP only)
- \* PCI2.2 Bus support and Bus Mastering
- \* Memory configurations up to 32MB of SDRAM

### Digital LCD monitor interface support (Optional)

- \* VESA P&D and VESA FPDI-S™ standard compliant
- \* Adjustable TMDS™ low-voltageswing signaling for long distance support
- \* Support for VGA, SVGA, XGA and SXGA TFT color panels monitor
- \* Panel data polarity switching for EMI reduction
- \* Auto-expansion and centering for VGA text and graphics modes
- \* MDR20 Panellink™ digital standard connector

### OPERATING SYSTEM Support

- \* Windows XP, Windows 2000, Windows ME, Windows 98 and Linux

## 1.2 NVIDIA VANTA Features

- \* Hardware acceleration for all Windows GDI operations
- \* Optimized for multiple color depths including 32, 24, 16, 15, and 8bits per pixel
- \* True-color hardware cursor
- \* Hardware color dithering
- \* Multi-buffering (up to quad buffering) for smooth animation and video playback
- \* Fast 32-bit VGA/SVGA support
- \* Maximum resolution of 1920x1200x32 @ 72Hz

### Award-winning 3D performance

- \* Second-generation 128-bit Twin Texel architecture
- \* Complete DirectX 6.0 and 5.0 support
- \* Single-pass multi-texturing
- \* 32-bit rendering with destination alpha
- \* Anti-aliasing: full scene, order independent
- \* Point-sampled, bilinear, and 8 tap anisotropic filtering
- \* 100% hardware triangle setup
- \* Texture Blend support
  - Multi-texture
  - Reflection maps
  - Bump map
  - Detail texture
  - Texture modulation
  - Environmental maps
  - Light maps
  - Procedural textures
- \* Per-pixel perspective-correct texture mapping
- \* Fog, light, mip mapping
- \* Optimized for Pentium III and K6-2 processors

### High-quality video acceleration

- \* Full-screen, full-frame DVD playback
- \* Advanced support for DirectDraw
- \* Back-end hardware video scaling for video conferencing and playback
- \* Hardware color-space conversion(YUV 4:2:2 and 4:2:0)
- \* Multi-tap X and Y filtering
- \* Per-pixel color keying
- \* Multiple video windows with hardware color space conversion and filtering
- \* DVD sub-picture alpha-blended compositing
- \* Video acceleration for Direct Show, MPEG-1, MPEG-2, and Indeo
- \* NTSC and PAL TV output with AV and S-Video output connector (Optional)

### Robust system interface

- \* AGP 4X/2X system bus AGP 2.0 and AGP 1.0 compliant (AGP only)
- \* PCI2.2 Bus support and Bus Mastering
- \* 64-bit frame-buffer interface, supporting up to 32MB SDRAM/SGRAM

### OPERATING SYSTEM Support

- \* Windows XP, Windows 2000, Windows ME, Windows 98 and Linux

### 1.3 NVIDIA VANTA LT Features

- \* 128-bit TwinN-Texel architecture
- \* High-performance 128-bit 2D/GUI/DirectDraw acceleration
- \* Fast 32-bit VGA/SVGA support
- \* Optimized for SIMD New Instructions and 3DNow
- \* High performance implementation of Direct3D and OpenGL standards
- \* Texture Blend support examples:
  - Multi-texture
  - Reflection maps
  - Bump map
  - Detail texture
  - Texture modulation
  - Environmental maps
  - Light maps
  - Procedural textures
- \* 24-bit or 16-bit Z buffer (floating point or integer)
- \* 8-bit stencil buffer
- \* Anti-aliasing, full scene, order independent

#### High quality video playback

- \* Full-screen, full-frame DVD playback (need S/W DVD player program)
- \* Video acceleration for DirectShow, MPEG-1, MPEG-2, and Indeo
- \* Back-end hardware video scaling for video conferencing and playback
- \* Hardware color-space conversion (YUV 4:2:2 and 4:2:0)
- \* Multi-tap X and Y filtering
- \* Per-pixel color keying
- \* Multiple video windows with hardware color space conversion and filtering
- \* DVD sub-picture alpha-blended compositing

#### Robust system interface

- \* AGP 2x interface (AGP 2.0)
- \* 64-bit frame buffer interface, supporting up to 8/16MB of SGRAM/SDRAM

#### OPERATING SYSTEM Support

- \* Windows XP, Windows 2000, Windows ME, Windows 98 and Linux

## **2. Hardware Installation**

### **2.1 Package Contents**

1. NVIDIA TNT2Pro or TNT2 M64 or VANTA or VANTALT 3D Accelerator card.
2. CD title or Software diskettes
3. This manual.

### **2.2 Installing the Card**

1. Turn off your computer.
2. Remove the cover of the computer per the owner's manual.
3. Install the card in the AGP bus slots.
4. Replace the cover.

### 3. Resolutions and colors supported:

NVIDIA TNT2Pro / TNT2 M64 / VANTA /VANTALT VGA cards are fully compatible VGA with the addition of Hi-Color and True Color modes depending on the amount of video memory stalled. The amount of memory needed to display various resolutions is shown below.

NVIDIA TNT2Pro / TNT2 M64 / VANTA

	B.P.P	Refresh Rates (HZ)
640*480	8	60/70/72/75/85/100/120/140/144/150/170/200/240
	16	60/70/72/75/85/100/120/140/144/150/170/200/240
	32	60/70/72/75/85/100/120/140/144/150/170/200/240
800*600	8	60/70/72/75/85/100/120/140/144/170/200/240
	16	60/70/72/75/85/100/120/140/144/170/200/240
	32	60/70/72/75/85/100/120/140/144/170/200/240
1024*768	8	60/70/72/75/85/100/120/140/144/150/170
	16	60/70/72/75/85/100/120/140/144/150/170
	32	60/70/72/75/85/100/120/140/144/150/170
1152*864	8	60/70/72/75/85/100/120/140/144/150
	16	60/70/72/75/85/100/120/140/144/150
	32	60/70/72/75/85/100/120/140
1280*1024	8	60/70/72/75/85/100/120
	16	60/70/72/75/85/100/120
	32	60/70/72/75/85/100
1600*1200	8	60/70/72/75/85
	16	60/70/72/75/85
	32	60/70/72/75
1920*1080	8	60/70/72/75/85
	16	60/70/72/75/85
	32	60/70/72(TNT2Pro / TNT2 M64 only)
1920*1200	8	60/70/72/75
	16	60/70/72/75
	32	60(TNT2Pro / TNT2 M64 only)



VANTA LT

	B.P.P.	Refresh Rates (HZ)
640*480	8	60/70/72/75/85/100/120/140/144/150
	16	60/70/72/75/85/100/120/140/144/150
	32	60/70/72/75/85/100/120/140/144/150
800*600	8	60/70/72/75/85/100/120/140/144
	16	60/70/72/75/85/100/120/140/144
	32	60/70/72/75/85/100/120/140/144
960*720	8	60/70/72/75/85/100/120
	16	60/70/72/75/85/100/120
	32	60/70/72/75/85/100/120
1024*768	8	60/70/72/75/85/100
	16	60/70/72/75/85/100
	32	60/70/72/75/85/100
1152*864	8	60/70/72/75/85/100
	16	60/70/72/75/85/100
	32	60/70/72/75/85/100
1280*1024	8	60/70/72/75/85
	16	60/70/72/75/85
	32	60
1600*1200	8	60/70/72/75
	16	60/70/72/75
	32	60/70/72/75
1920*1080	8	60/70/72/75
	16	60/70/72/75
	32	60/70/72
1920*1200	8	60/70/72/75
	16	60/70/72/75
	32	60

#### 4. Smart Installation

For Windows XP, Windows 2000, Windows 98, Windows ME

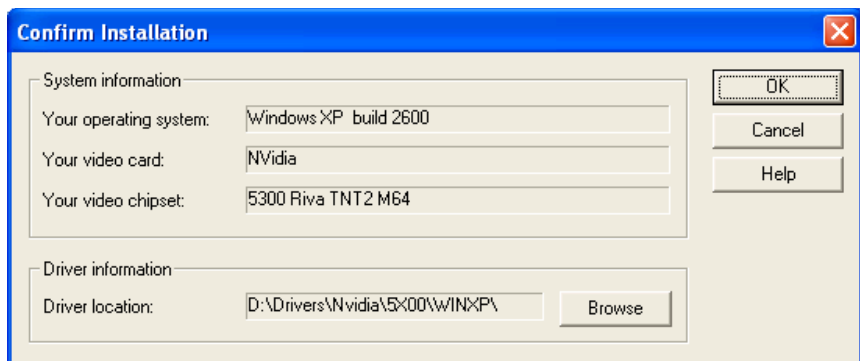
##### 4.1 Put the DRIVERS CD in your CD-ROM



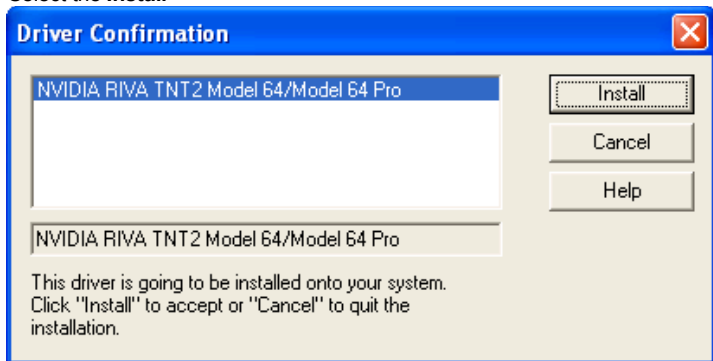
##### 4.2 Click **Driver installation**

##### 4.3 If everything fine, screen will show **Confirm Installation** window.

Then Select **OK** (Here the picture shows NVIDIA TNT2 M64 for example)



- 4.4 Now appears the **Driver Confirmation** window  
Select the **Install**



If the drivers is very new may not certified by Microsoft, if so, system will prompt you the drivers do not have "digital signature", still you can force to install.

- 4.5 Then **restart your computer**.



## 5. Manually install Windows XP drivers

### 5.1 Installation and Setup

The Windows setup program installs and modifies all of the necessary files. Follow these steps to install the Windows XP drivers.

1. Insert the DISC (CD Title Driver).
2. Select **Control Panel** from **Start menu**
3. Select the **Display** icon
4. Double-click on the **Display** icon in the **Control Panel** folder. You can also click the right mouse button anywhere on the desktop and select the Properties option from the pop-out menu.
5. Click **Settings**, and then **Advanced**
6. Now shows **[Plug And Play Monitor and NVIDIA...]** window  
Select **Adapter**
7. Then show **Standard PCI Graphics...(or NVIDIA TNT2...)**  
Select **Properties**
8. Then show **Adapter Properties ...**  
Select **Driver** and click **Update driver...**
9. Then show **Hardware Update Wizard**  
Select **Install from a list or specific location (Advanced)** – recommended for saving installation time  
Then select **Next**.
10. Default setting will select **Search for the best driver in these locations**  
Please check **Include this location in the search** – recommended for saving installation time  
Select **Browse**
11. Then show **Browse for Folder**  
Select **E:\drivers\NVIDIA\5X00\WinXP**  
**Note:** “E:”-> CD Drive, “NVIDIA”-> VGA chip brand name, “5X00”-> VGA model number  
Then select **OK** and then click **Next**
12. If no problem occur, system will start to install the driver
13. Then show **Completing the Hardware Update Wizard**  
Select **Finish**
14. Close the **Adapter Properties window**
15. Then show **System Settings Change**  
Select **OK**, System will restart automatically.

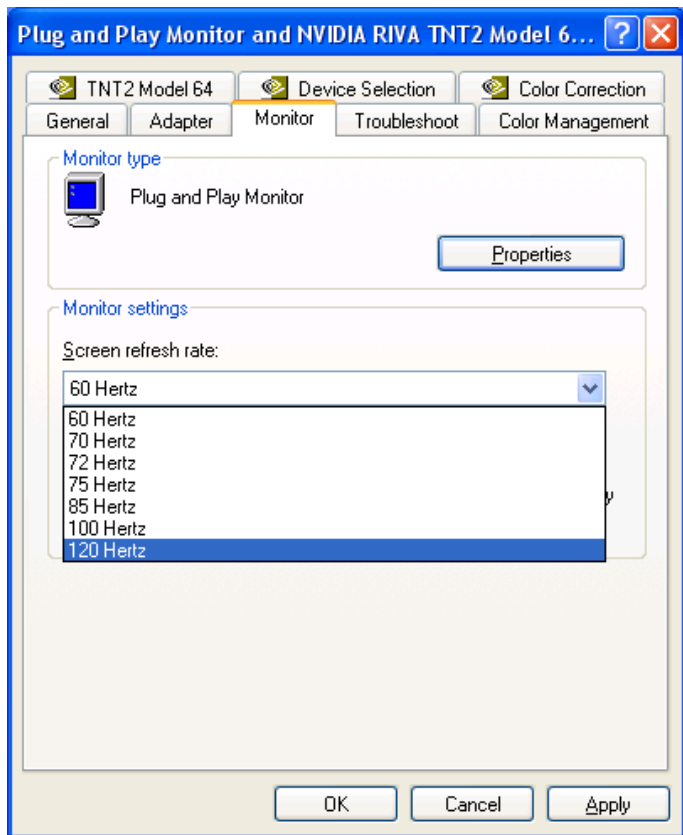
### 5.2 How to Change Color Depth and Resolution in Windows XP

1. Make sure that you have installed Windows Driver.
2. Select **Control Panel** from **Start menu**
3. Select the **Display** icon
4. Double-click on the **Display** icon in the **Control Panel** folder. You can also click the right mouse button anywhere on the desktop and select the Properties option from the pop-out menu.
5. Click **Settings**
6. Click on the pull-down arrow from the **Color** palette area to select color depth or adjust the sliding bar to either **Less** or **More** from the **Desktop area**
7. Select **OK** to restart **System** and new color depth or the new resolution takes effect.

### 5.3 How to Change Refresh Rate in Windows XP

1. Make sure that you have installed windows XP Driver. Click on the **Start** box in the lower left corner and proceed to Setting, **Control Panel**
2. Inside the **Control panel** group , click on **Display** icon to open the **Display Properties** folder and choose **Settings** click the **Advance Settings** choose **Monitor**
3. Click on the **Refresh Rate** sub window to change refresh rate
4. Select **OK** and new refresh rate takes effect
5. Refresh Rate default is Optimal.
6. If you change Refresh Rate from Optimal to another, you maybe need to restart Windows System for functional.

**Note:** If your monitor is not Branded or Plug&Play, you will only see Adapter default and optimal. Please contact your monitor supplier to get right or compatible drivers for your monitor. Otherwise you can not select the refresh rate you wanted.



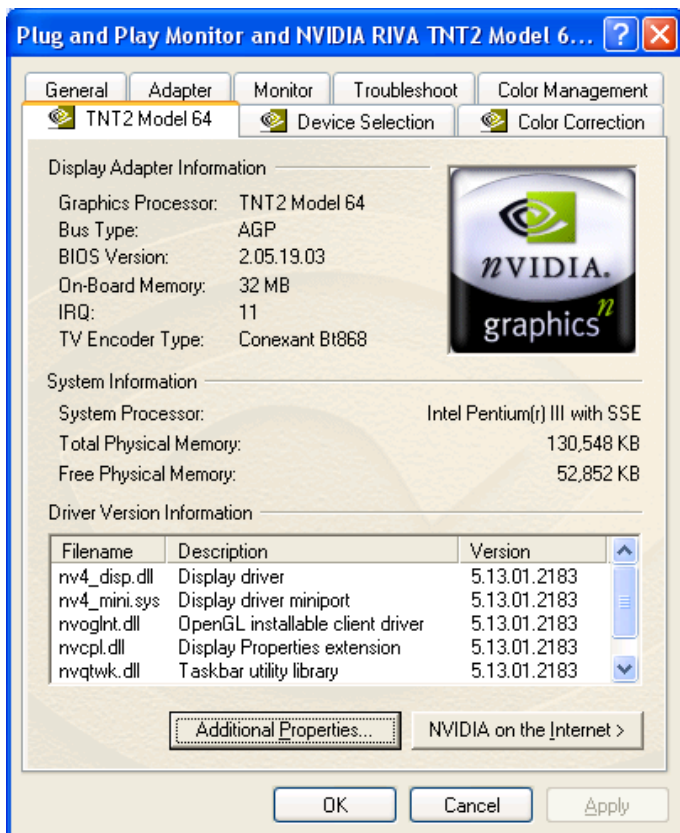
## 5.4 NVIDIA Utility in Windows System

### 5.4.1 TNT2 Model 64

Display Adapter Information Table, you can tell the BIOS and Drivers version, NVIDIA Chip model name, IRQ setting and many useful information.

**Additional properties** is for advance user to setting OpenGL, DirectX and other settings.

**NVIDIA on the Internet** can reach NVIDIA official web site for more NVIDIA news.



#### 5.4.2 Device selection

Select output device, if all the optional connector is connected, you will be able to select DFP or TV output as Windows default display device.

[TNT2 or VANTA Family do not support TwinView.](#)

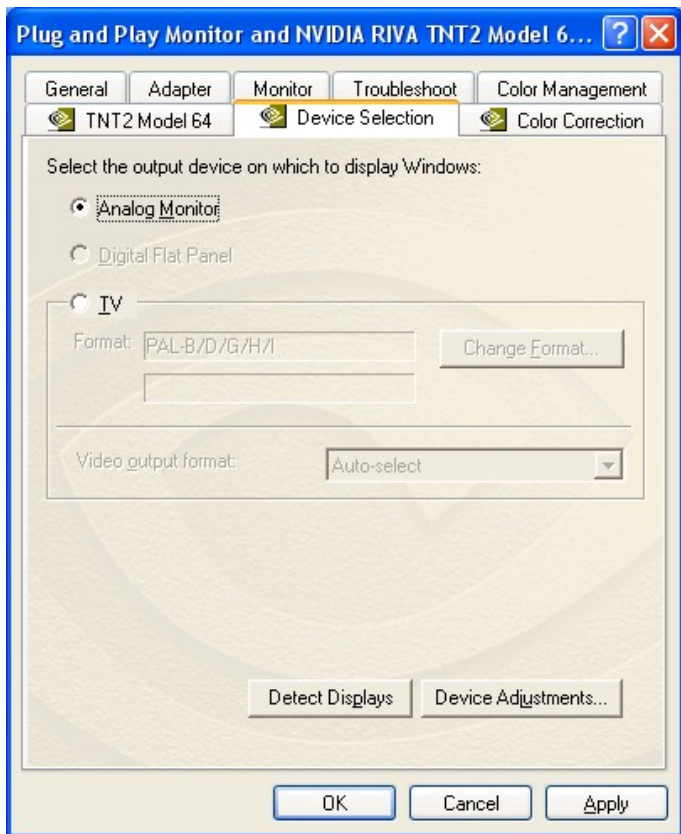
Only the device is plugged and functional, then you will be able to check the selection box. If you plug the connector after window boot up, click **Detect Displays** will functional the plugged output device check box.

For **Digital Flat Panel**, support only TMDS Panel Link compatible digital LCD monitor. Resolution support up to SXGA-1280x1024.

For **TV**, support both NTSC and PAL system TV, click **Change Format** to select your country and TV system.

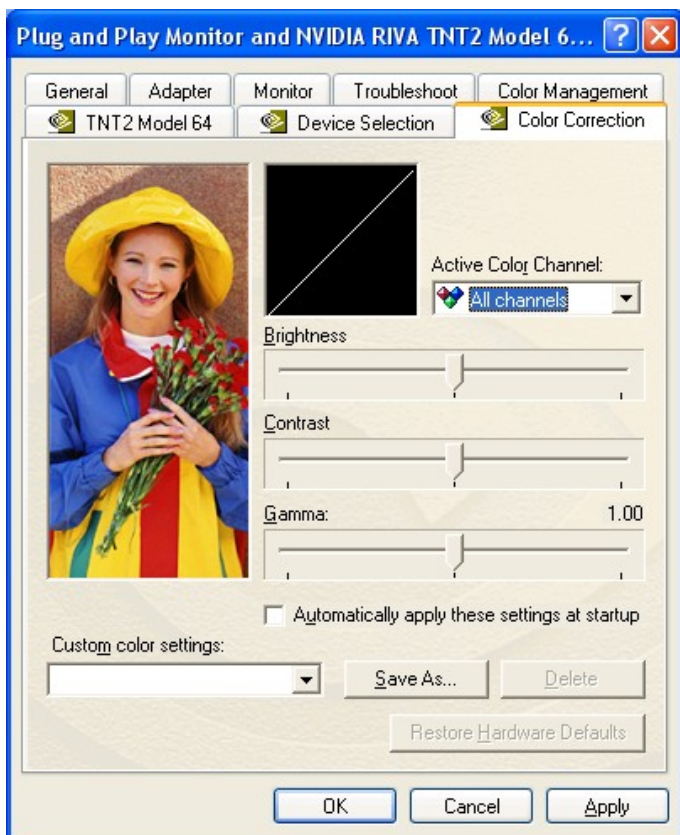
If you can not switch from PAL back to NTSC, please set resolution to 640x480 and try again.

For **Device Adjustments**, you can adjust the screen position



### 5.4.3 Color correction

This Window shows NVIDIA Digital Vibrance is functional and you can adjust Brightness, Contrast, Gamma and save it as your favorite setting. If you don't like your adjustments, you can also check **Automatically apply these settings at startup** to change it back.





## 6. Manually install Windows 98 and Windows ME drivers

### 6.1 Installation and Setup

The Windows setup program installs and modifies all of the necessary files. Follow these steps to install the Windows 98/ME drivers.

1. Insert the DISC (CD Title Driver).
2. Select **Control Panel** from **My Computer** group.
3. Select the **Display** icon
4. Double-click on the **Display** icon in the Setting -> **Control Panel** folder. You can also click the right mouse button anywhere on the desktop and select the Properties option from the pop-out menu.
5. Click the **Settings** tab.
6. Then show **[Unknown Device.] Properties** tab  
Select **Adapter**
7. Then show **Standard PCI Graphics...** tab  
Select **Change**
8. Then show **Update Device ...** tab  
Select **Next**
9. Then show **Update Device ...** tab  
Select **Search for a better...**  
Then select **Next**.
10. Then show **Update Device ...** tab  
If the **Specify a location** is wrong  
Please select **Brows**
11. Then show **Browse for Folder** tab  
Select **E:\drivers\ NVIDIA\5X00\Win9X (or \Winme)**  
**Note:** "E:"-> CD Drive, "NVIDIA"-> VGA chip brand name, "5X00"-> VGA model number  
Then select **OK**
12. Then show **Update Device Driver Wizard** tab  
Select **CD-ROM driver**  
Click the **Specify a locator**, if right  
Then select **Next**
13. Then show **Update Device Driver Wizard** tab  
Select **Next**
14. Then show **Update Device Driver Wizard** tab  
Select **Finish**
15. Then show **System Settings Change** tab  
Select **OK**

### 6.2 How to Change Color Depth and Resolution

1. Make sure that you have installed windows 98/ME Driver.
2. Click on the **Start** box in the lower left corner and proceed to **Control Panel**.
3. Inside the **Control panel** group , click on **Display** icon to open the **Display Properties** folder and select the **Setting table**
4. Click on the pull-down arrow from the **Color** palette area to select color depth or adjust the sliding bar to either **Less** or **More** from the **Desktop area**
5. Select **OK** to restart **Windows System** and new color depth or the new resolution takes effect.

### 6.3 How to Change Refresh Rate

1. Make sure that you have installed windows 98/ME Driver. Click on the **Start** box in the lower left corner and proceed to Setting, **Control Panel**
2. Inside the **Control panel** group , click on **Display** icon to open the **Display Properties** folder and choose **Settings** click the **Advance Settings** choose **Adapter**
3. Click on the **Refresh Rate** sub window to change refresh rate
4. Select **OK** and new refresh rate takes effect
5. Refresh Rate default is Optimal.
6. If you change Refresh Rate from Optimal to another, you maybe need to restart Windows System for functional.

**Note:** If your monitor is not Branded or Plug&Play, you will only see Adapter default and optimal. Please contact your monitor supplier to get right or compatible drivers for your monitor. Otherwise you can not select the refresh rate you wanted.

### 7. Manually install Windows 2000 drivers

First time install drivers under windows2000

1. When system boot up, system will prompt find new device. Suppose the device is VGA, now system will find the default drivers for you.
2. If you want to install our drivers along with the TNT2 or VANTA Family pack. Please put the drivers CD in your CDROM drive. If now shows SmartInstall window, please click **EXIT** button to quit.
3. Drivers for windows2000 are located at \drivers\NVIDIA\5X00\win2000
4. If the drivers is very new may not certified by Microsoft, if so, system will prompt you the drivers do not have “digital signature”, still you can force to install.
5. Follow on screen instructions will finish the installation.

The following steps describe how to update Windows2000 display drivers

1. Place the Disc (CD Title) into CDROM Drive. If now shows SmartInstall window, please click **EXIT** button to quit
2. Right click mouse button on Desktop Area, now shows a sub menu window. Please select **Properties**.
3. Now come up **Display Properties** window, please select **Settings** on the top.
4. Select **Advanced**
5. Select **Adapter**.
6. Select **Change**
7. Now comes up a update drivers wizard window. Please follow the on screen instruction to go on.
8. Please specify the drivers location at your CDROM:\drivers\NVIDIA\5X00\win2000 or the directory where you put your drivers
9. Select **Install** and click “**YES**” when the Installing Driver dialog box appears. If the drivers is very new may not certified by Microsoft, if so, system will prompt you the drivers do not have “digital signature”, still you can force to install.

A message appears stating that drivers were successfully installed. Click **OK**. Another message appears stating that the driver could not be restarted dynamically. Restart Windows2000 to run the new driver. Click **OK**.

## **FCC Statement**

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.

### **Warning:**

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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 in radio and television 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 the dealer or an experienced radio/TV technician for help.

### **Notice:**

(1) An Unshielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.

(2) Use only shielded cables to connect I/O devices to this equipment.

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

## **Trademark Acknowledgments**

All brand names and trademarks are the property of their owners.