Video-118PCI Series

nVIDIA GeForce2 MX400™

User's Manual

Version 8.00

Contents

Introduction

Video-118PCI Series are the 2D/3D graphics and multimedia accelerators made by Jaton Corporation. These accelerators are based on the GeForce2 MX400™core technology with single chipset solution, which is provided by nVIDIA®.

By incorporating GeForce2 MX's break-through 3D architecture, in a 2-pipe form, GeForce2 MX delivers the full GeForce2 GTS 3D feature set at mainstream price points.

nVIDIA GeForce2 MX400 GPUs integrated HDVP (High Definition Video Processor) and be able to support 720p at the specified frame rates. When combined with a high performance, high-level software MPEG-2 decoder, and a Digital TV receiver, GeForce2 MX chipset delivers a cost-effective, high-quality HDTV solution. nVIDIA GeForce2 MX400 chipset also enables ground-breaking new applications like HD time-shifting and digital VCR capabilities.

Video-118PCI Series (GeForce2 MX400 ™) take benefit of the latest advancements in PC computing to provide maximum performance in all graphics applications. Video-118PCI Series (GeForce2 MX400™) accelerators deliver the industry's fastest Direct3D® and OpenGL® gaining velocity in its class, they are also the most complete Microsoft® DirectX® 7 hardware implementation and meet all the requirements specified by Microsoft PC 00, PC 99, and PC 99a initiatives.

For feature-rich multimedia solution, Video-118PCI Series (GeForce2 MX400 ™) are implanted bridge and port for analog TV output function.

Video-118PCI Series (GeForce2 MX400 ™) are continuing products of Jaton heritage of bringing cutting edge technology combined a better solution to the mainstream with its cost-effective, which is absolutely integrated VGA graphics, and 2D/3D video in a multimedia homogenous mixture.

Key Features

Second Generation GPU

- Second generation transform and lighting (T&L) engine
- Integrated Dual-Link TMDS transmitters
- nVIDIA Shading Rasterizer (NSR)
- High-Definition Video Processor (HDVP)
- 32/64 MB SDR/DDR memory onboard
- 32-bit color, 32-bit Z/stencil buffer
- 4 texels per clock
- 256-bit graphics architecture
- Cube environment mapping
- DirectX texture compression

Performance

- upto 700 million texel fill rate
- upto 20 million triangles/sec through T&L and setup
- upto 2.7 GB/sec memory bandwidth
- 32 or 64 MB frame buffer size
- Maximum 3D/2D resolution of 2048x1536@75Hz
- Supports RGB / TV output optional display
- Complete DirectX® 7, DirectX® 6 and DirectX® 5 support

Quality

- nVIDIA Unified Driver Architecture

- Industry's first fully compliant professional OpenGL 1.2 support for Windows® operating systems

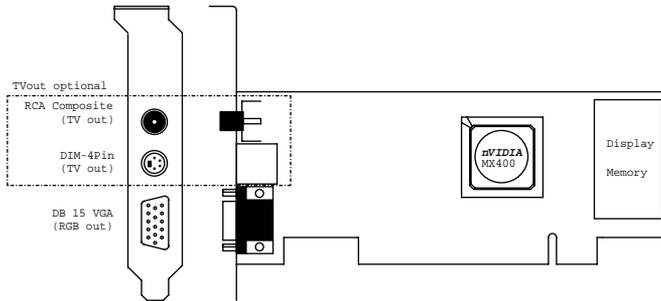- WHQL-certified Windows XP, Windows 2000, Windows NT®4.0, Windows 98

System Requirement

- Intel Pentium® or compatible system with PCI Bus Extension Slot

- CD-ROM drive, Double speed or faster

- Hard Drive with at least 50MB Free space

- MS Windows® 98/Me/NT™4.0/2000/XP operating systems

Check List

- Video-118PCI Multimedia Accelerator
- Software & Documents CD
- Quick Start Guide (Printed)

Hardware Description
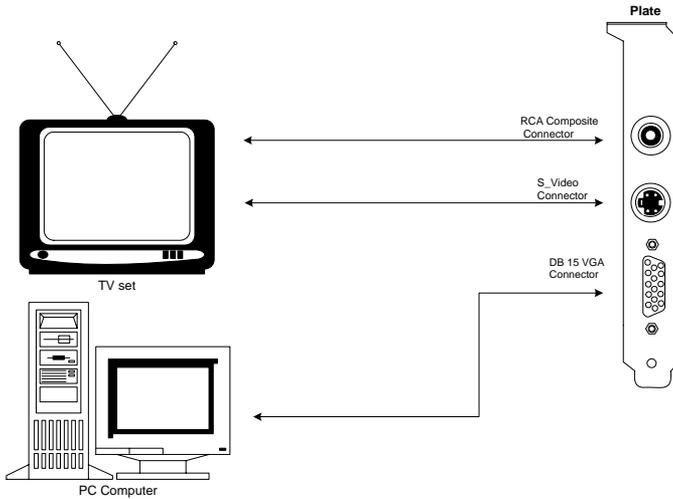
```
TVout optional
RCA Composite
   (TV out)

DIM-4Pin
  (TV out)

DB 15 VGA
 (RGB out)
```

nVIDIA MX400 — Display Memory

Product Name / PCB Version		Core Chipset	PCB Size	Memory Size	
Video-118PCI-32	82118N	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	2M*32 x 4 SDR TSSOP	32MB
	82118P	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	4M*16 x 4 SDR TSSOP	32MB
Video-118PCI-32TV	82118N	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	2M*32 x 4 SDR TSSOP	32MB
Video-118PCI-64	82118N	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	4M*32 x 4 SDR TSSOP	64MB
Video-118PCI-64TV	82118N	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	4M*32 x 4 SDR TSSOP	64MB
Video-118PCI-32LTV	82118P	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	4M*16 x 4 SDR TSSOP	32MB
Video-118PCI-64L	82118P	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	8M*16 x 4 SDR TSSOP	64MB
Video-118PCI-64LTV	82118P	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	8M*16 x 4 SDR TSSOP	64MB
Video-118PCI-32DDR	82118Q	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	8M*16 x 2 DDR TSSOP	32MB
	82118Q	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	4M*16 x 4 DDR TSSOP	32MB
Video-118PCI-32DDR-TV	82118Q	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	8M*16 x 2 DDR TSSOP	32MB
	82118Q	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	4M*16 x 4 DDR TSSOP	32MB
Video-118PCI-64DDR	82118Q	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	8M*16 x 4 DDR TSSOP	64MB
Video-118PCI-64DDR-TV	82118Q	nVIDIA GeForce2 MX400	W = 5.85" x H = 2.6"	8M*16 x 4 DDR TSSOP	64MB

Special Bracket (s) Alternative (Low profile system only)		
Bracket model	Use in	Dimension
P203	Video118PCI-64DDR-TV	L = 3.118", W =0.725"
P213	Video118PCI-32DDR / 64DDR	L = 3.118", W =0.725"

Alternative brackets can be purchased at

http://store.anvshopper.net/index.html

Display Devices Connection :

Plate

RCA Composite
Connector

S_Video
Connector

DB 15 VGA
Connector

TV set

PC Computer

Hardware Installation

Installation Procedures
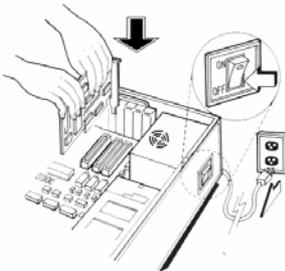
!! WARNING !!

Discharge static electricity by touching the **GROUND** such as metal part of your case connected with good power ground before you handle the electronic circuit boards.

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 with a qualified computer technician.

Steps:

1. Turn OFF all powers to your system, including any peripherals (printer, external drives, modem, etc.).

2. Disconnect the power cord and the monitor cable from the back of the computer.

3. Unfasten the cover mounting screws on your system and remove the system cover. Refer to your system user manual for instructions to determine the location of the mounting screws.

4. Remove the retaining screw that holds the slot cover in place. Slide the slot cover out and put the screw aside (you will need it to secure the adapter).

5. To install the adapter in PCI expansion slot, carefully line up the gold-fingered edge connector on the adapter directly above the expansion slot connector on the motherboard. Then press the adapter into place, completely. Use the (remaining) screw you removed to secure the adapter-retaining bracket in place.

6. Replace the computer cover. Secure the cover with the mounting screws you removed in Step 3.

You have now completed the installation of your new graphics adapter on your system.

🖫 **Very Important Note**:

Software Installation

🪟 *Microsoft Windows® 98/Me*

Since the Microsoft InstallShield® program has been added into our software's CD, the Display Driver Installation and its procedures are much easier for users to run with Windows® 98/Me operating systems. When you power-up the computer and boot-up to Windows, the Plug-and-Play detects new hardware and it pops-up the install wizard. Do Not **[Cancel]** because you must place a default display setting from

Microsoft Windows for your video adapter, then restart the Windows. After the desktop is loaded completely, insert the software's CD into CD ROM drive and proceed the display driver installation, which is provided from the hardware manufacturer.
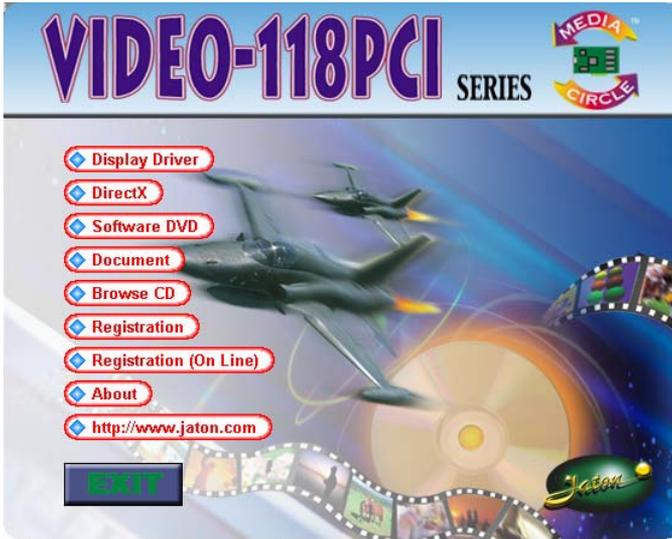
1. Autorun feature brings-up the "Welcome Screen", and you may point to "display driver" then press on it.

2. Microsoft InstallShield® Wizard has start loading its setup process; please wait until it has completed.

Welcome to the InstallShield Wizard for NVIDIA

Welcome to NVIDIA Setup. This will install NVIDIA Display Drivers on your computer.

< Back | Next > | Cancel

3. Click on "Next" to continue.

C:\WINDOWS\SYSTEM\nvrsda.dll

70%

Cancel

4. The Windows system will copy all driver files from source media to your local hard disk; please wait until the process has completed.

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InstallShield Wizard Complete

The InstallShield Wizard has successfully installed NVIDIA Windows 95/98/ME Display Drivers. Before you can use the program, you must restart your computer.

⦿ Yes, I want to restart my computer now.

○ No, I will restart my computer later.

| < Back | Finish | Cancel |
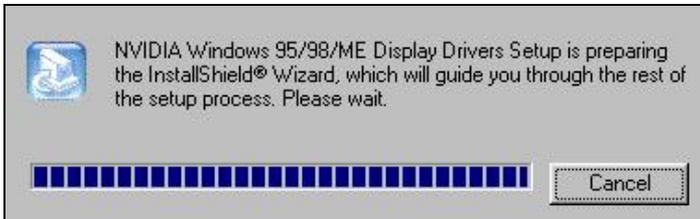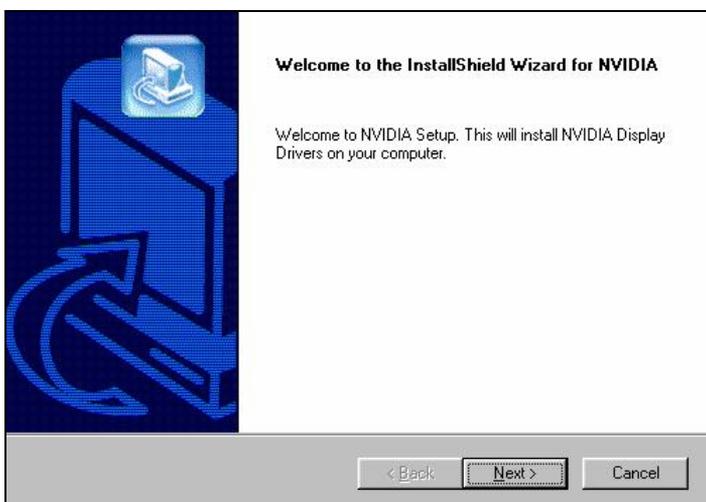
5. Click on "Finish" to restart your computer, the new display driver will be in place after Windows boots-up.

▦ *Windows® 2000 Display Driver:*

Microsoft Windows®2000 detects this new hardware and places appropriate display driver from its system folder automatically - it doesn't matter you have added a new driver or changed the existing one. To maximum the video board acceleration and increase its performance, you may install the manufacturers display driver as the follows:
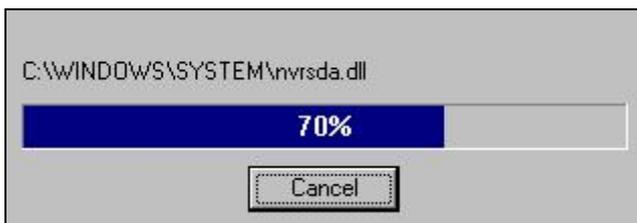
1. Autorun feature brings-up the "Welcome Screen", and you may point to "display driver" then press on it.

2. Microsoft InstallShield® Wizard has start loading its setup process; please wait until it has completed.
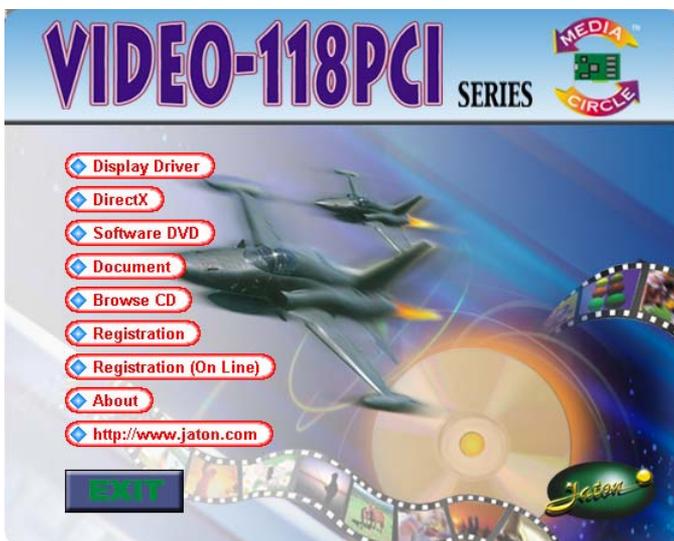
Welcome to the InstallShield Wizard for NVIDIA Windows 2000/XP Display Drivers

The InstallShield® Wizard will install NVIDIA Windows 2000/XP Display Drivers on your computer. To continue, click Next.

< Back   Next >   Cancel

3. Click on "Next" to continue.

The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.

The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.

    Video-118PCI Series, NVIDIA GeForce2 MX 200/400

If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.

Do you want to continue the installation?

Yes   No   More Info

4. Click on "Yes" to continue the installation. Otherwise, you may terminate the process by clicking on "No".

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InstallShield Wizard Complete

The InstallShield Wizard has successfully installed NVIDIA Windows 2000/XP Display Drivers. Before you can use the program, you must restart your computer.

⦿ Yes, I want to restart my computer now.

○ No, I will restart my computer later.

| < Back | Finish | Cancel |

5. Click on "Finish" to restart your computer, the new display driver will be in place after Windows boots-up.
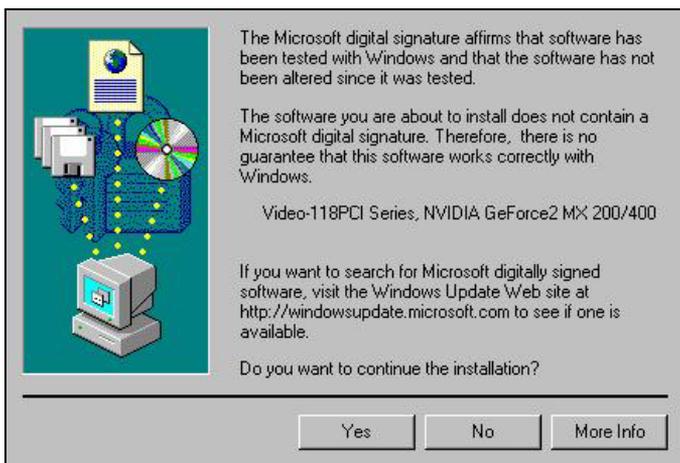
⊞ *Microsoft Windows® NT™4.0*

1. Autorun feature brings-up the "Welcome Screen", and you may point to "display driver" then press on it.

2. Microsoft InstallShield® Wizard has start loading its setup process; please wait until it has completed.
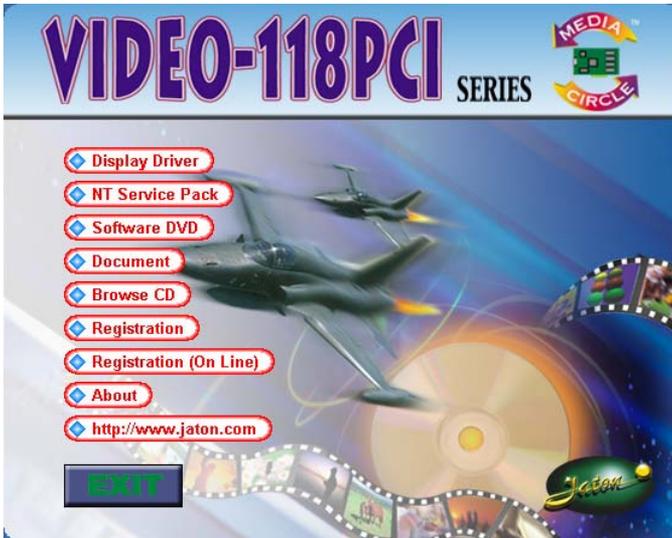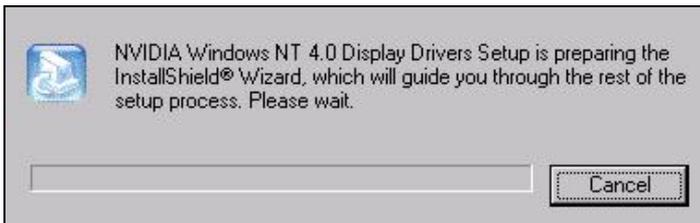
Welcome to the InstallShield Wizard for NVIDIA

Welcome to NVIDIA Setup. This will install NVIDIA Display Drivers on your computer.

< Back   Next >   Cancel

3.   Click on "Next" to continue.

Click the Display adapters that matches your hardware, and then click OK. If you don't know which model you have, click OK. This list shows only what was found on the installation disk.

Models:

NVIDIA Quadro4 980 XGL
NVIDIA Quadro4 NVS
NVIDIA RIVA TNT
Video-118PCI Series, NVIDIA GeForce2 MX 200/400
Video-158PCI Series, NVIDIA GeForce4 MX 440
Video-88PCI-16, NVIDIA TNT2 VANTA
Video-88PCI-32Plus, NVIDIA RIVA TNT2 M64

OK   Cancel

4.   Scroll down and Select on the "Video-118PCI Series, nVIDIA GeForce2 MX200/400" then click on "OK" for next screen.
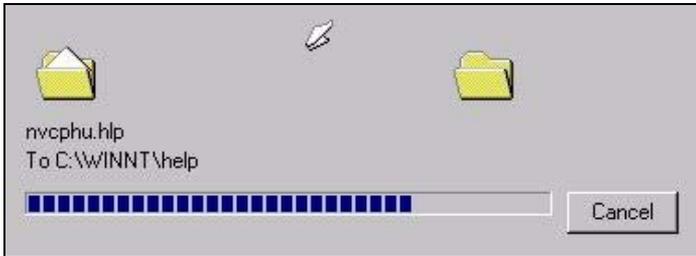
17

nvcphu.hlp
To C:\WINNT\help

5. The Windows system will copy all driver files from source media to your local hard disk; please wait until the process has completed.

InstallShield Wizard Complete

The InstallShield Wizard has successfully installed NVIDIA Windows NT 4.0 Display Drivers. Before you can use the program, you must restart your computer.

⦿ Yes, I want to restart my computer now.

○ No, I will restart my computer later.

< Back   **Finish**   Cancel

6. Click on "Finish" to restart your computer, the new display driver will be in place after Windows boots-up.

⊞ *Windows® XP Display Driver:*

Microsoft Windows® XP detects this new hardware and places appropriate display driver from its system folder automatically - it doesn't matter you have added a new driver or changed the existing one. To maximum the video board acceleration and

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increase its performance, you may install the manufacturer display driver as the follows:
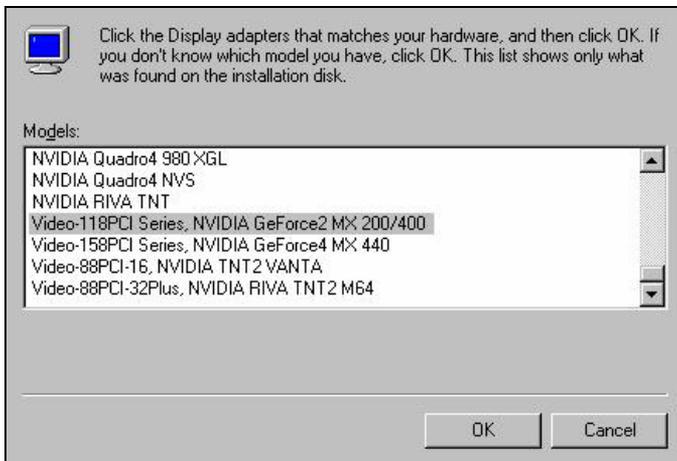

1. Autorun feature brings-up the "Welcome Screen", and you may point to "display driver" then press on it.
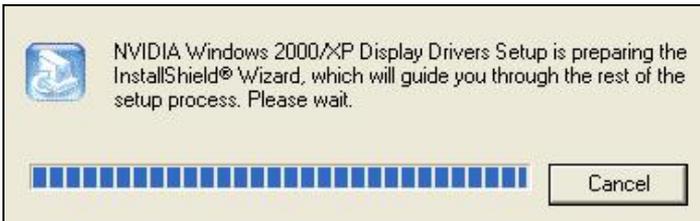

2. Microsoft InstallShield® Wizard has start loading its setup process; please wait until it has completed.
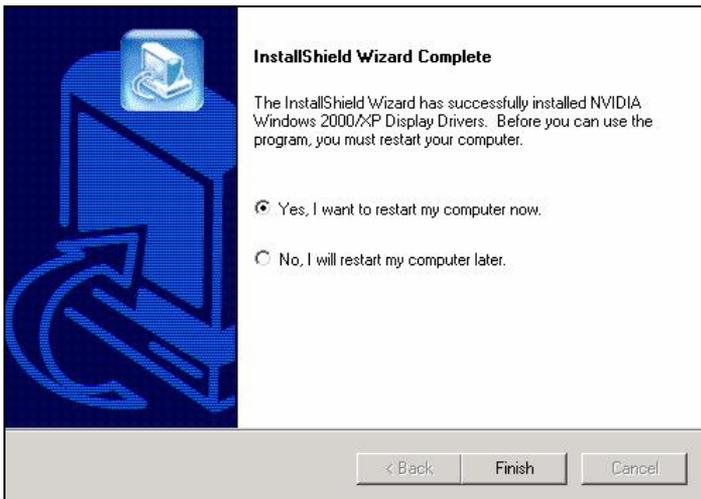
Welcome to the InstallShield Wizard for NVIDIA

Welcome to NVIDIA Setup. This will install NVIDIA Display Drivers on your computer.

< Back   Next >   Cancel

3.   Click on "Next" to continue.

The software you are installing for this hardware:

Video-118PCI Series, NVIDIA GeForce2 MX 200/400

has not passed Windows Logo testing to verify its compatibility with Windows XP. [Tell me why this testing is important.]

Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

Continue Anyway   STOP Installation

4.   Click on "Continue Anyway" to carry through the installation. Otherwise, you may terminate the process by clicking on "Stop Installation".
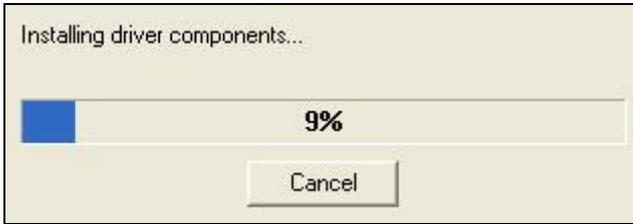
Installing driver components...

9%

Cancel

5. The Windows system will copy all driver files from source media to your local hard disk; please wait until the process has completed.

InstallShield Wizard Complete

The InstallShield Wizard has successfully installed NVIDIA Windows 2000/XP Display Drivers. Before you can use the program, you must restart your computer.

⊙ Yes, I want to restart my computer now.

○ No, I will restart my computer later.

< Back   Finish   Cancel

6. Click on "Finish" to restart your computer, the new display driver will be in place after Windows boots-up.

Notice:

We believed that the all steps where mentioned above are the clear and the correct procedures for installing display driver from manufacturer software's CD to your operating system. Any procedures other than these processes have not been specified.

Technical Assistance

Q: Why is the display shifted or changed sizes when I switch display modes?

Explain and Suggestion:

Some monitors lack auto-sizing features or just do not synchronize properly to the video board output. In some cases, horizontal and vertical display adjustments may be necessary. Use the monitor control panel functions to adjust screen.

In other cases, mode type and refresh rate adjustments may be necessary. Use the utility program, which provided by video card manufacturer or production developer. To centering the display with normal type (mode 3), and to reduce (decrease) the refresh rate with the monitor's specification.

Q: What kind monitors can display 800x600 mode or higher resolution mode?

Explain and Suggestion:

To display 800x600 resolution at 60Hz refresh rate, the monitor must be capable of synchronizing a 31.5KHz horizontal scan rate (e.g., NEC 2A, 3D). At 72Hz refresh rate, the monitor must be capable of synchronizing a 48.0KHz scan rate (e.g., Sony HG 1304, NEC 4D, 5D, Seiko 1450).

To display 1024x768 interlaced mode; the monitor must be capable of synchronizing a 35.5KHz horizontal scan rate (e.g., NEC 3D, Seiko 1430 or 1440). To display 1024x768 non-interlaced mode at 60Hz, the monitor must be capable of synchronizing a 48.7KHz scan rate (e.g., Sony HG 1304, NEC 4D, 5D, Seiko 1450).

To display 1024x768 non-interlaced mode at 70Hz, the monitor must be capable of synchronizing a 56.4KHz scan rate (e.g., NEC 4D).

Q: Windows screen won't come up, it kicks back to

DOS prompt. Why?

Explain and Suggestion:

Windows® 95

Inadvertently, certain configuration files (e.g., msdos.sys, and command.com) have been changed in the system. Proceed to correct that, is re-boot the system with a system (Windows® 95) formatted floppy diskette.

There are many reasons to causing the system booting-up with un-appropriated steps. Base on Microsoft support wizard on their WEBsite, there are many technical articles to help users with this subject, such as troubleshooting with VXD errors, virus, Fatal exceptions, etc., more details cover on each issue are descriptive and familiar with, and exclusively further to our support.

Q: System hangs-up after installing video driver.

Explain and Suggestion:

Today, most video drivers are developed for 32-bit processing and may require a channel to Code/Decode. Conflict between device drivers and TSR (terminate-and-stay-resident) programs will inverted the display, and are particularly effectual at crashing computer. The most effective way to check for conflicts is to replace with the original video driver, or delete and re-install the current video driver to the system.

Accomplishing IRQs (Interrupt Request Query) settings or troubleshooting the conflicts on hardware source may necessary. Most PCI video cards designed for Plug-n-Play, that means video card IRQ's setup which controls by main board's (motherboard) circuitry and BIOS. Physically pulling out other devices from system, and re-starts the computer. Confirm and modify your IRQ addresses with qualified computer technician.

Q: Multiple images or unreadable screen after loading video driver.

Explain and Suggestion:

There are a variety of reasons why the display might be distorted. One common reason is a monitor mis-match. Some older multifrequency monitors are unable to switch video modes without being turned off, then turned on again.

If the problem occurring in windows, make sure that you have loaded that proper video driver, and that the driver is compatible with the monitor being used. Try re-configuring your application software to use a compatible video mode. If problem persist in windows, load the standard generic VGA driver. The generic VGA driver should function properly with virtually every video board and VGA (or SVGA) monitor available.

If that is an unsatisfactory solution, you may have to upgrade to a monitor that supports the desired video mode.

Some new monitors are also synchronizing this problem because built-in DDC (Data-Digital-Channel) feature. Sometime that DDC automatically setup the display frequency without loading video driver. Try to turn it off, or change settings of monitor type in your system.

Q: Selection of color, resolution and refresh rate combination that always backs to default after restart the system.

Explain and Suggestion:

Accordingly, there must be a bug (defected source-code) in video driver, or in the system. Debug the source-code or fix the error in video driver that should be done by the driver developer. Likewise, upgrade the video driver from the manufacturer or from the original software developer is necessary.

Frequently Asked Questions (FAQ)

Q1 Why do we need 3D graphics capability in our PC?

Answer

3D technology is becoming increasingly important (and common) not only in games, but also in other applications such as VRML, which allows 3D scene descriptions in Web applications. 3D technology is used for image editing, modeling, and an increasing number of in home and business applications. In games, as well as other applications, 3D acceleration not only allows better visual qualities and more realistic scenery attributes than software alone, but it also allows a higher frame rate, which translates into a more interactive experience for the end user.

Q2 What does "Rendering Engine" mean?

Answer

"Rendering Engine" generically applies to the part of the graphics engine that draws 3D primitives, usually triangles. In most implementations, the rendering engine is responsible for interpolation of edges and "filling in" the triangle.

Q3 What does the set-up engine do in a graphics controller?

Answer

A set-up engine allows drivers to pass triangles in the form of raw vertex information; whereas, most common designs force triangles to be pre-processed for the rendering engine in terms of delta values for edges, color, and texture.

Q4 Why does a 3D graphics chip need to have both a rendering engine and a setup engine?

Answer

Any "3D application", a game, VRML, or modeling package, can benefit from 3D rendering. This is especially true of an application that uses texturing extensively, because texturing and texture filtering are very intensive operations at the pixel level in terms of CPU operations and demands for memory bandwidth. Without a set-up engine in a graphics controller, the CPU has to calculate the delta values for edges, color, and textures; the drivers need to handle ten (10) times more extensive data. This results in slower 3D pipeline operations between the CPU and the graphics controller.

Q5 If we use powerful CPUs, such as a Pentium™ 200, can a standard 2D graphics card achieve 3D performance?

Answer

Yes and no. Software rendering can take advantage of "tricks" learned by force of necessity through years of trial and error. With such stratagems, the speed of software rendering for simple scenes can approach that of low-level hardware 3D rendering. On the other hand, as scenes become more complex (or frame sizes become larger), there are conflicts between using the CPU for high-level game logic, geometry, lighting, and rendering, all of which increase their demands. No current CPU or system can perform advanced quality-enhancements (bilinear filtering and alpha blending) in real time. Even general case texture mapping with RGB lighting is too much for the current CPU generation.

Q6 What does "software 3D" mean?

Answer

Software 3D is generally used to mean using non-specific (2D) hardware in conjunction with the CPU to render for 3D applications. Some of these techniques allow usable 3D applications when high-powered and/or MMX™-equipped CPU's are employed along with special-case software optimization techniques. As stated above, SW 3D can achieve credible results with today's (software optimized) applications, but the rising popularity of good 3D hardware at the consumer price level is inexorably compelling the public to expect hardware level scene enhancements and frame rates.

Q7 What is "SGRAM"?

Answer

Synchronous Graphics Random Access Memory (SGRAM) is a new and improved type of memory, custom-designed for graphics use.

Q8 What is the advantage of as compared to ordinary DRAM?

Answer

is now capable of running at much higher speeds than Fast Page Mode or EDO DRAM. Also, is able to execute a small number of frequently executed operations, such as buffer clears, specific to graphics applications, independently of the controller.

Pinout and Sync Frequencies

Analog Color Display Pinouts (DB 15)

PIN	FUNCTION
1	Red Video[1]
2	Green Video[1]
3	Blue Video[1]
4	Not Used
5	Ground
6	Red Return (ground)
7	Green Return (ground)
8	Blue Return (ground)
9	Vcc (+5v DDC Power)
10	Sync Return (ground)
11	Monitor ID (not used)
12	SDA (DDC support)
13	Horizontal Sync
14	Vertical Sync
15	SCL (DDC support)

Note: Analog monochrome type monitors use green video for all video input and ignore red and blue video.

Conversion Table: Pin Adapters

If you will be using a 9-to-15-pin adapter cable to link your 9-pin monitor connector to the 15-pin accelerator card connector, check

Table carefully before you install the cable. The 9-to-15 pin adapter cables are available from a variety of sources, but they need to match the specifications in Table to work properly with your new card.

The adapter cable requires a D-shaped 9 pin female connector and a D-shaped 15 pin male connector.

9-to-15 Pin Conversion Table

9 PIN SIGNALS	PIN NO.	15 PIN SIGNALS	PIN NO.
Red	1	Red	1
Green	2	Green	2
Blue	3	Blue	3
Horz Sync	4	Horz Sync	13
Vert Sync	5	Vert Sync	14
Red Ground	6	Return Red	6
Green Ground	7	Return Green	7
Blue Ground	8	Return Blue	8
Sync Ground	9	Digital Ground	10
		Ground	5

Analog Video Signals

Black Level = 0 V

Full Intensity (White) Level = +0.7 V

Technical Support

In the event you have a technical problem with this product, please read the README files in the software CD_ROM. Updated drivers are available through Jaton Web site. Have following information handy when you contact technical support:

☑ Name of the product.
☑ Software Driver and Version.
☑ System Information, such as CPU speed, BIOS version, Monitor Specification, etc.
☑ Description of the problems including any error messages.

Telephone: (408) 934-9369 9-5 PST Mon. - Fri.

FAX: (408) 942-6699

WEBsite: www.jaton.com

NOTICE

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May 2002, Rev. C

FCC SHIELDED CABLE WARNING:

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. Operation is subject to the following 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,

"SHIELD INTERFERENCE CABLE (S) MUST BE USED ACCORDING TO FCC 15.27©."

CAUTION:

Changes or modifications not expressly approved by the Manufacturer could void your authority to operate this equipment in accordance with FCC rules and regulations.

SOFTWARE LICENSE AGREEMENT:

The Company grants the customer a non-exclusive, non-transferable license to use the software in this package for internal use on a single computer system. No other license of any kind is granted to any part of the product or any of the intellectual property therein.

TRADEMARK AND COPYRIGHT:

This product incorporates copyright protection technology that

is protected by method claims of certain U.S. patents and other

intellectual property rights owned by Macrovision Corporation

and other rights owners. Use of this copyright protection

technology must be authorized by Macrovision Corporation ,

and is intended for home and other limited viewing used only

unless otherwise authorized by Macrovision Corporation.

Reverse engineering or disassembly is prohibited.

All Trademarks and Registered Trademarks belong to
respective owners.

Limited Warranty.

Manufacturer warrants that the products sold hereunder are free from defects in material and workmanship for a period of two (2) years from manufacturing date. This limited warranty applies only to the original purchaser of Jaton Product and is not transferable. This limited warranty does not apply if failure to the Product Registration, or over thirty (30) days from purchase (original invoice date). This Limited Warranty does not cover any incompatibilities due to the user's computer, hardware, software or any related system configuration in which the Jaton Products interfaces. Proof of purchase will be requiring before any consideration by Manufacturer occurs.

Other Limits.

The forgoing is in lieu of all other warranties, expressed or implied. Including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Manufacturer does not warrant against damages or defects arising out of improper or abnormal use of handling of the products; against defects or damages arising from improper installation (where installation is by persons other than Manufacturer), against defects in products or components not manufactured or installed by Manufacturer, or against damages result from non-manufacturer made products or components. This warranty does not apply if the Product has been damaged by accident, abuse, nor misuse. This warranty also does not apply to products upon which repairs have been affected or attempted by persons other than pursuant to written authorization by Manufacturer.

Exclusive Obligation.

This warranty is exclusive. The sole and exclusive obligation of Manufacturer shall repair or replace the defective products in the manner and for the period provided above. Manufacturer shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, and strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, Manufacturer shall not be liable for incidental, special, or consequential damage.

Other Statements.

Manufacturer's employees or representatives' **ORAL OR OTHER WRITTEN STATEMENTS DO NOT CONSTITUE WARRANTIES**, shall not be relied upon by Buyer, and are not a part of the contract for sale or this Limited Warranty.

Terms and Conditions.

Direct Jaton Customer:	This warranty applies only for a period of two (2) years from purchase date of Jaton original invoice.
Reseller/ Vendor:	This warranty applies only for a period of two (2) years from manufacturing date.
Registered User:	This warranty applies only for a period of two (2) years from purchase date and register within 30 days of purchase date from legal reseller.
Others:	If the products do not conform to this Limited

Warranty (as herein above described), Manufacturer should charge services such as repair, replacement whether based on its costs. Shipping and installation of the replacement Products or replacement parts shall be at User's expanse.

Services agreement:

(1) All applicants shall completed service request form from Manufacturer.

(2) All returned checks will be charged a $20.00 fee by Manufacturer.

(3) All repair and replacement services allow 4-6 weeks from the date of receiving by Manufacturer.

(4) All products without warranties require service processing fee $20 (payment in advance), which is not refundable.

Entire Obligation.

This Limited Warranty states the entire obligation of Manufacturer with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in force and effect. Some states do not allow limitation of implied warranties, or exclusive or limitation on product incidental or consequential damages, so above limitation may not apply to you. This warranty gives you specific legal rights. You may have other rights, which may vary from state to state.

This warranty applies only to this product, and is governed by the law of the State of California.

Reducing Warranty Claim Rejections.

To reduce the potential of incurring damages not covered by Manufacturers warranties, we strongly recommend the following:
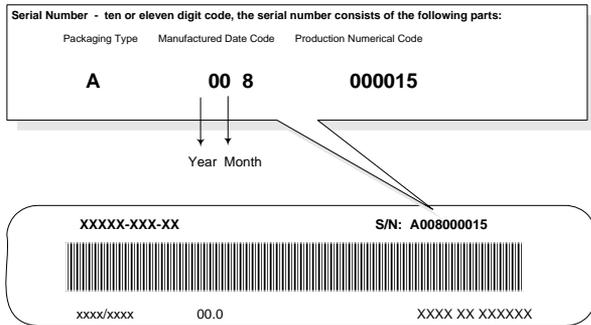
- Read your manuals before installing peripherals and/or before making changes to the machine's configuration;
- Ask your dealer if there are any known problems with the system requirements or installation procedures for any add-on products that your are purchasing;
- Buy industry standard products where compatibility issue are more likely to surface;
- If you are unsure about installation for a new product, contact your dealer's service department.

We believe it is important for you to know and understand what your warranty coverage provides and what it does not.

We also want you to be aware that most hardware warranties only relate to the function of the hardware. In most cases, no assurances are given by the manufacturer that the hardware item will work in

conjunction with any other hardware item. If a computer product is not working because it is not compatible with another product, or because it has not been properly installed and set-up, the manufacturer does not pay for the service time. To help avoid these inconveniences, contact a professional consultant that one can help you determine the possibility of incompatibility issue before you purchase add-on or accessories.

Warranty Service Use Only

Serial Number - ten or eleven digit code, the serial number consists of the following parts:

Packaging Type   Manufactured Date Code   Production Numerical Code

A   00 8   000015

Year Month

XXXXX-XXX-XX   S/N: A008000015

xxxx/xxxx   00.0   XXXX XX XXXXXX

Product Label and Manufactured Date Code