



NVIDIA Quadro® FX Series by PNY Technologies for PCI Express

PCI Express architecture ushers in extraordinary enhancements doubling the effective bandwidth to meet the demands of the most intensive next-generation applications

Pushing Visual Boundaries

ADVANCED VISUALIZATION SOLUTIONS

PNY Technologies delivers significant graphics performance enhancements to professionals with a full line of NVIDIA Quadro® graphics boards that capitalize on the revolutionary PCI Express interconnect standard. The new PCI-enabled NVIDIA Quadro by PNY

Technologies workstation graphics solutions provide top-to-bottom selection of workstation boards that offer more bandwidth than AGP-based alternatives and faster processing power for professional 3D applications.

Image courtesy EdenFX



THE BENEFITS OF PCI EXPRESS

Workstations with PCI Express deliver high performance in video, graphics, multimedia, and other professional applications. The new PCI Express high-performance I/O interconnect standard doubles the previous AGP 8x bus bandwidth to 8GB/sec. bi-directionally. Taking advantage of this next generation technology, NVIDIA Quadro by PNY Technologies graphics boards based on PCI Express feature isochronous data transfer to reduce system bottlenecks and bi-directional data transfer for blazing fast read-back performance—effectively doubling the capabilities of AGP cards.

SUPPORT FOR SLI

The new high-end NVIDIA Quadro FX1400, FX 3400 and FX 4400 by PNY Technologies graphics board based on PCI express supports NVIDIA SLI (Scalable Link Interface). SLI allows users to plug two FX1400, FX 3400 and FX 4400 graphics boards into multi-GPU PCI Express-compatible motherboards for true scalable graphics performance.



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FEATURES

Proven Workstation Graphics Architecture

Advanced Vertex and Pixel Programmability

Full 128-bit Precision Graphics Pipeline

12-bit Subpixel Precision

High Quality Full-Scene Antialiasing (FSAA)

High Precision Dynamic Range Imaging (HPDR) Technology²

Hardware-Accelerated Pixel Read-Back²

PCI Express Support

Scalable Link Interface (SLI) Technology

BENEFITS

Parallel vertex engines, programmable pixel pipelines, and workstation specific features result in the industry's highest application performance and quality.

Enables real-time shaders to simulate a wide range of physical effects and surface properties.

Enables mathematical computations to maintain high accuracy, resulting in unmatched visual quality.

3x that of the nearest competitive workstation graphics, 12-bit subpixel precision delivers high geometric accuracy, eliminating speckles, cracks, and other rasterization anomalies.

Up to 16x FSAA dramatically reduces visual aliasing artifacts or "jaggies" at resolutions up to 3840x2400, resulting in highly realistic scenes. New rotated grid FSAA algorithm (RGFSAA) delivers unprecedented quality and performance².

Sets new standards for image clarity and quality through floating point capabilities in shading, filtering, texturing and blending. Enables unprecedented rendered image quality for visual effects processing. Support for 32-bit floating point precision per component - an industry exclusive.

Greater than 1.0GB/sec. Pixel read-back performance delivers massive host throughput, more than 5x the performance of previous generation graphics systems.

Designed specifically to take advantage of the next generation PCI EXPRESS bus architecture. This new bus doubles the bandwidth of AGP 8X delivering over 4 GB per second in both upstream and downstream data transfers.

Enables NVIDIA Quadro® FX products to be linked together via an intelligent communication protocol resulting in true graphics scaling to unprecedented levels of performance and quality¹.

THE DEFINITION OF PERFORMANCE. THE STANDARD FOR QUALITY.

NVIDIA Quadro FX by PNY Technologies graphics standards empower professionals with virtually unlimited 3D graphics programmability and precision, enabling users to defy creative design limitations and conceptual boundaries imposed by legacy hardware and expand the boundaries of art and design with a new level of interactivity, speed and efficiency. Designed for professional users who require the highest levels of functionality and image quality in multi-screen environment, NVIDIA Quadro FX by PNY Technologies workstation graphics solutions have made styling and production rendering an integral part of the design workflow – drastically shortening the production process while enhancing productivity.

NVIDIA QUADRO® FX BY PNY PCI EXPRESS PRODUCT SPECIFICATIONS

BOARD FEATURES	QUADRO FX 330	QUADRO FX 540	QUADRO FX 1300	QUADRO FX 1400	QUADRO FX 3400	QUADRO FX 4400
Memory Size	64MB DDR	128MB DDR	128MB DDR	128MB DDR	256MB DDR3	512MB DDR3
Memory Interface	64-bit	128-bit	256-bit	256-bit	256-bit	256-bit
Memory Bandwidth	3.2 GB/sec	8.8 GB/sec	17.6 GB/sec	19.2 GB/sec	27.2 GB/sec	35.2 GB/sec
I/O Connectors	2xDVI-I/VGA	DVI-I+VGA+ HDTV	DVI-I+DVI-I+ Stereo	DVI-I+DVI-I+ Stereo	DVI-I+DVI-I+ Stereo	DVI-I+DVI-I+ Stereo
Dual-Link DVI	---	---	---	---	YES (1)	YES (2)
SLI	---	---	---	YES	YES	YES
3D PRIMITIVE PERF						
Triangles per Second	42	49	88	75	117	135
Texels per Second/ Fill Rate	1.0 Billion	1.2 Billion	2.8 Billion	2.8 Billion	4.2 Billion	6.4 Billion
RELATIVE 3D APPLICATION PERFORMANCE						
SPEC PROE-02	13.4	33.3	37.7	46.8	48.0	49.8
SPEC UGS-03	9.7	29.0	38.5	52.0	63.6	76.4

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NVIDIA QUADRO® FX WORKSTATION GPU

- Full 128-bit floating-point precision pipeline
- 12-bit subpixel precision
- 8 pixels per clock rendering engine
- Hardware accelerated antialiased points & lines
- Hardware OpenGL® overlay planes
- Hardware accelerated two-sided lighting
- Hardware accelerated clipping planes
- 3rd-generation occlusion culling
- 16 textures per pixel
- OpenGL® quad-buffered stereo (3-pin sync connector)
- Hardware-Accelerated Pixel Read-Back

NEXT GENERATION SHADING ARCHITECTURE

- Fully programmable GPU (OpenGL® 1.5/DirectX® 9.0 class)
- Long fragment and vertex programs (up to 65,536 instructions)
- Looping and subroutines (up to 256 loops per vertex program)
- Dynamic flow control
- Conditional execution

ARCHITECTURE

- x16 PCI Express
- 128-bit IEEE floating-point precision graphics pipeline
- 128-bit color
- 32-bit floating point frame buffer
- 12-bit subpixel precision
- Up to 512 MB high-speed GDDR3 memory
- Up to 28.8 GB/sec. memory bandwidth
- Up to 16x FSAA

- Unlimited programmability
- 3D volumetric textures

HIGH-LEVEL SHADER LANGUAGES

- Optimized compiler for Cg, OpenGL® shading language and Microsoft HLSL
- OpenGL® 1.5 and DirectX® 9.0c support
- Open source compiler

HIGH-RESOLUTION ANTIALIASING

- Up to 16x Full-Scene Antialiasing (FSAA) up to 2048x1536 per display or 3840x2400 for single digital display
- 12-bit subpixel sampling precision enhances AA quality
- Rotated grid FSAA significantly increases color accuracy and visual quality for edges, while maintaining performance

MEMORY

- High-speed memory (up to 512MB GDDR3)
- Advanced lossless compression algorithms (color and Z data)

UNIFIED DRIVER ARCHITECTURE

- Single driver supports all products

OPERATING SYSTEMS

- Windows® XP, 2000, NT®
- Linux - Full OpenGL® implementation,



Image courtesy Don Kim

complete with NVIDIA and ARB extensions (complete XFree 86 drivers)

APPLICATION COMPATIBILITY

- Optimized and certified for all leading workstation applications
- Fully compliant with OpenGL® 1.5 and DirectX® 9.0

NVIEW™ ARCHITECTURE

- Advanced multi-display desktop & application management seamlessly integrated into Microsoft Windows®.
- Dual DVI output—Drives two independent digital displays at 1600 x1200, or one at 3840x2400³.
- Dual Dual-link TMDS—Drives up to two digital displays at 3820x2400 @24Hz simultaneously^{4/5}
- 400 MHz DACs—Two analog displays up to 2048x1536 @ 85Hz each⁶
- OpenGL® stereo support for resolutions up to 3840x2400

Professional Certifications

MECHANICAL COMPUTER-AIDED DESIGN (MCAD):

- Alias AutoStudio®
- Alias DesignStudio®
- Ansys®
- Autodesk AutoCAD®
- Autodesk Inventor®
- Autodesk Architectural Desktop®
- Autodesk Lightscape®
- AVEVA PDMS®
- Bentley Microstation®
- Co|Create™ SolidDesigner
- Dassault CATIA®
- ESRI ArcGIS

- Helix
- ICEMSurf
- MSC Nastran/Patran
- Plant Designer/Imagineer
- PTC® Pro/ENGINEER™
- PTC 3Dpaint™
- SDRC I-DEAS® Master Series
- SolidWorks®
- UGS Solid Edge™
- Unigraphics®
- and many more...

- SOFTIMAGE | 3D
- SOFTIMAGE | XSI
- and many more...

VIDEO APPLICATIONS:

- Adobe After Effects®
- Adobe Premier®
- Apple Shake®
- Avid Xpress®
- Avid Xpress DV®
- Avid Xpress PRO®
- Discreet Combustion
- Macromedia Suite
- Pinnacle
- and many more...

DIGITAL CONTENT CREATION (DCC):

- Alias Maya®
- Alias StudioTools®
- Adobe After Effects®
- Discreet 3ds max
- Kaydara Motionbuilder®
- Maxon Cinema 4D™
- Newtek Lightwave 3D™
- Side Effects Houdini™

OIL AND GAS:

- Schlumberger
- Paradigm GEO
- Landmark
- and many more...



Image courtesy SolidWorks

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Warranty and Service

- PNY Technologies offers three years warranty
- Tech Support at www.pny-europe.com or +49 (0)2405 4826 222 (english and german speaking) or +33 (0)5 56 13 75 32 (french speaking)
 - The latest up-to-date drivers at www.pny-europe.com



Package Contains

- NVIDIA Quadro® FX by PNY PCI Express Graphics Card
- CD-ROM Containing:
 - Drivers for Windows® XP, 2000, and NT, Including DirectX® 9.0 and OpenGL® 1.5 and 2.0 Support
 - Detailed Installation Guide
 - NVIDIA® nView™ Desktop Manager Guide
 - NVIDIA® Display Properties User Manual
 - Quickstart Installation Guide
- DVI-I to VGA Adapters (2 for Quadro FX 1300/1400/3400/4400 , 1 for Quadro FX 540)
- DMS59 to Dual VGA Cable for Quadro FX 330

Minimum System Requirements

- IBM® or 100% PC compatible with genuine Intel Pentium® III or AMD Athlon® class processor or higher
- One available PCI Express compliant slot
- Windows® XP, 2000, Windows® NT4.0 (Service Pack 5 or 6)
- 256MB system memory
- 80MB of available disk space for full installation
- CD-ROM or DVD-ROM drive
- VGA or DVI-I compatible monitor

SKUS and EAN

- **Quadro FX 330:**
Retail: VCQFX330-PCIE-PB
EAN: 3536403329877
Bulk (unit SKU, only sold by carton of 10 cards): VCQFX330-PCIEBLK-1
- **Quadro FX 540:**
Retail: VCQFX540-PCIE-PB
EAN: 3536403330095
Bulk (unit SKU, only sold by carton of 10 cards): VCQFX540-PCIEBLK-1
- **Quadro FX 1300:**
Retail: VCQFX1300-PCIE-PB
EAN: 3536403329891
Bulk (unit SKU, only sold by carton of 10 cards): VCQFX1300-PCIEBLK-1
- **Quadro FX 1400:**
Retail: VCQFX1400-PCIE-PB
EAN: 3536403330101
Bulk (unit SKU, only sold by carton of 10 cards): VCQFX1400-PCIEBLK-1
- **Quadro FX 3400:**
Retail: VCQFX3400-PCIE-PB
EAN: 3536403329914
Bulk (unit SKU, only sold by carton of 10 cards): VCQFX3400-PCIEBLK-1
- **Quadro FX 4400:**
Retail: VCQFX4400-PCIE-PB
EAN: 3536403330118
Bulk (unit SKU, only sold by carton of 10 cards): VCQFX4400-PCIEBLK-1

Spare parts

- **DVI to VGA Adapter for Quadro FX 540/1300/1400/3400/4400 (provided with boards, for replacement):**
CALI0096
- **DMS59 to Dual VGA Cable for Quadro FX 330 (provided with boards, for replacement):**
91004085



Assassin Image courtesy Dave Wilson, www.3DLuVr.com/davewilson

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- 1 NVIDIA Quadro® FX 1400/3400 and 4400 only
- 2 NVIDIA Quadro® FX 540/1300/1400/3400 and 4400
- 3 NVIDIA Quadro® FX 540 includes one DVI and one Analog output
- 4 Single Dual link digital display available on NVIDIA Quadro® FX 3400
- 5 Dual Dual-link digital display supported on NVIDIA Quadro® FX 4400
- 6 NVIDIA Quadro® FX 330 includes dual 350MHz DACs

