NVIDIA QUADRO® FX 4500 X2

The Definition of Performance
The Standard for Quality

NVIDIA Quadro® FX 4500 X2 multi-GPU, ultra-high performance professional solution shatters the visualization limits for CAD, geo-seismic, and visualization applications.

NVIDIA Quadro FX 4500 X2 graphics solution is architected with two NVIDIA Quadro FX 4500 graphics processing units (GPUs) and delivers the industry's most advanced graphics in a dual slot solution. Multi-GPU rendering enables maximum performance and image quality, leveraging 32x full-scene antialiasing (FSAA) for graphics-intensive applications. The industry's first quad dual-link DVI drives visual real-estate on up to four ultra-high resolution displays (3840 x 2400). Certified on all industry-leading CAD, geo-seismic, and visualization applications, NVIDIA Quadro FX 4500 X2 delivers a full 128-bit floating point pipeline and 12-bit subpixel precision, setting the standard for the industry's highest workstation quality.

The NVIDIA Quadro FX family delivers on the promise of the industry's fastest PCI Express® workstation graphics solutions. Featuring NVIDIA Quadro FX 5500, FX 4500 X2, and FX 4500 at the ultra-high-end, NVIDIA Quadro FX 3500 and FX 3450 at the high-end, NVIDIA Quadro FX 1500 and FX 1400 at the mid-range, and NVIDIA Quadro FX 560, FX 550, and FX 350 at the entry-level, NVIDIA Quadro FX delivers unmatched workstation performance and quality. CAD, DCC, and visualization applications acquire a new level of interactivity by enabling unprecedented capabilities in programmability and precision. For the first time, styling and production rendering become integral functions of the design workflow, shortening the production process and enabling faster time to market.

PRODUCT SPECIFICATIONS

Form Factor	ATX, 4.38"x 12.28"
Frame Buffer Memory	512MB GDDR3 per GPU
Memory Interface	256-bit
Memory Bandwidth	33.6GB/sec.
Max Power Consumption	145W
Graphics Bus	PCI Express x16
Display Connectors	4 X DVI-I, STEREO
Dual Link DVI	Yes (4)
Auxiliary Power Connectors	Yes (2)
Number of Slots	2
Thermal Solution	Active Fansink
Genlock/Framelock	Yes

NVIDIA Quadro FX 4500 X2 Key Features and Benefits

Highest Workstation Application Performance	Next-generation architecture enables over 2x improvement in geometry and fill rates with the industry's highest performance for professional CAD, geo-seismic, and visualization applications
512MB GDDR3 per GPU	Delivers high throughput for interactive visualization of large models and high-performance for real time processing of large textures and frames and enables the highest quality and resolution full-scene antialiasing (FSAA).
Quad Dual-Link Digital Display Connectors	Quad dual-link TMDS transmitters support ultra-high-resolution panels (up to 3840 x 2400 @ 24Hz on each panel)—which result in amazing image quality producing detailed photorealistic images.
Unmatched Color Precision	Full 128-bit precision graphics pipeline enables sophisticated mathematical computations to maintain high accuracy, resulting in unmatched visual quality. Full IEEE 32-bit floating-point precision per color component (RGBA) delivers millions of color variations with the broadest dynamic range.
Next-Generation Vertex and Pixel Programmability	NVIDIA Quadro FX GPUs introduce infinite length vertex programs and dynamic flow control, removing the previous limits on complexity and structure of shader programs. With full support for Vertex and Shader Model 3.0, NVIDIA Quadro FX GPUs deliver sophisticated effects never before imagined for real-time graphics systems.
Unparalleled Subpixel Precision	12-bit subpixel precision delivers high geometric accuracy, eliminating spreckles, cracks, and other rasterization anomalies.
Hardware-Accelerated Pixel Read-Back	Greater than 2.4GB/sec., pixel read-back performance delivers massive host throughput, more than 10x the performance of previous generation graphics systems.
32x Full-Scene Antialiasing (FSAA)	Up to 32x FSAA dramatically reduces visual aliasing artifacts or "jaggies" at resolutions up to 1920x1200, resulting in highly realistic scenes.
NVIDIA PureVideo Technology	NVIDIA® PureVideo™ technology is the combination of high-definition video processors and software that delivers unprecedented picture clarity, smooth video, accurate color, and precise image scaling for SD and HD video content. Features include, high-quality scaling, spatial temporal de-interlacing, inverse telecine, and high quality HD video playback from DVD.

PRODUCT SPECIFICATIONS

Supported Operating Systems

- Microsoft® Windows® XP (64-bit and 32-bit)
- Microsoft Windows 2000 (32-bit)
- Linux® - Full OpenGL® implementation, complete with NVIDIA and ARB extensions (64-bit and 32-bit)
- AMD64, Intel EM64T

NVIDIA Quadro FX Architecture

- 128-bit color precision
- Unlimited fragment instruction
- Unlimited vertex instruction
- 3D volumetric texture support
- Single-system powerwall
- 12 pixels per clock rendering engine
- Hardware accelerated antialiased points and lines
- Hardware OpenGL overlay planes
- Hardware accelerated two-sided lighting
- Hardware accelerated clipping planes
- 3rd-generation occlusion culling

- 16 textures per pixel in fragment programs
- Window ID Clipping Functionality
- Hardware Accelerated Line Stippling

Shading Architecture

- Fully programmable GPU (OpenGL2.0/ DirectX 9.0c class)
- Long fragment programs (unlimited instructions)
- Long vertex programs (unlimited instructions)
- Looping and subroutines (up to 256 loops per vertex program)
- Dynamic flow control
- Conditional execution

High Level Shader Languages

- Optimized compiler for Cg and Microsoft HLSL
- OpenGL 2.0 and DirectX 9.0c support
- Open source compiler

High-Resolution Antialiasing

- 12-bit subpixel sampling precision enhances AA quality
- Rotated Grid Full-Scene Antialiasing (RG FSAA)
- 32x FSAA dramatically reduces visual aliasing artifacts or "jaggies" at resolution up to 1920x1200

Display Resolution Support

- Quad dual-link DVI-I outputs - drive four digital displays at resolutions up to 3840 x 2400 @ 24Hz
- Internal 400 MHz DACs – drive four analog displays up to 2048 x 1536 @ 75 Hz

nView Architecture

- Advanced multi-display desktop & application management seamlessly integrated into Microsoft Windows.

Where to buy NVIDIA Quadro

NVIDIA Quadro is available through major US OEMs, PNY Technologies (US and Europe), Leadtek (Asia-Pac), and ELSA Japan. Please visit **www.nvidia.com/page/workstation.html** for information.

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