



NVIDIA® Quadro® 2000
 REDEFINING MID-RANGE
 PROFESSIONAL GRAPHICS



PART NUMBER:
 VCQ2000-PB

Delivering the industry's best-in-class performance across leading CAD and DCC applications, the Quadro 2000 mid-range professional graphics solution features NVIDIA® Scalable Geometry Engine™ technology and 1 GB of memory for fast processing of complex models and scenes.

Quadro 2000 enables advanced capabilities including 3D Vision Pro for the highest quality stereoscopic 3D environments, SLI Multi-OS to drive multiple Windows or Linux environments from a single workstation, and Mosaic Technology which enables any application to scale across up to eight displays.

Modern applications harness the NVIDIA® Scalable Geometry Engine of the Quadro GPU to deliver huge performance gains over previous generations when running leading CAD, DCC and medical applications. NVIDIA professional software technologies including CUDA™, NVIDIA Application Acceleration Engines, and optimized drivers, enable Quadro GPUs to further accelerate applications including CATIA, 3ds Max, AutoCAD and many more.

The entire Quadro family takes leading professional applications to a new level of interactivity leveraging the Fermi architecture to enable hardware-accelerated features, performance and quality not found in any other products. From the 6 GB² Quadro 6000 at the ultra-high-end to the small form factor Quadro 600 at the entry-level, NVIDIA solutions deliver the productivity you need at every price point. With Quadro solutions your work flows — design, iterate and deliver higher quality results in less time.

QUADRO 2000 - PRODUCT SPECIFICATIONS

CUDA PARALLEL PROCESSING CORES	192
FRAME BUFFER MEMORY	1 GB DDR5
MEMORY INTERFACE	128-bit
MEMORY BANDWIDTH	41.6 GB/s
DISPLAY CONNECTORS ¹	DVH (1) and DP (2)
MAX POWER CONSUMPTION	62 W
GRAPHICS BUS	PCI Express 2.0 x16
FORM FACTOR	110mm (H) x 178mm (L) Single Slot
THERMAL SOLUTION	Active
3D VISION / 3D VISION PRO	Support via USB

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QUADRO 2000 - FEATURES AND BENEFITS

NVIDIA® SCALABLE GEOMETRY ENGINE™	Dramatically improves geometry performance across a broad range of CAD, DCC, and medical applications, enabling professionals to work interactively with models and scenes that are an order of magnitude more complex than before.
GPU TESSELLATION WITH SHADER MODEL 5.0	Quadro Tessellation Engines automatically generate finely detailed geometry, delivering the highest quality imagery without sacrificing performance.
30 BIT COLOR FIDELITY	30-bit color fidelity (10-bits per color) enables billions rather than millions of color variations for rich, vivid image quality with the broadest dynamic range.
NVIDIA® SLI® MULTI-OS	NVIDIA SLI Multi-OS allows a user to run multiple Windows or Linux workstation applications from a single system, with each Operating System directly assigned to a Quadro graphics solution. <i>Only available on SLI Multi-OS certified platforms.</i>
NVIDIA® MOSAIC TECHNOLOGY	NVIDIA Mosaic Technology enables transparent scaling of any application across up to eight display channels.

QUADRO 2000 - TECHNICAL SPECIFICATIONS

SUPPORTED PLATFORMS

- >> Microsoft Windows 7 (64-bit and 32-bit)
- >> Microsoft Windows Vista (64-bit and 32-bit)
- >> Microsoft Windows XP (64-bit and 32-bit)
- >> Linux - Full OpenGL implementation, complete with NVIDIA and ARB extensions (64-bit and 32-bit)
- >> Solaris

3D GRAPHICS ARCHITECTURE

- >> Scalable geometry architecture
- >> Hardware tessellation engine
- >> NVIDIA® GigaThread™ engine
- >> Shader Model 5.0
- >> OpenGL 4.0
- >> DirectX 11
- >> Optimized compiler for Cg and Microsoft HLSL
- >> Up to 16K x16K texture and render processing
- >> Transparent multisampling and super sampling
- >> 16x angle independent anisotropic filtering
- >> 128-bit floating point performance
- >> 32-bit per-component floating point texture filtering and blending
- >> 64x full scene antialiasing (FSAA)
- >> Decode acceleration for MPEG-2, MPEG-4 Part 2 Advanced Simple Profile, H.264, MVC, VC1, DivX (version 3.11 and later), and Flash (10.1 and later)
- >> Blu-ray dual-stream hardware acceleration (supporting HD picture-in-picture playback)

NVIDIA CUDA PARALLEL PROCESSING ARCHITECTURE

- >> API support includes:
 - > CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, or Fortran
- >> NVIDIA® Parallel DataCache™ hierarchy (configurable L1 and unified L2 caches)
- >> 64 KB of RAM (configurable partitioning of shared memory and L1 cache)
- >> Full IEEE 754-2008 - 32-bit or 64-bit double precision
- >> Dual Warp Scheduler (schedules and dispatches simultaneously instructions from two independent warps)

ADVANCED DISPLAY FEATURES

- >> 30-bit color (10-bit per each red, green, blue channel)
- >> Support for any combination of two connected displays
- >> Dual DisplayPort (up to 2560 x 1600 @ 60Hz or 1920 x 1200 @ 120Hz)
- >> Dual-link DVI-I output (up to 2560 x 1600 @ 60Hz or 1920 x 1200 @ 120Hz)
- >> Internal 400 MHz DAC DVI-I output (analog display up to 2048 x 1536 @ 85Hz)
- >> DisplayPort to VGA, DisplayPort to DVI (single-link and dual-link) and DisplayPort to HDMI cables (resolution support based on dongle specifications)
- >> DisplayPort 1.1a, HDMI 1.3a, and HDCP support
- >> 10-bit internal display processing (hardware support for 10-bit scanout for both windowed desktop and full screen, only available on Windows and Linux with Aero disabled)
- >> NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and other 3D stereo format support
- >> Full OpenGL quad buffered stereo support
- >> Underscan/overscan compensation and hardware scaling
- >> NVIDIA® nView® multi-display technology

DISPLAYPORT AND HDMI DIGITAL AUDIO

- >> Support for the following audio modes:
 - > Dolby Digital (AC3), DTS 5.1, Multichannel (7.1) LPCM, Dolby Digital Plus (DD+), and MPEG-2/MPEG-4 AAC
- >> Data rates of 44.1 KHz, 48 KHz, 88.2 KHz, 96 KHz, 176 KHz, and 192 KHz
- >> Word sizes of 16-bit, 20-bit, and 24-bit



To learn more, go to www.pny.eu/quadro

1 Two out of any three connectors can be active at a time

2 6 GB is supported on Win7 and Linux64 (4GB memory limit on Windows XP64) via Rel 256 driver

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PNY PROFESSIONAL RANGE OF PRODUCTS

	QUADRO 400	QUADRO 600	QUADRO 2000	QUADRO 2000D	QUADRO 4000	QUADRO 4000 MAC	QUADRO 5000	QUADRO 6000
 Graphics Solutions by PNY								
MEMORY	512 Mo DDR3	1 GB DDR3	1 GB GDDR5	1 GB GDDR5	2 GB GDDR5	2 GB GDDR5	2,5 GB GDDR5	6 GB GDDR5
MEMORY INTERFACE	64-bit	128-bit	128-bit	128-bit	256-bit	256-bit	320-bit	384-bit
MEMORY BANDWIDTH	12.3 GB/s	25.6 GB/S	41.6 GB/S	41.6 GB/S	89.6 GB/S	89.6 GB/S	120 GB/S	144 GB/S
CUDA PARALLEL PROCESSING CORES	48	96	192	192	256	256	352	448
DISPLAY CONNECTORS	Dual-Link DVI-I (1) DP (1)	DVI-I (1) DP (1)	DVI-I (1) DP (2)	Dual Link DVI-I (2)	DVI-I (1) DP (2)	DVI-I (1) DP (1) Stereo (1)	DVI-I (1) DP (2)	DVI-I (1) DP (2)
INCLUDED ACCESSORIES	DVI to VGA DP to DVI (SL)	DVI to VGA DP to DVI (SL)	DVI to VGA DP to DVI (SL)	DVI to VGA (2)	DVI to VGA DP to DVI (SL) 6-pin power cable	DVI to VGA DP to DVI (SL) 6-pin power cable	DVI to VGA DP to DVI (SL) 6-pin power cable	DVI to VGA DP to DVI (SL) 6-pin power cable
MAXIMUM POWER CONSUMPTION	32 W	40 W	62 W	62 W	142 W	142 W	152 W	204 W
PHYSICAL DIMENSIONS	69mm (H) x 142mm (L) Single Slot	69mm (H) x 142mm (L) Single Slot	110mm (H) x 178mm (L) Single Slot	110mm (H) x 178mm (L) Single Slot	110 mm (H) x 240 mm (L) Single Slot	110 mm (H) x 240 mm (L) Single Slot	110 mm (H) x 250 mm (L) Dual Slot	110 mm (H) x 250 mm (L) Dual Slot
3D VISION PRO	Support via USB	Support via USB	Support via USB	Support via USB	3-pin mini DIN	3-pin mini DIN	3-pin mini DIN	3-pin mini DIN
GRAPHICS BUS	PCI EXPRESS 2.0 x 16	PCI EXPRESS 2.0 x 16	PCI EXPRESS 2.0 x 16	PCI EXPRESS 2.0 x 16	PCI EXPRESS 2.0 x 16	PCI EXPRESS 2.0 x 16	PCI EXPRESS 2.0 x 16	PCI EXPRESS 2.0 x 16
THERMAL SOLUTION	Active	Active	Active	Active	Active	Active	Active	Active
LOW PROFILE	Yes	Yes	No	No	No	No	No	No
PART NUMBERS	VCQ400-PB	VCQ600-PB	VCQ2000-PB	VCQ2000DVI-PB	VCQ4000-PB	VCQ4000MAC-PB	VCQ5000-PB	VCQ6000-PB
EAN	3536403339579	3536403338916	3536403338893	3536403339494	3536403338404	3536403338855	3536403338336	3536403338411

	QUADRO G-SYNC	QUADRO SDI CAPTURE	QUADRO SDI OUTPUT
 Graphics Solutions by PNY			
ADD-ON CARD FOR	Quadro 5000 Quadro 6000	Quadro 4000 Quadro 5000 Quadro 6000	Quadro 4000 Quadro 5000 Quadro 6000
BUS TYPE	-	PCI-E 2.0 x8	-
CONNECTORS	2x RJ-45 1x BNC	5x BNC	3x BNC 1x DVI-D In
FEATURES	Genlock Frame Lock Swap Lock Synchronization of several workstations, visualisation clusters, caves, videowalls	4x HD-SDI Capture 1x HD-SDI Output 8-Bit, 10-Bit, 12-Bit Ancillary Data SDI capture and postprocessing in realtime. Genlock Preview output.	2x HD-SDI Output 8-Bit, 10-Bit, 12-Bit Ancillary Data SDI output and postprocessing in realtime. Genlock

	QUADRO SDI OUTPUT
 GPU Computing by PNY	
TOTAL DEDICATED MEMORY	6GB GDDR5
MEMORY SPEED	1.5 GHz
MEMORY INTERFACE	384-bit
# OF CUDA CORES	448
DOUBLE PRECISION FLOATING POINT PERFORMANCE (PEAK)	515 GFlops
SINGLE PRECISION FLOATING POINT PERFORMANCE (PEAK)	1.03 Tflops
POWER CONSUMPTION	225 W
PART NUMBERS	TCSC2075-PB
EAN	3536403340193