NVIDIA® QUADRO® 400
STEP UP TO PROFESSIONAL GRAPHICS

NVIDIA® Quadro® 400 delivers superior professional application performance and capabilities compared to consumer graphics.

The NVIDIA® Quadro® 400 professional graphics solution provides up to 5X faster performance over high-end consumer gaming cards and up to 10X improvement over integrated graphics processors in industry leading CAD/CAM applications[1]. Which means you can design, iterate and deliver higher quality results in less time.

Designed for efficiency, Quadro 400 consumes less than 35W and its low-profile form factor fits into any workstation. Quadro 400 also includes advanced capabilities such as Mosaic™ and nView® technologies to span and efficiently manage your entire Windows desktop across multiple displays. It can also drive NVIDIA 3D Vision™ Pro stereoscopic 3D shutter-glasses.

Modern applications harness the NVIDIA® CUDA™ parallel processing architecture of the Quadro GPU to deliver performance gains when running applications that require computational horsepower. NVIDIA optimized and certified drivers enable Quadro GPUs to accelerate applications including 3ds Max, AutoCAD, SolidWorks and many more.

The entire Quadro family takes leading professional applications to a new level of interactivity with hardware-accelerated features, performance and quality not found in other products. From the 6 GB[2] Quadro 6000 at the ultra-high-end to the small form factor Quadro 400 at the entry-level, NVIDIA solutions deliver the productivity you need at every price.

QUADRO 400 PRODUCT SPECIFICATIONS

CUDA PARALLEL PROCESSING CORES
> 48

FRAME BUFFER MEMORY
> 512 MB DDR3

MEMORY INTERFACE
> 64-bit

MEMORY BANDWIDTH
> 12.3 GB/s

DISPLAY CONNECTORS
> 1 single link DVI-I and 1 Display Port

MAX POWER CONSUMPTION
> 32 W

GRAPHICS BUS
> PCI Express 2.0 x16

FORM FACTOR
> 2.731" H x 5.58" L, Single slot, Low Profile

THERMAL SOLUTION
> Active

3D VISION / 3D VISION PRO
> Support via USB

NVIDIA® QUADRO® 400

Features	Benefits
PERFORMANCE	Quadro 400 provides up to 5X faster performance over high-end consumer gaming cards and up to 10X improvement over integrated graphics processors in industry leading CAD/CAM applications[1].
NVIDIA MOSAIC™ TECHNOLOGY	NVIDIA® Mosaic Technology enables transparent scaling of any application across up to eight displays, using multiple graphics solutions. Each Quadro solution drives two displays or projectors.
NVIEW® ADVANCED DESKTOP SOFTWARE	The nView® Advanced Desktop Software delivers maximum flexibility for single large display or multi-display options, providing unprecedented end-user control of the desktop experience for increased productivity.
30-BIT COLOR FIDELITY	30-bit color fidelity (10-bits per color) enables billions of color variations for rich, vivid image quality with the broadest dynamic range.
3D VISION AND 3D VISION PRO	Advanced active shutter glasses deliver crystal-clear stereoscopic 3D visualization for the most immersive experience. Infrared (3D Vision) or RF (3D Vision Pro) technology enables a range of immersive environments ranging from your desktop workstation to collaborative work spaces. 3D Vision and 3D Vision Pro sold separately.

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

- Shader Model 4.1 (OpenGL 4.1 and DirectX 10.1)
- 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
- 16x 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

ADVANCED DISPLAY FEATURES

- 30-bit color (10-bit per each red, green, blue channel)
- Support for any combination of two connected displays
- DisplayPort (up to 2560 x 1600 @ 60Hz and 1920x1200 @ 120Hz)
- Dual-link DVI-I output (up to 2560 x 1600 @ 60Hz and 1920x1200 @ 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™ and 3D Vision™ Pro 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, Multi-channel (7.1) LPCM, Dolby Digital Plus (DD+), andMPEG-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 about NVIDIA Quadro, go to **www.nvidia.com/quadro**
Follow Quadro on Twitter **@NVIDIAQuadro.**

[1]5X performance gain based on Pro/Engineer score in the SPEC Viewperf 11 compared to GeForce GTX 580 on a standard industry workstation (Core i7 965 3.2GHz, X58 motherboard, 6GB RAM, Win7-64, 265.81 drivers). 10X performance gain based on SPEC Viewperf 10 compared to Sandy Bridge system (2GHz, 4GB, Win7-64). SPEC® and the benchmark name SPECviewperf® are registered trademarks of the Standard Performance Evaluation Corporation. Competitive benchmark results stated above reflect results published on www.spec.org as of 12/8/2010. For the latest SPECviewperf® benchmark results, visit www.spec.org/gwpg.

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

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