

PART NUMBER:
VCQKK4000-PB

NVIDIA® QUADRO® K4000
INTERACT FLUIDLY WITH LARGE, COMPLEX
3D MODELS IN A SINGLE SLOT CONFIGURATION



**Scale up visualization with multiple display outputs,
SDI video I/O and Stereo capability**

The new family of NVIDIA® Quadro® professional graphics products leverages the powerful NVIDIA Kepler™ architecture to deliver a new level of workstation performance and capabilities.

You can now realize your most ambitious vision—whether it’s product design, visualization, and simulation or spectacular visual storytelling — and get it to market faster, more profitably, and with superior quality.

The NVIDIA Quadro K4000 graphics board offers supercharged performance for graphics-intensive applications. You get 3 GB of GDDR5 memory, stereo capability, and the freedom to drive up to four displays simultaneously from a single slot board configuration.

NVIDIA CUDA® Architecture

Parallel-computing architecture that tightly integrates advanced visualization and compute features to significantly accelerate professional workflows

NVIDIA Scalable Geometry Engine

Dramatically improves geometry performance across a broad range of CAD, DCC, and medical applications. This lets you work interactively with models and scenes that are an order of magnitude more complex than ever before.

Large Frame Buffers with Ultra-Fast Bandwidth

Large GPU memory with fast bandwidth for display of complex models and scenes, as well as computation of large datasets

NVIDIA Parallel DataCache™

Supports a true cache hierarchy combined with on-chip shared memory. L1 and L2 caches drive exceptional throughput, accelerating features such as real-time ray tracing, physics, and texture filtering.

Unified Driver Architecture (UDA)

Guarantees forward and backward compatibility with software drivers. This simplifies upgrading to a new solution because all Quadro-based products work with the same driver software.

Bindless Textures²

Dramatically increases the number of unique textures available to shaders at run-time, enabling significantly more materials and richer texture detail in scenes

NVIDIA SMX

Delivers more processing performance and efficiency through a new, innovative streaming multiprocessor design that allows a greater percentage of space to be applied to processing cores versus control logic

H.264 encoder²

Dedicated H.264 encode engine that’s independent of 3D/compute pipeline and delivers real-time performance for transcoding, video editing, and other encoding applications

PCI Express 2.0 Compliance

Supports data transfer rates up to 5 GT/sec per lane for an aggregate bandwidth of 16 GB/sec bi-directional (8 GB/sec in each direction)

Ultra-Quiet Design

An advanced cooling design enables acoustics lower than 28 db for an ultra-quiet desktop environment.

NVIDIA Quadro K4000 - PRODUCT SPECIFICATIONS

CUDA PARALLEL PROCESSING CORES	768
FRAME BUFFER MEMORY	3 GB GDDR5
MEMORY INTERFACE	192-bit
MEMORY BANDWIDTH	134 GB/s
MAX POWER CONSUMPTION	80 W
GRAPHICS BUS	PCI Express 2.0 x16
DISPLAY CONNECTORS	{1} DVIH {2} DP 1.2 {1} Stereo
FORM FACTOR	110 mm (H) x 240 mm (L) Single Slot
THERMAL SOLUTION	Active
NVIDIA® 3D VISION® AND 3D VISION PRO	Supports 3D Vision and 3D Vision Pro with both USB and optional 3-pin connection to 3D Vision Pro hubs
HD SDI CAPTURE/OUTPUT	Supported
PACKAGE CONTENT	{1} DVI to VGA adapter P/N: QSP-DVIVGA {2} DP to DVI (SL) adapter P/N: QSP-DPDISL {1} Stereo Additional Connector P/N: QSP-STEREOQ4000-PB

NVIDIA Quadro K4000 - New NVIDIA Kepler Architecture Features and Benefits

NVIDIA CUDA® PARALLEL COMPUTING ARCHITECTURE	Quadro solutions leverage general-purpose GPU computing using standard programming languages like C/C++ and Fortran, as well as emerging APIs such as OpenCL and Direct Compute. This broad adoption of CUDA accelerates techniques like ray tracing, video and image processing, and computation fluid dynamics.
DISPLAYPORT 1.2 SUPPORT (WITH AUDIO)	Compact and secure DisplayPort 1.2 connectors support multi-stream technology, stream cloning, and ultra-high-resolution panels (up to 3840 x 2160 @ 60 Hz). This allows maximum range, resolution, refresh rate, and color depth designed to support the latest display technologies.
DEEP COLOR PROCESSING AND DISPLAY	Preserve color detail and precision throughout the processing and display pipeline for smooth gradients transitions, even on high dynamic range imagery. Each color component can be processed at up to 32-bit floating point precision and displayed at up to 12-bit precision with supported DisplayPort 1.2 or HDMI 1.4 displays.
LARGE FRAME BUFFERS WITH ULTRA-FAST BANDWIDTH	Large GPU memory with fast bandwidth for display of complex models and scenes, as well as computation of large datasets

NVIDIA Quadro K4000 - TECHNICAL SPECIFICATIONS

SUPPORTED PLATFORMS

- >> Microsoft Windows 8 (64-bit and 32-bit)
- >> Microsoft Windows 7 (64-bit and 32-bit)
- >> Microsoft Windows Vista (64-bit and 32-bit)
- >> Microsoft Windows XP (64-bit and 32-bit)¹
- >> Linux® - Full OpenGL implementation, complete with NVIDIA and ARB extensions (64-bit and 32-bit)

3D GRAPHICS ARCHITECTURE

- >> Scalable geometry architecture
- >> Hardware tessellation engine
- >> FXAA/TXAA dedicated anti-aliasing engine²
- >> Bindless Textures³
- >> Shader Model 5.0 (OpenGL 4.3 and DirectX 11)
- >> Up to 16K x16K texture and render processing
- >> Transparent multisampling and super sampling
- >> 16x angle independent anisotropic filtering
- >> 32-bit per-component floating point texture filtering and blending
- >> Up to 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)
- >> Dedicated H.264 Encoder⁴
- >> Blu-ray dual-stream hardware acceleration (supporting HD picture-in-picture playback)

NVIDIA CUDA PARALLEL-PROCESSING ARCHITECTURE

- >> SMX Architecture (streaming multi-processor design that delivers greater processing and efficiency)
- >> API support, including:
 - > CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran
- >> NVIDIA Parallel DataCache hierarchy (configurable L1 and unified L2 caches)

ADVANCED DISPLAY FEATURES

- >> Simultaneously run three directly connected displays, each with the full capabilities of the display
- >> Support up to four displays with DisplayPort 1.2 Multi-Stream³
- >> Dual DisplayPort 1.2 outputs including Multi-Stream and HBR2 support³ (capable of supporting resolutions such as 3840x2160 @60Hz)
- >> Dual-link DVI-I (Supports 330MPixels/sec which enables resolutions such as 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 available (resolution support based on dongle specifications)
- >> DisplayPort 1.2, HDMI, and DVI support HDCP
- >> Supports NVIDIA SDI capture and output cards and GPUDirect™ for Video enabled 3rd party I/O boards
- >> Optional 3-pin VESA stereo bracket for synchronizing external stereo devices
- >> 12-bit internal display pipeline (hardware support for 12-bit scanout on supported panels, applications and connection)
- >> Stereoscopic 3D display support including NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and passive stereo
- >> OpenGL and Direct3D quad buffered stereo support
- >> Underscan/overscan compensation and hardware scaling
- >> Support for NVIDIA® Quadro® Mosaic, 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+), DTS-HD, TrueHD
- >> Output data rates of 44.1 KHz, 48 KHz, 88.2 KHz, 96 KHz, 176 KHz (HDMI only), and 192 KHz (HDMI only)
- >> Word sizes of 16-bit, 20-bit, and 24-bit



PACKAGE CONTENT:









- Driver
- Quick Start Guide
- (1) DVI to VGA adapter
- (2) DP to DVI adapter
- (1) Stereo Additional Connector





P/N: **GSP-DVIVGA**
 P/N: **GSP-DPDPVISL**
 P/N: **GSP-STEREOQ4000-PB**








¹ Supports up to 3 displays only
² This feature requires implementation by software applications and is not a stand-alone utility. Please contact us for details on availability.
³ Available on Windows 7 or later
⁴ Virtualization software includes Parallels Workstation Extreme, XenServer, and vSphere.
⁵ For detailed display support, please see display connectors for specific Quadro board.

PNY PROFESSIONAL RANGE OF PRODUCTS

 PNY Professional Solutions <small>NVIDIA Quadro® / NVIDIA Tesla® / Prevail SSDs</small>	 QUADRO 410	 QUADRO K600	 QUADRO K2000	 QUADRO K2000D	 QUADRO K4000	 QUADRO K5000 MAC	 QUADRO K5000
CUDA PARALLEL PROCESSING CORES	192	192	384	384	768	1536	1536
FRAME BUFFER MEMORY	512 Mo DDR3	1 GB DDR3	2 GB GDDR5	2 GB GDDR5	3 GB GDDR5	4 GB GDDR5	4 GB GDDR5
MEMORY INTERFACE	64-bit	128-bit	128-bit	128-bit	192-bit	256-bit	256-bit
MEMORY BANDWIDTH	14 GB/s	29 GB/s	64 GB/s	64 GB/s	134 GB/s	173 GB/s	173 GB/s
MAX POWER CONSUMPTION	38 W	41 W	51 W	51 W	80 W	122 W	122 W
GRAPHICS BUS	PCI Express 2.0 x16	PCI Express 2.0 x16	PCI Express 2.0 x16	PCI Express 2.0 x16	PCI Express 2.0 x16	PCI Express 3.0 x16	PCI Express 3.0 x16
DISPLAY CONNECTORS	(1) DVH (1) DP 1.2	(1) DVH (1) DP 1.2	(1) DVH (2) DP 1.2	(1) DVH (1) DVI-D (1) mDP 1.2	(1) DVH (2) DP 1.2	(1) DVH (1) DVI-D (2) DP 1.2 (1) Optional Stereo	(1) DVI-H (1) DVI-D (2) DP 1.2 (1) Optional Stereo
FORM FACTOR	69 mm (H) x 160 mm (L) Single Slot	69 mm (H) x 160 mm (L) Single Slot	110 mm (H) x 200 mm (L) Single Slot	110 mm (H) x 200 mm (L) Single Slot	110 mm (H) x 240 mm (L) Single Slot	110 mm (H) x 265 mm (L) Dual Slot	110 mm (H) x 265 mm (L) Dual Slot
THERMAL SOLUTION	Active	Active	Active	Active	Active	Active	Active
NVIDIA® 3D VISION® AND 3D VISION PRO	Support via USB	Support via USB connection to 3D Vision Hub	Support via USB connection to 3D Vision Hub	Support via USB connection to 3D Vision Hub	Supports 3D Vision and 3D Vision Pro with both USB and optional 3-pin connection to 3D Vision Pro hubs	Support via 3 pin mini DIN	Support via 3 pin mini DIN
LOW PROFILE	Yes	Yes	Yes	No	No	No	No
PART NUMBERS	VCG410-PB	VCGK600-PB	VCGK2000-PB	VCGK2000DVI-PB	VCGK4000-PB	VCGK5000MAC-PB	VCGK5000-PB
EAN	3536403341299	3536403342173	3536403342098	3536403342135	3536403342050	3536403341770	3536403341503

 PNY Professional Solutions <small>NVIDIA Quadro® / NVIDIA Tesla® / Prevail SSDs</small>	 QUADRO SYNC	 QUADRO SDI CAPTURE	 QUADRO SDI OUTPUT
ADD-ON CARD FOR	Quadro K4000 Quadro K5000	Quadro K4000 Quadro K5000	Quadro K4000 Quadro K5000
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

 PNY Professional Solutions <small>NVIDIA Quadro® / NVIDIA Tesla® / Prevail SSDs</small>	 TESLA C2075	 TESLA K20
PEAK DOUBLE PRECISION FLOATING POINT PERFORMANCE	515 Gflops	1.17 Tflops
PEAK SINGLE PRECISION FLOATING POINT PERFORMANCE	1030 Gflops	3.52 Tflops
MEMORY BANDWIDTH (ECC OFF)	148 GB/sec	208 GB/sec
MEMORY SIZE (GDDR5)	6 GB	5 GB
CUDA CORES	448	2496
PART NUMBERS	TCS2075-PB	TCSK20CARD-PB
EAN	3536403340193	3536403341695

PNY PROFESSIONAL SSDs	PREVAIL 	PREVAIL ELITE 
120 GB	SSD9SC120GCDA-PB	SSD9SC120GEDA-PB
240 GB	SSD9SC240GCDA-PB	SSD9SC240GEDA-PB
480 GB	SSD9SC480GCDA-PB	SSD9SC480GEDA-PB